SCHEME : J

Name : _____

Roll No. : _____ Year : 20___ 20___

Exam Seat No. : _____

LABORATORY MANUAL FOR
COMMUNITY PHARMACY & MANAGEMENT (20057)

SECOND YEAR D.PHARMACY

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI
(Autonomous) (ISO 9001: 2015) (ISO/IEC 27001:2013)

VISION

To ensure that the Diploma level Technical Education constantly matches the latest requirements of Technology and industry and includes the all-round personal development of students including social concerns and to become globally competitive, technology led organization.

MISSION

To provide high quality technical and managerial manpower, information and consultancy services to the industry and community to enable the industry and community to face the challenging technological & environmental challenges.

QUALITY POLICY

We, at MSBTE are committed to offer the best in class academic services to the students and institutes to enhance the delight of industry and society. This will be achieved through continual improvement in management practices adopted in the process of curriculum design, development, implementation, evaluation and monitoring system along with adequate faculty development program.

CORE VALUES

MSBTE believes in the following

- Skill development in line with industry requirements
- Industry readiness and improved employability of Diploma holders
- Synergistic relationship with industry
- Collective and Cooperative development of all stake holders
- Technological interventions in societal development
- Access to uniform quality technical education

Laboratory Manual of

COMMUNITY PHARMACY AND MANAGEMENT

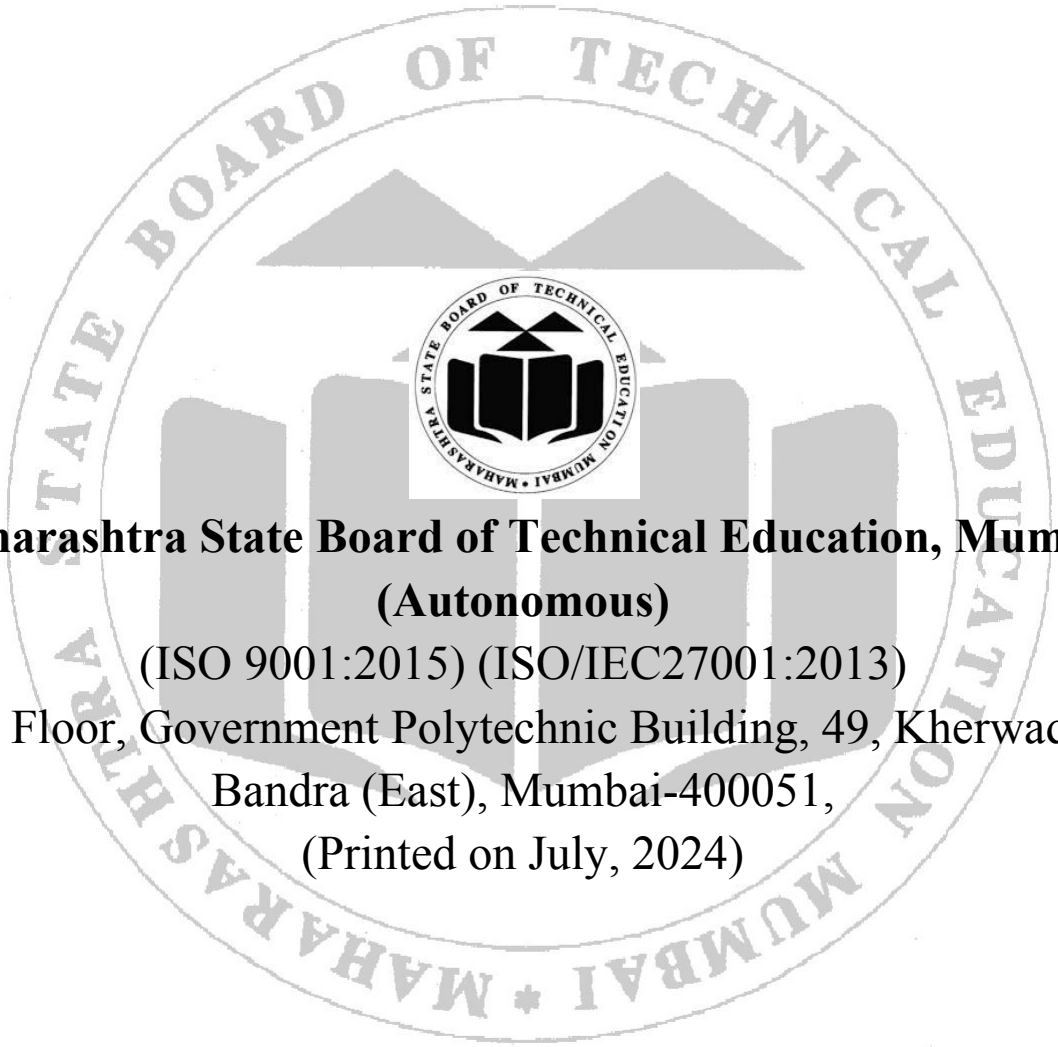
(20057)

Second Year
Diploma in Pharmacy (PH)

Maharashtra State
Board of Technical Education, Mumbai.
(Autonomous)

(ISO 9001:2015) (ISO/IEC27001:2013)

PCI ER-2020/'J' Scheme Curriculum



Maharashtra State Board of Technical Education, Mumbai
(Autonomous)
(ISO 9001:2015) (ISO/IEC27001:2013)
4th Floor, Government Polytechnic Building, 49, Kherwadi,
Bandra (East), Mumbai-400051,
(Printed on July, 2024)

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI

CERTIFICATE

This is to certify that, Mr. /Ms. _____

Roll No. _____ of Second Year Diploma in Pharmacy studying at (Institute)_____

Has completed the practical work satisfactorily in Community Pharmacy and Management (20057) for the academic year 20 to 20as prescribed in the PCI ER 2020 syllabus.

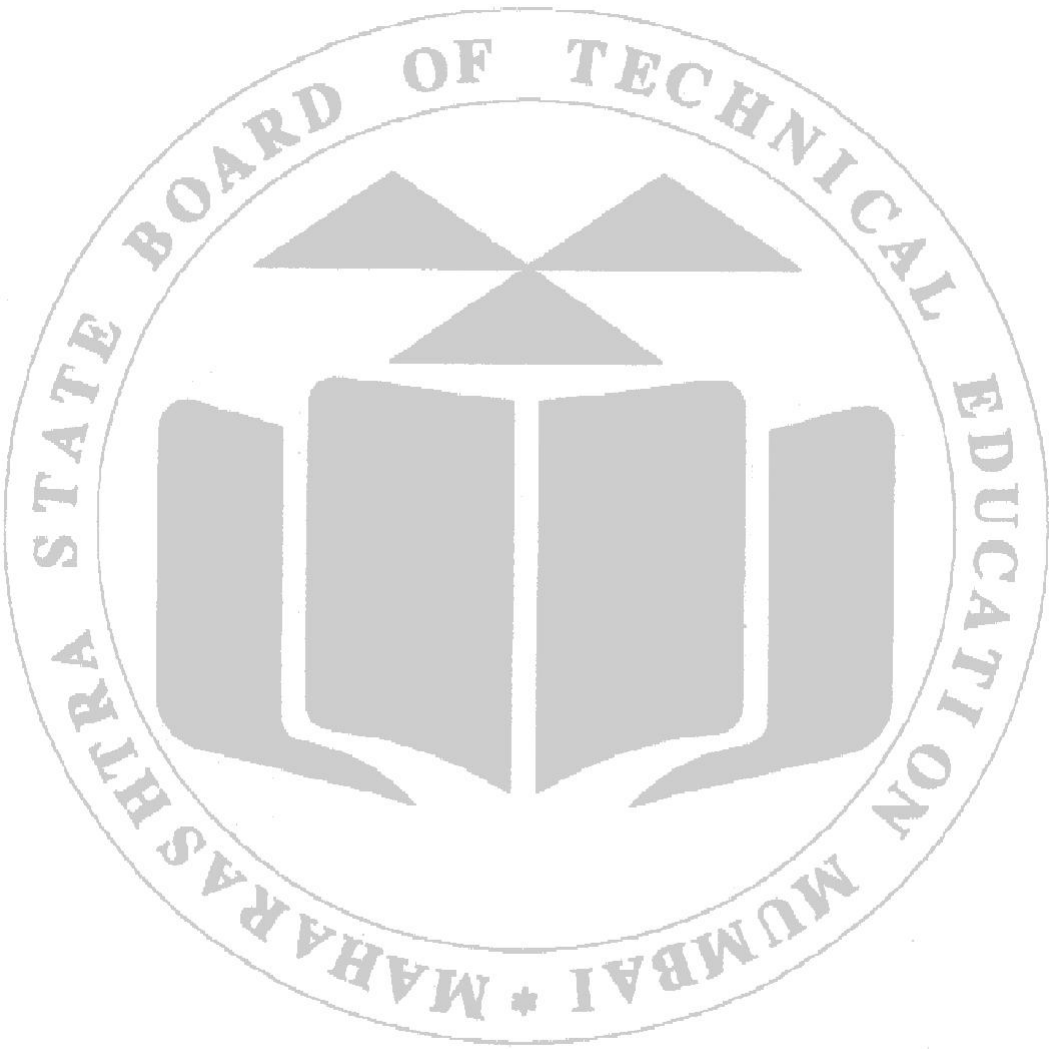
Date: _____ Enrollment No: _____

Place: _____ Exam Seat No: _____

Course Teacher **Principal**

External Examiner

Seal of the Institute


MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION MUMBAI

PROGRAM OUTCOMES

1. **Pharmacy Knowledge:** Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy.
2. **Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
3. **Leadership skills:** Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
4. **Professional Identity:** Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
5. **Pharmaceutical Ethics:** Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
6. **Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
7. **The Pharmacist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
8. **Environment and sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
9. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-access and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

COMPETENCIES FOR THE INDIAN D.PHARM HOLDERS (AS PER ER-2020)

Competency is defined as "A distinct composite of knowledge, skill, attitude and value that is essential to the practice of the profession in real life contexts".

The candidates who successfully complete the Diploma in Pharmacy (D. Pharm) program of Education Regulations 2020 (ER-2020), from the institutions approved by the Pharmacy Council of India are expected to attain the following professional competencies.

1. Review Prescriptions: The student should receive and handle prescriptions in a professional manner and be able to check for their completeness and correctness. Also, the prescribers should be contacted for any clarifications & corrections in the prescriptions with suggestions if any.

2. Dispense Prescription / Non-Prescription Medicines: The student should be able to dispense the various scheduled drugs / medicines as per the implications of the Drug & Cosmetic Act and Rules there under. Also, the non-prescription medicines (over-the-counter drugs) should be dispensed judicially to the patients as required.

3. Provide Patient Counseling / Education: The student should be able to effectively counsel / educate the patients / caretakers about the prescription / non-prescription medicines and other health related issues. Effective communication includes using both oral and written communication skills and various communication techniques.

4. Hospital and Community Pharmacy Management: The student be able to manage the drug distribution system as per the policies and guidelines of the hospital pharmacy, good community pharmacy practice and the recommendations of regulatory agencies. Also, be able to manage the procurement, inventory, and distribution of medicines in hospital / community pharmacy settings.

5. Expertise on Medications: The student should be able to provide an expert opinion on medications to health care professionals on safe and effective medication – use, relevant policies and procedures based on available evidences.

6. Proficiency on Pharmaceutical Formulations: The student should be able to describe the chemistry, characteristics, types, merits and demerits of both drugs and excipients used in pharmaceutical formulations based on her/his knowledge and scientific resources.

7. Entrepreneurship and Leadership: The student should be able to acquire the entrepreneurial skills in the dynamic professional environments. Also, be able to achieve leadership skills through teamwork and sound decision-making skills.

8. Deliver Primary and Preventive Healthcare: The student should be able to contribute to various healthcare programs of the nation including disease prevention initiatives to improve public health. Also contribute to the promotion of national health policies.

9. Professional, Ethical and Legal Practice: The student should be able to deliver professional services in accordance with legal, ethical and professional guidelines with integrity.

10. Continuing Professional Development: The student should be able to recognize the gaps in the knowledge and skills in the effective delivery of professional services from time to time and be self-motivated to bridge such gaps by attending continuing professional development programs.

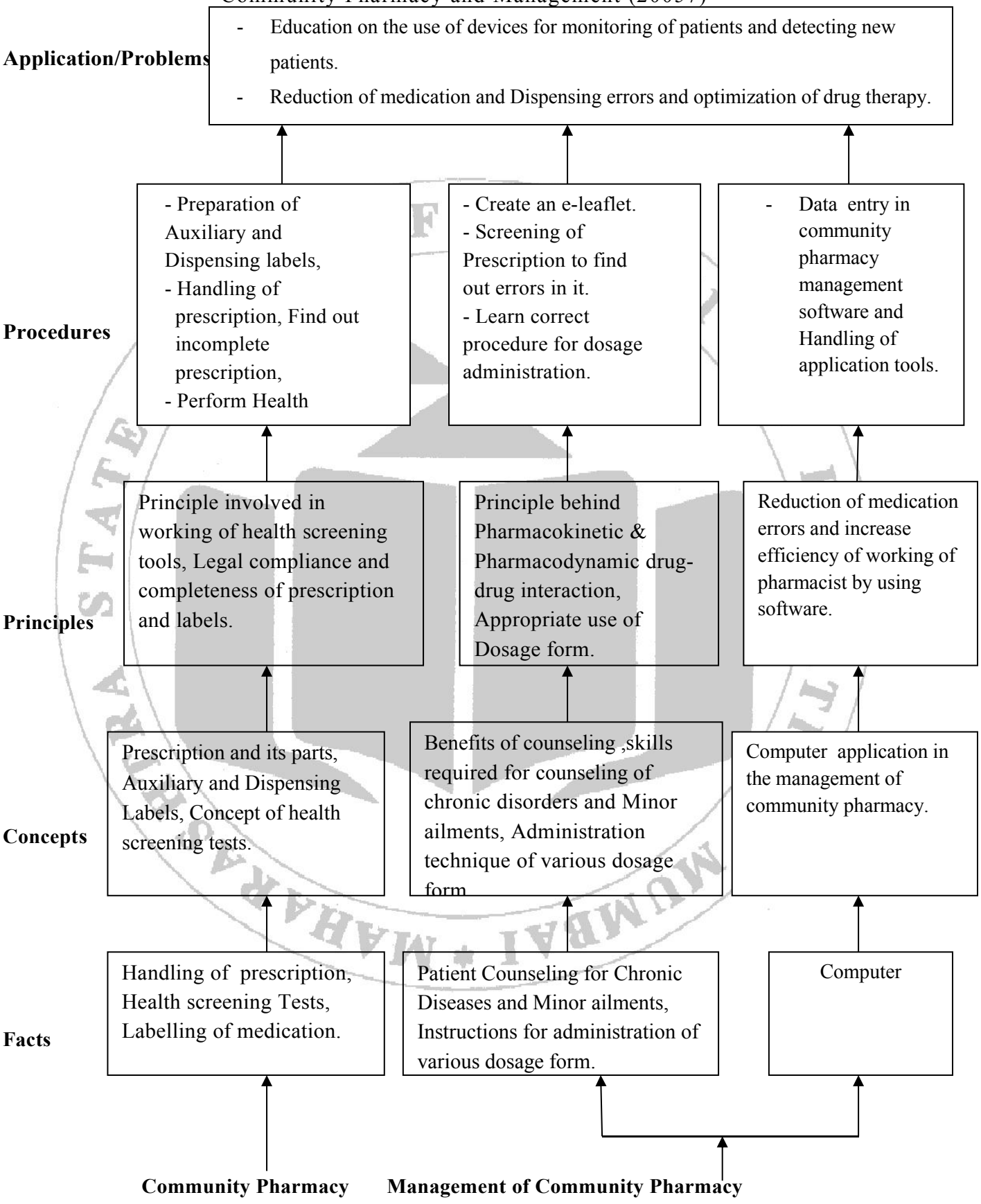
COMPETENCY MAPPING WITH THE COURSE

Competencies	Community Pharmacy And Management
1.Review Prescriptions	✓
2.Dispense Prescription / Non-Prescription Medicines	✓
3.Provide Patient Counseling / Education	✓
4.Hospital and Community Pharmacy Management	✓
5.Expertise on Medications	✓
6.Proficiency on Pharmaceutical Formulations	
7.Entrepreneurship and Leadership	✓
8.Deliver Primary and Preventive Healthcare	✓
9.Professional, Ethical and Legal Practice	✓
10.Continuing Professional Development	✓

GRAPHICAL STRUCTURE OF SUBJECT AREA

Second year Diploma in Pharmacy

Community Pharmacy and Management (20057)



COMMUNITY PHARMACY AND MANAGEMENT - PRACTICAL

Course Code : ER20-22P/20057 **75 Hours (3 Hours / Week)**

Scope : The course is designed to train the students and improve professional skills to provide various pharmaceutical care services in community pharmacy.

Course Objectives: This course will train the students in the following

1. Professional handling and filling prescriptions
2. Patient counseling on diseases and minor ailments
3. Patient counseling on prescription and / or non-prescription medicines
4. Preparation of counseling materials such as patient information leaflets
5. Performing basic health screening tests

Course Outcomes: Upon successful completion of this course, the students will able to

1. Handle and fill prescriptions in a professional manner
2. Counsel patients on various diseases and minor ailments
3. Counsel patients on prescription and or non-prescription medicines
4. Design and prepare patient information leaflets
5. Perform basic health screening tests

Practicals

Note: The following practical's shall be carried out in the model community pharmacy with appropriate simulated scenarios and materials. Students shall be trained through role plays wherever necessary. The activities of the students shall be assessed / evaluated using a structured objective assessment form.

1. Handling of prescriptions with professional standards, reviewing prescriptions, checking for legal compliance and completeness (minimum 5)
2. Identification of drug-drug interactions in the prescription and follow-up action (minimum2)
3. Preparation of dispensing labels and auxiliary labels for the prescribed medications (minimum5)
4. Providing the following health screening services for monitoring patients / detecting new patients (one experiment for each activity). Blood Pressure Recording, Capillary Blood Glucose Monitoring, Lung function assessment using Peak Flow Meter and incentive spirometer, recording capillary oxygen level using Pluse Oximeter, BMI measurement.
5. Providing counseling to simulated patients for the following chronic diseases / disorders including education on the use of devices such as insulin pen, inhalers, spacers, nebulizers, etc. where appropriate (one experiment for each disease). Type 2 Diabetes Mellitus, Primary Hypertension, Asthma, Hyperlipidaemia, Rheumatoid Arthritis.
6. Providing counseling to simulated patients for the following minor ailments (any three). Headache, GI disturbances (Nausea, Vomiting, Dyspepsia, diarrhea, constipation), Worm infestations, Pyrexia, Upper Respiratory Tract infections, Skin infections, Oral and dental disorders.
7. Appropriate handling of dummy dosage forms with correct administration techniques – oral liquids with measuring cup/cap/dropper, Eye Drops, Inhalers, Nasal drops, Insulin pen, nebulizers, different types of tablets, patches, enemas, suppositories
8. Use of Community Pharmacy Software and digital health tools.

Assignments

The students shall be asked to submit written assignments on the following topics (One assignment per student per sessional period. i.e., a minimum of THREE assignments per student)

1. SOPs for various activities in Community Pharmacy (as discussed in Theory and Practical)
2. List out the various abbreviations, short forms used in prescriptions and their interpretation
3. Patient information Leaflet for a given chronic disease / disorder
4. Patient information Leaflet for prescription / non-prescription medicines
5. Preparation of window / shelf display materials for the model community pharmacy
6. Overview of software available for retail pharmacy management including billing inventory.etc.
7. Dosage / Medication Reminder Aids
8. Overview on the operations and marketing strategies of various online pharmacies
9. Overview on the common fixed dose combinations
10. Overview on the medications requiring special storage conditions
11. Role of community Pharmacists in preventing Antimicrobial Resistance
12. Jan Aushadhi and other Generic Medicine initiatives in India
13. Global Overview of Online Pharmacies
14. Community Pharmacy Practice Standards : Global Vs. Indian Scenario
15. Overview of Pharmacy associations in India

Field Visit

The students shall be taken in groups to visit community pharmacies and medicine distributors to understand and witness the professional activities of the community pharmacists, and supply chain logistics. Individual reports from each student on their learning experience from the field visit shall be submitted.

STRATEGY FOR IMPLEMENTATION

It is suggested that 32-35% experiments shall be completed before every sessional exam.

GUIDELINES FOR TEACHERS

Teacher shall explain the following points to the students before starting of the practical:

1. **Learning Objectives:** To foster better understanding of the subject and to inculcate the skills and attitude related practical's.
2. **Graphical structure:** In graphical structure topics and subtopics are organized in systematic way so that ultimate purpose of learning the subject is achieved. This is arranged in the form of fact, concept, principle, procedure, application and problem.
3. **Elementary Guide to work in Laboratory:** The methods and other finer details of the equipment including equipment specifications should be explained to avoid equipment breakages, create conducive environment for proper organizing of the practical work with the time schedule.
4. Teachers should verify and check the work conditions of the equipment and request the students to follow the standard operating procedures (SOP).
5. Before starting the practical, Teachers should explain the strategies of the experiment.
6. Teachers should ensure the active participation of students while performing the experiment.
7. Observations should be checked individually and each student should be given a chance to perform the experiment.
8. Teachers should ask the students to complete the questions which are given at the end of the experiment accordingly.
9. Assessment of manuals should be done according to the assessment norms. Proper marks should be distributed according to the performance of the individuals.
10. Teachers should explain the competencies that student should achieve, in detail with their importance to students after completion of their course.
11. Apart from the syllabus, teachers should provide and cover extra topics which are beneficial for the students.
12. Explanation about various equipment with some interesting videos, reagents, chemicals, glassware's should be given to students prior to commencing of the practical.
13. Teachers should observe the students when students are performing practical's in groups, proper contributions of the individual student should be there and record of observation should be noted by all of them.
14. Teachers should also organize a visit to the pharmaceutical industries where students get a brief idea about the manufacturing processes of common dosage forms such as tablets, capsules, liquid orals, injectables, etc.
15. Teachers should also ask them to gather information about each type of dosage forms, their generic name, branded names and label contents.
16. Teachers may suggest the students to refer to sources of information such as literature, research papers, books, attending conferences, seminars for the updating of knowledge.
17. According to the professional competencies given by PCI, teachers should develop the professional skills of the students.
18. Teacher should conduct different types of sessions for students such as quiz, group discussions projects on different topics, etc.
19. Teachers should ensure that revised CIAAN – 2017 norms or the latest norms given by MSBTE are followed simultaneously and implemented.
20. Teachers should follow the guidelines given by PCI & MSBTE from time to time.

GUIDELINES OF BLOOMS TAXONOMY LEVELS

1 Knowledge

Define, Identify, Describe, Recognize, Tell, Explain, Recite, Memorize, Illustrate, Quote

2 Understand

Summarize, Interpret, Classify, Compare, Contrast, Infer, Relate, Extract, Paraphrase, Cite

3 Apply

Solve, Change, Relate, Complete, Use, Sketch, Teach, Articulate, Discover, Transfer

4 Analyze

Contrast, Relate, Devise, Distill, Correlate, Illustrate, Conclude, Categorize, Connect, Take apart

5 Evaluate

Criticize, Reframe, Judge, Defend, Appraise, Value, Prioritize, Plan, Grade,

6 Create

Design, Modify, Role-play, Develop, Rewrite, Pivot, Modify, Collaborate, Invent, Write

GUIDELINES TO STUDENTS

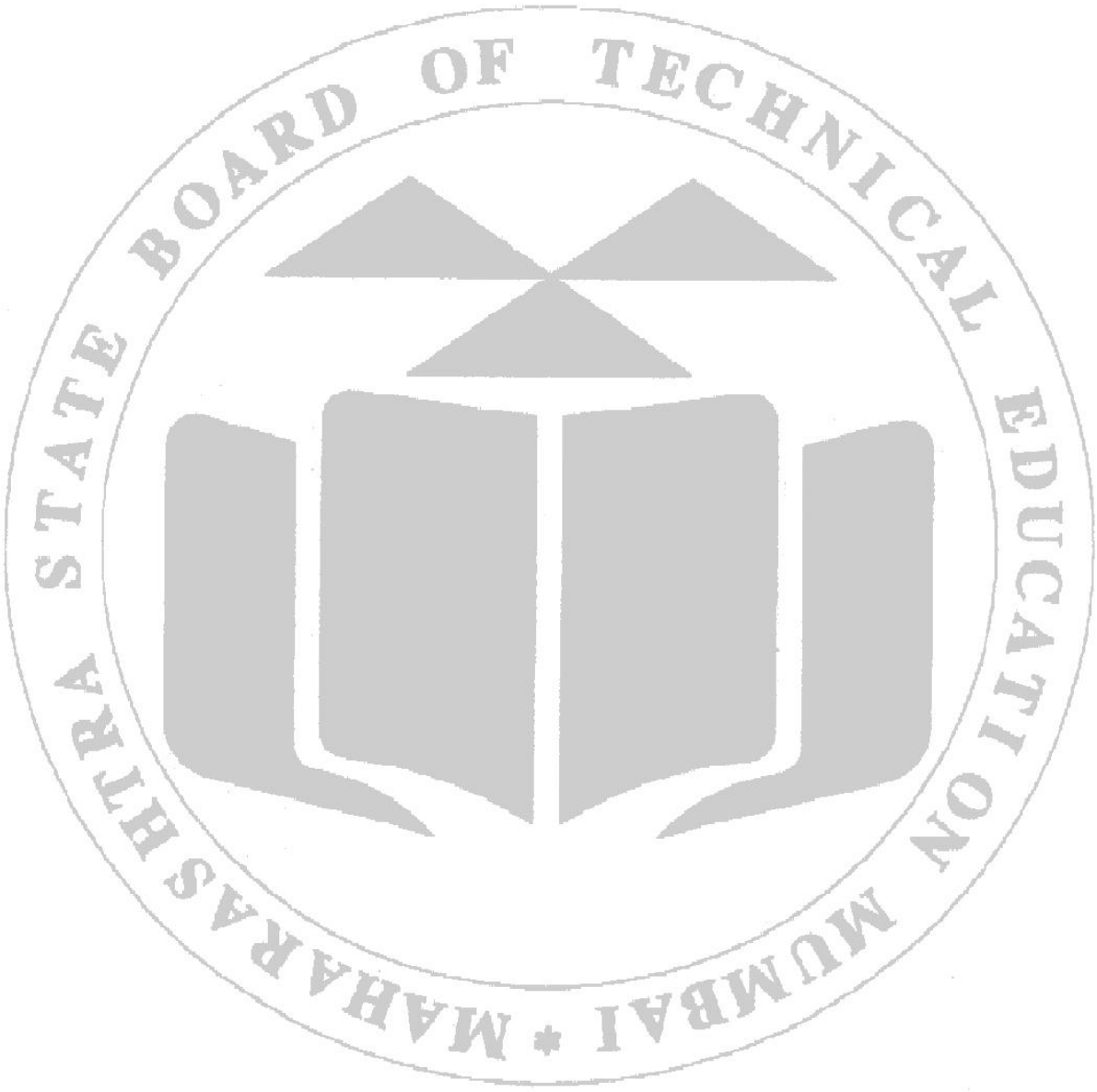
Students should follow the instructions given below for better understanding of the subject from a theoretical and practical concept of view.

1. As per the instructions, the students should wear an apron, cap, mask, gloves and slippers before entering the lab.
2. The students should keep their important things in the locker which is provided by the college.
3. While entering the laboratory, the students should carry manual, rough book and practical requirements as instructed.
4. Students should attend the practical regularly throughout the year, so as to understand the Subject properly, and to develop the skills for performing the experiments and attaining the competencies.
5. The students should carry out the experiment individually and perform the experiment at the allotted specific work area.
6. The practical applications of every experiment should be noted by the students.
7. Students should answer the questions asked in the practical's and should ask the teacher about their difficulties without any hesitation.
8. After completion of practical's students should write the answers of the question given at the end of the experiment.
9. Students should develop different types of competencies to become competent Pharmacists.
10. Students should actively participate in group discussions, activities, etc. and strive to achieve the knowledge, skills, and attitude.
11. Student should submit the manual for assessing regularly on the scheduled date.
12. After completing the practical, the student should clean the platform and glassware that he has used.

LABORATORY MANUAL OF COMMUNITY PHARMACY AND MANAGEMENT MAPPING OF COURSE OUTCOMES

Sr. No.	Title of Experiment	CO 1	CO 2	CO 3	CO 4	CO 5
1	To Review, Handle and Identify the Parts of Prescription.	✓				
2	To check the legal compliance and completeness of Prescription.	✓				
3	To Identify the Errors in the given prescription.	✓				
4	To Identify the Omission Errors in the given prescription and make necessary correction for ensuring the completeness of the prescription.	✓				
5	To Identify the overdose in the given prescription.	✓				
6	To Identify and Resolve the Pharmacokinetic drug -drug interactions in the prescription.	✓		✓		
7	To identify and Resolve the Pharmacodynamic drug -drug interactions in the prescription	✓		✓		
8	To prepare dispensing and auxiliary labels for the prescribed solid dosage form.		✓	✓		
9	To prepare dispensing and auxiliary labels for the prescribed Monophasic Liquid dosage form.		✓	✓		
10	To prepare dispensing and auxiliary labels for the prescribed biphasic liquid dosage form.		✓	✓		
11	To prepare dispensing and auxiliary labels for the prescribed semisolid dosage form.		✓	✓		
12	To prepare dispensing and auxiliary labels for the prescribed suppositories.		✓	✓		
13	To determine blood pressure by using sphygmomanometer					✓
14	To determine the capillary blood glucose level by using Glucometer.					✓
15	To measure the peak expiratory flow rate using peak flow meter and maximum value of air inhaled using Incentive Spirometer.					✓
16	To measure the capillary oxygen level using Pulse Oximeter.					✓
17	To determine the body mass index (BMI) of subject and interpret the body weight status.					✓
18	To counsel the simulated patient for the management of Diabetes Mellitus (Type 2).		✓	✓	✓	
19	To counsel the simulated patient for the management of Primary Hypertension.		✓	✓	✓	
20	To counsel the simulated patient for the management of Asthma.		✓	✓	✓	
21	To counsel the simulated patient for the management of Hyperlipidemia.		✓	✓	✓	
22	To counsel the simulated patient for the management of Rheumatoid Arthritis.		✓	✓	✓	

23	To counsel the simulated patient for the management of Minor Ailments.		✓	✓	✓	
24	To demonstrate the handling and administration techniques for various dosage forms.		✓	✓	✓	
25	To introduce with Community Pharmacy Software and Digital Health Tools.	✓			✓	✓



LIST OF EXPERIMENTS AND RECORD OF PROGRESSIVE ASSESSMENT

Sr. No.	Title of Experiment	Page No.	Date Of Performance	Date Of Submission	Assessment Marks10	Teacher's Signature
1	To Review, Handle and Identify the Parts of Prescription	1				
2	To check the legal compliance and completeness of Prescription.	7				
3	To Identify the Errors in the given prescription.	11				
4	To Identify the Omission Errors in the given prescription and make necessary correction for ensuring the completeness of the prescription.	15				
5	To Identify the overdose in the given prescription.	20				
6	To Identify and Resolve the Pharmacokinetic drug -drug interactions in the prescription.	24				
7	To identify and Resolve the Pharmacodynamic drug -drug interactions in the prescription	30				
8	To prepare dispensing and auxiliary labels for the prescribed solid dosage form.	35				
9	To prepare dispensing and auxiliary labels for the prescribed monophasic liquid dosage form.	41				
10	To prepare dispensing and auxiliary labels for the prescribed biphasic liquid dosage form.	47				
11	To prepare dispensing and auxiliary labels for the prescribed semisolid dosage form.	53				
12	To prepare dispensing and auxiliary labels for the prescribed suppositories.	59				
13	To determine blood pressure by using sphygmomanometer	65				
14	To determine the capillary blood glucose level by using glucometer.	72				

15	To measure the peak expiratory flow rate using peak flow meter and maximum value of air inhaled using Incentive Spirometer.	77				
16	To measure the capillary oxygen level using pulse oximeter.	83				
17	To determine the body mass index (BMI) of subject and interpret the body weight status.	87				
18	To counsel the simulated patient for the management of Diabetes Mellitus (Type 2).	92				
19	To counsel the simulated patient for the management of Primary Hypertension.	99				
20	To counsel the simulated patient for the management of Asthma.	105				
21	To counsel the simulated patient for the management of Hyperlipidemia.	112				
22	To counsel the simulated patient for the management of Rheumatoid Arthritis.	117				
23	To counsel the simulated patient for the management of Minor Ailments.	122				
24	To demonstrate the handling and administration techniques for various dosage forms.	129				
25	To introduce with Community Pharmacy Software and Digital Health Tools.	145				

I) PRACTICAL RECORD MARKS*:

Sessional Exam	Experiment No.		Total no. of experiment conducted	Average marks obtained for the experiment conducted. (out of 10)*	Teacher's Signature
	From	To			
First Sessional					
Second Sessional					
Third Sessional					

*Sessional wise marks should be considered for internal assessment of practical sessional examinations (out of 10M)

II) ASSIGNMENT MARKS#:

Sr. No.	Title of Assignment	Marks out of 05#	Assignment Marks (Average of three)	Teacher's Signature
1				
2				
3				

#Marks should be transferred from Appendix -1 A typical format for assessment of an assignment.

III) FIELD VISIT REPORT MARKS:

Sr. No.	Title of Field Visit	Marks out of 05	Field Visit Marks (Average of two)	Teacher's Signature
1				
2				

#Marks should be transferred from Appendix -2 A typical format for assessment of an assignment.

Average Sessional Mark out of 10	Assignments Mark out of 05 (Average of three)	Field Visit Mark out of 05(Average for the reports)	Total Marks out 20	Teacher's Signature

EXPERIMENT NO. 01

Handling and Identification of Parts of Prescription

1. Aim:

To Review, Handle and Identify the Parts of Prescription

2. Practical Significance:

A pharmacist should be able to identify the different parts of prescriptions and handle the prescription as per ethics while dispensing of prescribed medication to the patients. This can help to the pharmacist to avoid the different types of medication errors and protect the patient from their harmful effects. In these experiment students will learn identification of parts of prescription and handling of prescription in professional manner.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Receive and handle the prescriptions in a professional manner	CO 2	BTL1, BTL2
PrO 2	Identify different parts of prescription	CO 2	BTL2

4. Relevant Theoretical background:

Prescription is a written order from a registered medical practitioner to a pharmacist to compound and dispense specific medication for the patients. Prescriptions also contain directions to the Pharmacist and Patients. The prescription communicates to a pharmacist about patient's therapy, quantity of specific medication to be taken and the duration of medicine.

Parts of Prescription:

A typical prescription consists of following parts:

1. Date of the prescription
2. Patient's Name, age, gender, weight and address
3. Superscription
4. Inscription
5. Subscription
6. Signatura
7. Renewal (refill) instruction
8. Signature of the prescriber

1) Date:

It should be at the top of the prescription. It should be written by the prescriber. It helps the pharmacist to find out the date of prescribing and date of filling the prescription. It prevents the misuse of the prescription of narcotics or other habit forming drugs.

2) Name, Age, Sex, Weight And Address of the Patient (Patient Information):

Name, address & age of the patient is necessary so as to avoid error in delivery of the medications to any other patient. Age & weight of the patient helps in checking the dose of the prescribed drugs especially in case of pediatric & geriatric patients.

3) Superscription:

Rx The symbol represents the Latin word recipe, means 'you take'. It was believed to be the sign of Jupiter, the god of healing.

4) Inscription:

This is the main part or the body of the prescription. Medication is prescribed with their generic or brand name, Dosage form, its strength, quantity, frequency, route of administration.

5) Subscription:

It includes directions to the pharmacist by the physician regarding dosage form & the number of doses to be compounded & or dispensed.

6) Signatura(Transcription):

It is the part of the prescription which consists of directions to the patient or to be mentioned on the label .This includes, the dose, route of administration, frequency & time of administration, vehicle to be used for administration.

7) Refill Instruction:

A physician may advice the pharmacist to re dispense the medicines against the same prescription when he judges that patient needs another course of same treatment after particular interval of time.

8) Signature of the Prescriber:

The prescription must bear the signature of the prescriber. This is required for authentication of the prescription.

Handling of Prescription:

The following procedure should be adapted by the pharmacist while handling the prescription for compounding and dispensing-

1. Pharmacist should identify the patient.
2. Weather the prescription is presented by patient himself or by someone on the patients behalf.
3. The patient may be politely requested to wait while the pharmacist review the prescription for therapeutic aspect (Pharmaceutical and pharmacological).
4. Prescription should be complete with regards to-

a) Name of doctor,
b) His/her address and registration number,
c) Name, address, age ,sex, height and weight of patient ,
d) Name of medicine, potency, dosage, total amount of the medicine to be supplied,
e) Instructions to the patient,
f) Refill information,
g) Prescribed doctor's usual signature.

5. Requirements:

Dummy Prescription

6. Requirements used:

---

7. Activities:

Activity 1

XYZ CLINIC
Dr.V.R.Kulkarni,MBBS
Adress-Plot no.13,Arjun colony, Kharadi, Pune
Time-Monday to Saturday 10.00am to 1.00 pm
Phone-02132-232233 4.00pm to 9.00pm

Patients Name-Ram Gadhave Date-24.04.2024
Address- Nighot colony,Pune Age -30 Yr Sex- Male

R

Cap.Almox 500mg BD 7 days

Signature-
Regd No.125xxxx

Prescription 1

XYZ CLINIC
Dr.V.P.Kambale MD (Medicine)
Adress-Plot no.11,Ajinkya colony, Kharadi, Pune
Time-Monday to Saturday10.00am to 1.00 pm
Phone -02132- 232233 4.00pm to 9.00pm

Patients Name-Nayana Gadhave Date-24.04.2024
Address- Chafekar chouk,Pune Age -30 Yr
Sex-Female

Rx

Tab.Azee 500mg Once a day 5 days

Signature-
Regd No.111xxxx

Prescription 2

8. Observation table:

Parts of Prescription	Prescription 1	Prescription 2
Name of Prescriber with address		
Prescribers Registration number		
Name of Patient		
Address of Patient		
Age of Patient		
Sex of Patient		
Superscription		
Signatura		
Refill instructions		

Activity II

The subject teacher must display a dummy prescription to the students and perform role-play for handling of prescription in front of students .

Students must note down the steps followed by pharmacist (ie. teacher) during handling of prescription.

Enlist the steps taken during handling of prescription:

---

9. References/ Further Reading Material:

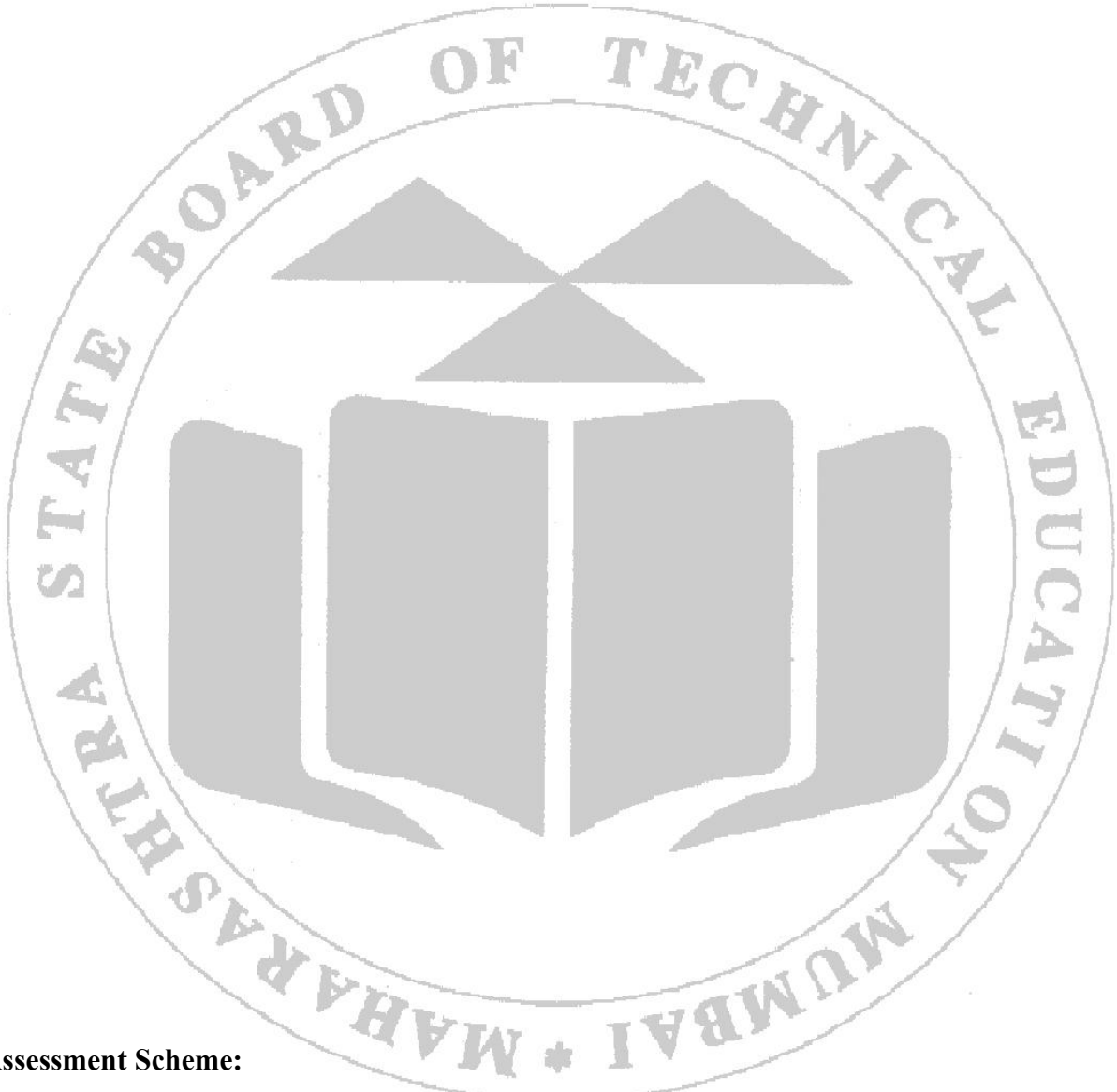
1. A textbook of Community Pharmacy and Management by Dr.Ashok Hajare.
2. Dispensing Pharmacy by R.M. Mehta.
3. A textbook of Pharmaceutics II by R.M. Mehta.

10. Practical Related Questions:

1. Define prescription .Enlist the various parts of prescriptions.
2. How the prescription should be handled?
3. What is Subscription?
4. What is Inscription?
5. Give Reason-Why Address, age ,sex of the patient are required in the prescription ?

(Space for answers)

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION MUMBAI



11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 02

Legal compliance and completeness of Prescription

1. Aim:

To check the legal compliance and completeness of Prescription.

2. Practical Significance:

A pharmacist should be able to check the legal compliance and completeness of prescription so that he / she will be able to handle the prescription in proper way. In this experiment, the students will learn to evaluate the legal compliance and completeness of the prescription.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Explain the requirements for legal compliance and correctness of the prescription.	CO1	BTL 2
PrO 2	Evaluate the prescription for its legal compliance and correctness	CO1	BTL 5

4. Prior Concept:

Prescription is a written order from a registered medical practitioner to a pharmacist to compound and dispense specific medication for the patients. The pharmacist should check the prescription with the major objective of determining the safety and accuracy of the prescription.

5. Relevant Theoretical background:

Legal Requirements of a Prescription:

1. Name, qualification, address and registration number of the doctor.
2. Name, age and gender of the patient. Weight should be mentioned for pediatric patients.
3. Date of consultation.
4. Name of the Medication prescribed.
5. Directions for use including dosage, frequency and duration.
6. Doctor's signature and stamp.
7. Refill information.

A pharmacist must verify whether the received prescription complies with the above mentioned legal requirements before dispensing any prescribed medication to the patient. If any of the above information is missing, the pharmacist should bring this to the notice of the prescriber.

Correctness of the Prescription:

Pharmacist should also check the prescription for -

1. Dosage:

Pharmacist must ensure that the prescribed dosage is within the standard minimum and maximum dose range.

2. Medications:

Pharmacist should ensure that no two medications with same pharmacotherapeutic effect have been prescribed at the same time.

3. Interaction Between the Currently Prescribed Medications:

If a pharmacist suspects a drug interaction that could make the therapy ineffective or produce unwanted side effects in the patients, he should refer back the prescription to the prescriber.

4. Usage:

The pharmacist should look into the patient's history of overuse, underuse or misuse of medicines.

5. Legibility of the Prescription:

A difficulty with handwriting readability should be brought to the prescriber's attention and the doubtful part be clarified.

6. Changes in the Prescription:

Changes made by the prescriber in the prescription should be noted on the prescription by the pharmacist, with the words "Changes made over the telephone in consultation with the Dr…….(name) at…(time) on…..(date)" followed by signature and stamp of the pharmacist.

6. Requirements:

Dummy Prescription

7. Requirements Used:

---

8. Activities:

Activity

Observe the prescription and answer the questions given below.

Prescription

XYZ CLINIC
Dr.V.R.Kulkarni MBBS, DCH
Address-Plot no.13,Arjun colon, Kharadi, Pune .Time-Monday to Saturday
Phone-02132-232233 10.00am to 1.00 pm
4.00pm to 9.00pm

Patient's Name-Ram Gadhave
Address- Nighot colony,Pune .Age: 6 Months
℞

T- Minic oral drops	0.3 ml - 0.3 ml - 0.3 ml
Astakind drops	0.4 ml - 0.4 ml - 0.4 ml
Advent drops	0.8 ml - 0.8 ml - 0.8 ml

Signature:

Q. 1. Is the above prescription complete and complies with the legal requirement?

Q. 2. List the problems associated with the prescription.

---

9. References/ Further Reading Material:

1. A textbook of Community Pharmacy and Management By Dr.Ashok Hajare.
2. Dispensing Pharmacy By R.M. Mehta.
3. A textbook of Pharmaceutics II By R.M. Mehta.

10. Practical Related Questions:

1. Give the legal requirements for a prescription.
2. If the pharmacist suspects any interaction in the prescription, what action should be taken by the pharmacist?
3. What should be done by the pharmacist if changes are made in the prescription by the prescriber?
4. Why is it important to check the prescription?
5. What are the steps in prescription processing?

(Space for answers)

11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 03
Identification of Errors in the Prescription

1. Aim:

To identify the Errors in the given prescription.

2. Practical Significance:

Prescribing Errors are common but considerable number of these errors can lead to serious consequences .Pharmacist during dispensing process should be aware about prescription errors possible in order to minimize such consequences .From this experiment students will learn to identify the errors in the prescription.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Describe the prescription errors with examples	CO 1	BTL 2
PrO 2	Identify the prescription errors in the given prescription and rectify it.	CO 1	BTL 2

4. Relevant Theoretical background:

Any steps taken in the prescription process can generate errors .Faults in the dose selection; omitted transcription and poor handwriting are the common causes of errors. Writing wrong prescription, prescribing wrong dose and prescribing wrong frequency are also other causes of errors.

Prescription errors are classified into –

1.Omission errors related to prescriber (including name of patient. age, prescriber name, prescriber signature Patient visited to Department and Diagnosis)

2. Omission errors related to drugs (including route, dose, frequency, dosage form and quantity to supply)

3. Commission errors –The errors of commission are errors in arithmetical accuracy.

Sources of Errors in Prescription-

1. Incorrect route of administration
2. Giving the drug to the wrong patient
3. Extra dose
4. Treatment duration
5. Incorrect dose

5. Requirements:

Dummy Prescription, official recourses for information related to recommended dose of drug.

6. Requirements used:

---

7. Activities:

Activity 1

XYZ CLINIC
Dr.V.R.Shinde ,MBBS

Adress-Aaradhya Complex, Nr.Zilla Parishad,Pune.
Phone-02132-232233

Time-Monday to Saturday
10.00am to 1.00 pm
04.00pm to 09.00pm

Patients Name-Vishal Thorat Date-
Address- Bibvewadi , Pune . Age -35 Yr Sex- Male

℞

Tab.Ciplox 500mg TD 3 days

Signature-
Regd No.-

Errors In the above prescription:

Points to Rectify Errors:

Activity II

The subject teacher must display a dummy prescription to the students identify the errors in the given prescription and note down the points to rectify same.

Errors In the above prescription-

Points to Rectify Errors-

---

8. References/ Further reading material:

1. A textbook of Community Pharmacy and Management By Dr. Ashok Hajare.
2. Dispensing Pharmacy by R.M. Mehta.
3. https://www.practo.com/medicine-info

9. Related Questions:

1. Define Prescription errors.
2. Enlist the different types of Prescription Errors
3. What type of effect will occur when high dose is given to the patients?
4. Give the causes of Prescription errors.
5. Which factors can be controlled by pharmacist to avoid prescription errors?

(Space for answers)

10. Assessment Scheme-:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 04
Identification of Omission Errors in the Prescription

1. Aim:

To identify the Omission Errors in the given prescription and make necessary correction for ensuring the completeness of the prescription.

2. Practical Significance:

Medication Errors means any errors in the process of ordering, transcribing dispensing, administering and monitoring medication. Pharmacist should identify errors of omission in the prescription in order to improve the patient's safety. From this experiment students will learn to identify the omission errors in the prescription and make necessary changes to ensure the correctness of prescription.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Describe the omission errors with examples.	CO 1	BTL 2
PrO 2	Identify the omission errors in the given prescription and rectify it.	CO 1	BTL 2

4. Relevant Theoretical background:

Omission errors mean any errors occur because of lacking of essential information related to drugs (including route, dose, frequency, dosage form and quantity to supply).If information given in the prescription is incomplete then the prescription becomes illegible, which is against Law. It also includes the incorrect dosage strength, dosage form, drug-drug interactions and drug name. When the pharmacist immediately informs the physicians, omission errors can be avoided.

Errors of Omission related to Prescriber include:

1. Patients name not mentioned
2. Age not mentioned
3. Ordering or prescribing number not mentioned.
4. Prescribers name and Prescribers signature not mentioned
5. Name of Clinic not mentioned
6. Weight not mentioned
7. Diagnosis not mentioned
8. Illegibility

Errors of Omission related to Drug include:

1. Route not mentioned
2. Dose not mentioned
3. Frequency not mentioned
4. Strength not mentioned
5. Dosage form not mentioned
6. Duration / number of doses not mentioned.
7. Quantity to supply not mentioned.

5. Requirements:

Dummy Prescription.

6. Requirements used:

---

7. Activities:

Activity 1

GANESHA CLINIC
Dr.R.S.Gavan, MBBS,PUNE.

Address-Trimurti colony, Oscar road ,Pune.
Phone-02132-232233

Time-Monday to Saturday
10.00am to 1.00 pm
04.00pm to 09.00pm

Patients Name-Nayana Yewale Date-
Adress- Age -35 Yr Sex- Female

℞

Tab.Biplex Forte		1-1-1
Tab. Shelcal	500mg	0-0-1

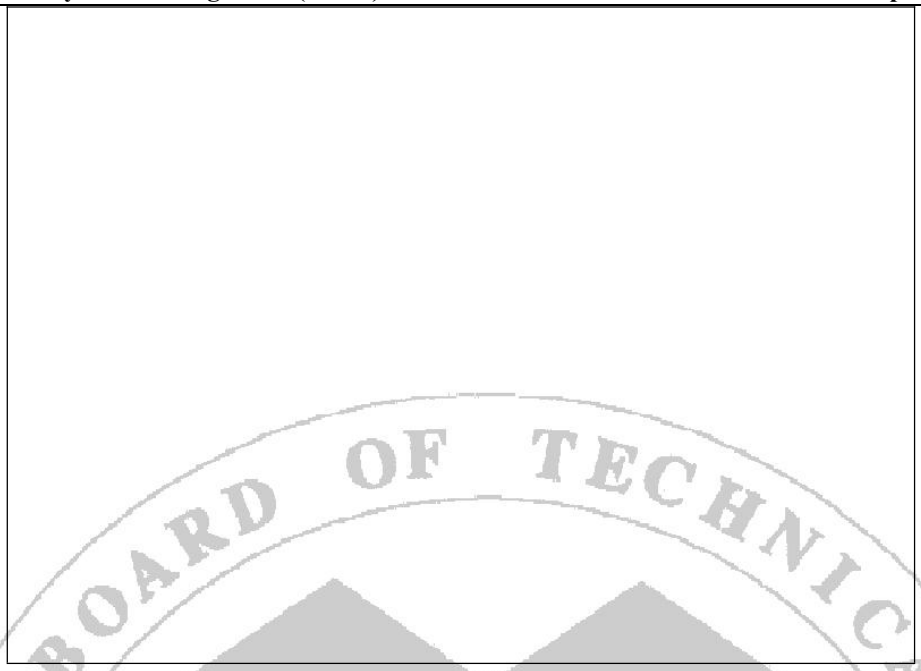
Signature-
Regd No.-

Identify the errors in the prescription:

How will you rectify omission errors in the prescription?

Activity II

The subject teacher must display a dummy prescription to the students identify the omission errors in the given prescription and note down the points to rectify same.



Identify the errors in the prescription:

How will you rectify omission errors in the prescription?

---

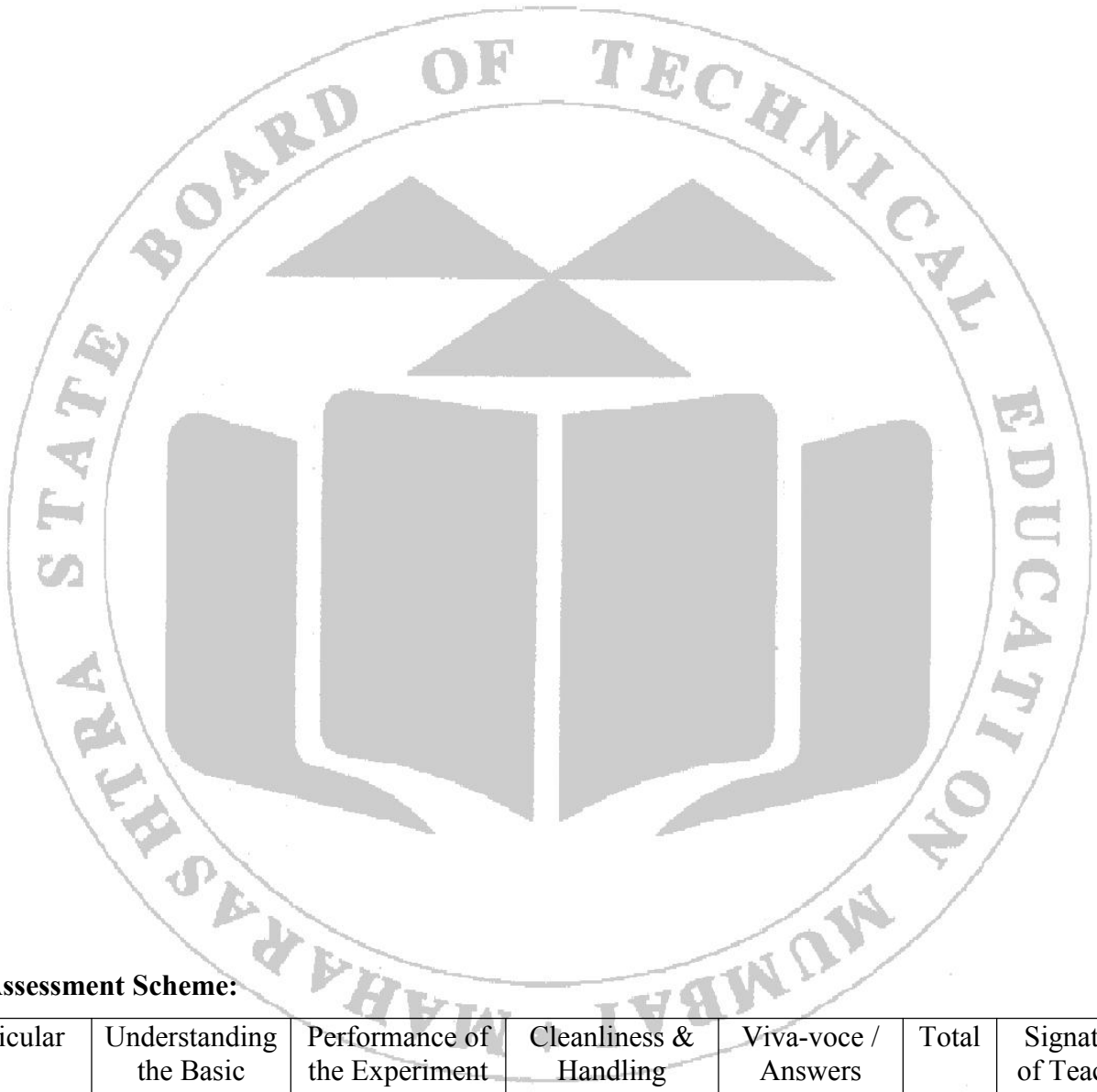
8. References/ Further Reading Material:

1. A textbook of Community Pharmacy and Management by Dr. Ashok Hajare.
2. Dispensing Pharmacy by R.M. Mehta.
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2723200/

9. Practical Related Questions:

1. Enlist the different type's omission errors related to prescribers.
2. Enlist the different type's omission errors related to drug.
3. How can we overcome the omission errors?
4. Which action is taken by pharmacist when the drug dosage strength is not mentioned?
5. Enlist the types of prescription errors.

(Space for answers)



10. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 05
Identification of Overdose in Prescription

1. Aim:

To identify the overdose in the given prescription.

2. Practical Significance:

Pharmacist during dispensing process should be aware about dose of medication. An overdose occurs when the patients take more than recommended amount of drug. An overdose may results in serious, harmful symptoms or death. After studying this experiment students will understand the over dosage of medication and accuracy in the prescription also they will check & Identify the over dosage in the prescription.

3. Practical Outcomes (PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Describe the overdose in the prescription and make necessary corrections.	CO 1	BTL 2
PrO 2	Identify the overdose in the given prescription and rectify it.	CO 1	BTL 2

4. Relevant Theoretical background:

When patient takes more than prescribed or Non prescribed medication (OTC) then drug overdosing occurs. An overdose leads to serious medical complications, including death. The severity of a drug overdose depends on drug, the amount taken and the physical and medical history of the person .The overdosing can be mild, moderate, or severe.

Causes of overdosing:

1. **Accidental overdosing:**

This type of overdosing occurs when patient takes medication incorrectly.ie.the wrong substance or combination of substances in wrong amount, without realizing they are potentially harmful. Children and some adults may accidently swallow the incorrect dose.

2. **Intentional overdosing:**

This overdose may occur when person take too much medication for a specific reason to harm them as a suicide attempt.

3. **Prescription overdosing:**

These mistakes made by physician when writing prescriptions and specifying dosage is responsible for 30% of prescription errors. Misdiagnosis or unfamiliarity with the patient diet and other prescriptions can cause some of these errors. In some cases, the physician prescribes a dose that is too high for the situation because he has incorrect information.

Overdosing errors may also occur due to simple transcription mistakes. In some case doctor writes the incorrect dosage, but in others the problems is caused by illegibility of the prescription.

Role of Pharmacist in Avoiding the Overdosing of prescription error-

1. Pharmacist should ensure that Prescribers are aware of the Patients Prescription.
2. Pharmacist should review the medication, optimize medication safety, and provide patient education.
3. Pharmacist should address the potential drug -drug interactions.
4. Pharmacist should consult the physician when he suspects any irrational combination of drug.
5. Pharmacist should provide overdose calculation.

5. Requirements:

Dummy Prescription, official recourses for information related to recommended dose of drug.

6. Requirements used:

---

7. Activities:

Activity 1

Observe the prescription and answer the following questions.

XYZ CLINIC
Dr.M.K Patil ,MBBS

Address-Datta ChoukComplex, Nr Pune Nashik Road ,Pune.
Phone-02132-232233

Time-Monday to Saturday
10.00am to 1.00 pm
04.00pm to 09.00pm

Patients Name-Tanaya Mishra Date-25.04.2024
Adress- Rajgurunagar, Pune . Age - 40Yr , Sex- Female

R

Tab Okacet	10 mg	TD 3 days
Tab.Ibugesic plus	500 mg	4 times a day 3 days

Signature-
Regd No.-142xxxx

Question:

Using official resource, identify the drug in the above prescription which can lead to overdose. State the correct dose for the same.

Name of the Drug----------

Resource used to identify the drug----------

Correct dose of Drug----------

Activity II

Identify the drugs with overdose in the table given below. You can use official resources for the same.

Sr.No	Name of the Drug(Strength)	Age of the Patient	Dose in Prescription	Tick if Overdose
1	Restyl 0.25mg	50	0.25 mg/day	
2	Restyl 0.25mg	50	0.50mg/day	
3	Restyl 0.25mg	50	0.75mg /day	
4	Aspirin 300mg	50	200mg/day	
5	Aspirin 300mg	50	300mg/day	
6	Aspirin 300mg	50	400mg/day	

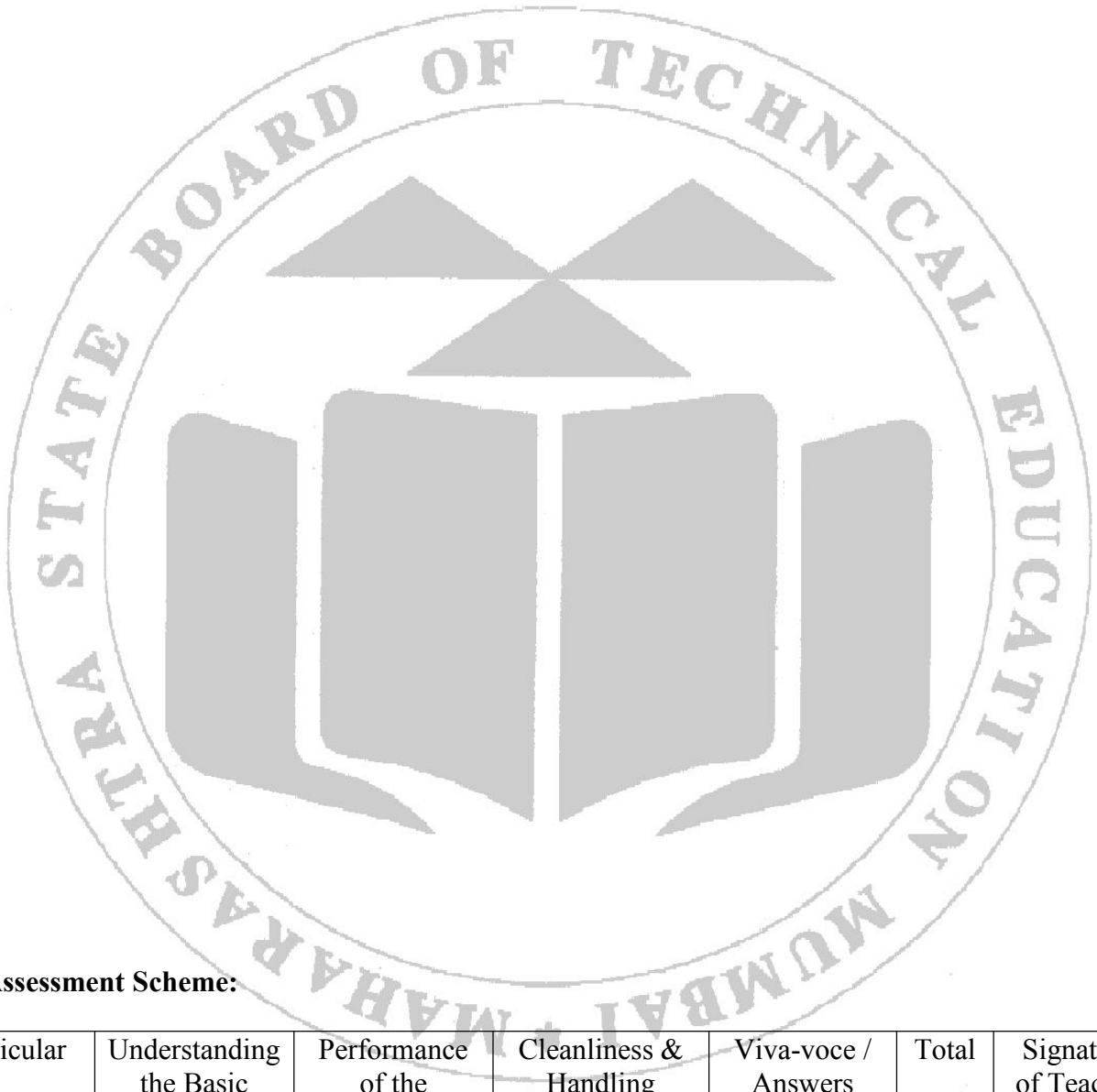
8. References/ Further Reading Material:

1. https://www.healthline.com/health/drug-overdose#risk-factors
2. https://journals.lww.com/journaladdictionmedicine
3.https://www.practo.com/medicine-info
4. http:/www.healthline.com/health/drug overdose
5.https://archive.cdc.gov/#/details?q=https://www.cdc.gov/drugoverdose/epidemic/index.html&start=0&rows=10&url=https://www.cdc.gov/drugoverdose/epidemic/index.html

9. Practical Related Questions:

1. Which are the different causes of overdosing of drug?
2. Explain the role of pharmacist in avoiding the overdosing of drug.
3. What do you mean by Overdosing of drug?
4. Give any two drug with their effect on human body if taken in overdose quantity.
5. What are the reasons for prescription overdosing?

(Space for answers)



10. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 06

Identification and Resolution of Pharmacokinetic drug -drug interactions

1. Aim:

To identify and Resolve the Pharmacokinetic drug -drug interactions in the prescription.

2. Practical Significance:

Drug-drug interactions (DDIs) are one of the commonest causes of medication error in developed countries, particularly in the elderly due to poly-therapy. In particular, poly-therapy increases the complexity of therapeutic management and thereby the risk of clinically important DDIs, which can both induce the development of adverse drug reactions or reduce the clinical efficacy. After studying this experiment students will understand the pharmacokinetic drug -drug interaction and resolve it

3. Practical Outcomes (PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define the pharmacokinetic drug –drug interactions.	CO 1	BTL 2
PrO 2	Describe mechanism of pharmacokinetic drug –drug interactions.	CO 1	BTL 2
PrO 3	Identify and resolve the of pharmacokinetic drug –drug interactions in the prescription.	CO 1	BTL 2,BTL 3

4. Relevant Theoretical background:

Drug interactions can have desired, reduced or unwanted effects. The probability of interactions increases with the number of drugs taken. The high rate of prescribed drugs in elderly patients (65-year-old patients take an average of 5 drugs) increases the likelihood of drug interactions. There are two types of mechanism which can cause drug-drug interactions .ie. Pharmacokinetic and Pharmacodynamic. Pharmacokinetic Interactions Involves altered absorption, distribution, metabolism and excretion of drug.

Pharmacokinetic Drug- drug Interactions:

1. Interactions affecting the absorption of drug-This group includes those interactions in which the absorption through GIT is either increased or decreased. eg. The gastrointestinal absorption of slowly dissolving digoxin may be increased by propantheline which decreases gastrointestinal motility.

2. Interactions Affecting the distribution of drugs-This is mainly related to the interaction in protein binding level.eg. Phenylbutazone replaces tolbutamide from protein binding and enhances hypoglycemic effect.

3. Interactions affecting Metabolism of drug- Changes in drug metabolism might cause changes in drug clearance, which can leads to unexpected drug interactions.

a) Inhibition of Metabolism- eg Isoniazide inhibits the hydroxylation of diphenyl hydantoin and may cause toxicity of Biphenyl hydantoin.

b) Induction of Metabolism-Barbiturates stimulates microsomal enzyme system in the liver and thus increases metabolic degradation of other drug ,such as alcohol ,phenytoin.

4. Interactions Affecting Excretion – One drug may block the renal excretion of another by competing for the same tubular transport system or may increase the excretion of the drug by increasing ionization.

a) Inhibition of Excretion – Probenicide competes with penicillin in renal secretion and thus inhibits excretion of penicillin.

b) Increase in Renal Excretion-Antacids like sodium bicarbonate make the urine alkaline & thus enhance the isolation of weak acidic drugs like salicylates , barbiturates, and lead to their rapid excretions.

Factors affecting drug interaction:

1. Multiple drug therapy.
2. Poor patient compliance.
3. Multiple prescribers.
4. Patients with hepatic/ renal insufficiency.
5. Advancing age of patients.

Role of Pharmacist in Management of Drug Interactions:

It is the pharmacists and prescribers responsibility to ensure that patients are aware of the possibility of side effects. Pharmacists should be able to recognize unexpected symptoms experienced by patients due to drug -drug interactions based on their knowledge of medicine. He should refrain adverse drug reactions (ADRs)by avoiding medications with potential negative effects in vulnerable patients. As a results pharmacist must play an important role in prevention, identification and reporting of drug –drug interactions.

Management of drug interactions include Monitoring of early detection, spacing dosing time and provide information on patient risk factor.

5. Requirements:

Dummy Prescription

6. Requirements used:

---

7. Activities:

Activity 1-

Using official resources, identify and resolve the pharmacokinetic drug drug interactions in the prescriptions given below-

PRESCRIPTION 1

CRITICARE CLINIC
Dr.M.K Salvi,MBBS.

Address- Halvai Peth,
Nr Pune Nashik Road,Pune.
Phone-020-564738

Time-Monday to Saturday
10.00am to 1.00 pm
04.00pm to 09.00pm

Patients Name-Sharad Pingale Date-25.04.2024
Address- Rajgurunagar , Pune . Age – 35 Yrs, Sex-Male

℞

Tab CEPODEM	200 mg	1-0-1	(5days)
CAP OMEZ	20 mg	1-0-0	(5days)

Signature-
Regd No.-122xxxx

Details about drug interactions: for eg. What actual drug-drug interaction did you identify in above prescription?

Resolutions:

Resource Used:

PRESCRIPTION 2

TRIMURTI CLINIC
Dr.G.M.Hawaldar ,MD

Address- Halvai Peth, Time-Monday to Saturday
Sterninton Road ,Pune. 10.00am to 1.00 pm
Phone-020-564738 04.00pm to 09.00pm

Patients Name- Mrs Martin Joseph Date-25.04.2024
Address-Rajgurunagar, Pune . Age – 75 Yr , Sex-Female

℞

Sotalol	80 mg PO BID
Aspirin	80 mg PO BID
Enalpril	20 mg PO BID
HCTZ	50mg PO QD
Felodipine	5 mg PO QD

Signature-
Regd No.-122xxxx

Details about Drug Interactions: What actual drug-drug interaction did you identify in above prescription?

Resolutions:

Resource Used:

---

8. References/ Further reading material:

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3897029/
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3444856/
3. A textbook of Pharmacology and Toxicology by Dr.A.V.Yadav.
4. A text book of Hospital and Clinical Pharmacy By Dr.Hemendra Gautam.

9. Related Questions:

1. Which are the different types of Drug Interactions?
2. Explain the role of pharmacist in avoiding the Drug- Drug Interactions.
3. Explain the different factors responsible for drug interactions.
4. Give any two eg. of Pharmacokinetic Drug - Drug Interactions.
5. Define pharmacokinetic drug interactions.

(Space for answers)

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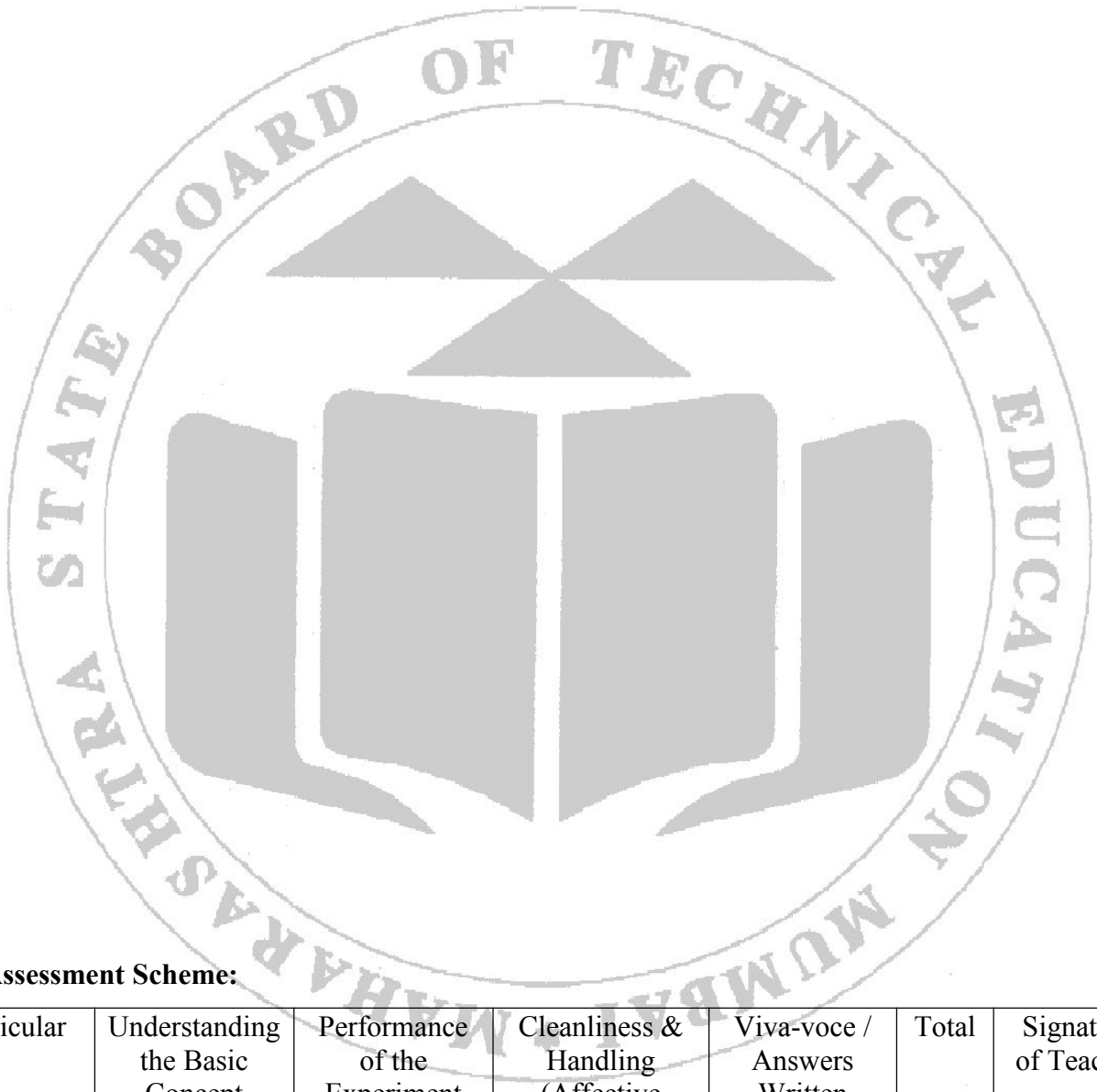


10. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 07

Identification and Resolution of Pharmacodynamic drug –drug interactions

1. Aim:

To identify and Resolve the Pharmacodynamic drug -drug interactions in the prescription.

2. Practical Significance:

After studying this experiments students will learn to identify the pharmacodynamic drug -drug interaction in the prescription and resolve it.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	State the mechanism of pharmacodynamic drug –drug interactions.	CO 1	BTL 2
PrO 2	Identify and resolve the of pharmacodynamic drug –drug interactions.	CO 1	BTL 2,BTL 3

4. Relevant Theoretical background:

Pharmacodynamic drug drug interactions (DDI's) occur when the pharmacological effect of one drug is altered by that of another drug in a combination regimen. PD Drug –Drug Interactions are classified into Synergistic, additive, or antagonistic in nature, which are judged based on changes in drug effects.

This involves interactions at pharmacodynamic level of the drug. There may be direct interaction between drug s and drug effects or interaction at receptor level. This may enhance or inhibit the total effect.

Types of Pharmacodynamic drug drug Interactions:

I) Pharmacological Interactions:

When drug A(An Antagonist) and Drug B (an Agonist)compete for same receptor site and their concentrations determine whether they prevent (antagonist) or produce (agonist) response.

II) Physiological Interactions:

1. **Additive interaction:**

When two or more drugs with similar pharmacodynamic effects are given they produce additive effect resulting in excessive response which can also results in toxicity.

2. **Synergistic interaction:**

In this interactions drug A and drug B interact with different receptors and enhance the activity of each other via different cellular mechanisms.

3. **Antagonistic interaction:**

In this interactions drug A and drug B bind to different receptors and have opposite effect due to different cellular mechanism.eg. Acetylcholine and Atropine by competitive antagonism oppose the actions of each other.

III) Chemical Interactions:

In Chemical Interaction drug A interact with drug B and prevents it from binding to its target response.

Role of Pharmacist in Management of Drug Interactions-

1. Identify the risk factors in patients .
2. Take thorough drug history of patients.

3. Gain knowledge about the actions of the drugs being used.
4. Take into account therapeutic alternatives.
5. If at all possible avoid complicated therapeutic manual.
6. Educate the Patient and Monitor Therapy.

5. Requirements:

Dummy Prescription

6. Requirements used:

---

7. Activities:

Activity 1-

Using official resources, identify and resolve the pharmacodynamic drug-drug interactions in the prescriptions given below-

PRESCRIPTION 1

PRAGATI CLINIC
Dr.Vedant Y.Prabhune , MBBS.

Address- Shaniwar Peth, Pune.
Phone-020-564888

Time-Monday to Saturday
10.00am to 1.00 pm
04.00pm to 09.00pm

Patients Name-Raj Tekude
Adress-Hadapsar , Pune .

Date-28.04.2024
Age – 75 Yr , Sex-Male

℞

Tab PIROX	10 mg	1-0-1	(5days)
CAP LISORIL	10mg	1-0-0	(5days)

Signature-
Regd No.-122xxxx

Details about Drug Interactions:

Resolutions:

Resource Used:

PRESCRIPTION 2

TRIMURTI CLINIC
Dr. Rutuja P.Kakade , BAMS.

Address- Sadashiv Peth Peth, Laxmi Road ,Pune.
Phone-020-564738

Time-Monday to Saturday
10.00am to 1.00 pm
04.00pm to 09.00pm

Patients Name- Mrs Rajaram Pisal Date-28.04.2024

Address- Katraj Pune. Age – 60 Yr , Sex-Male

R_x

CAP.TRAMACIP	50 mg	1-0-1 (7 days)
TAB. XYCALM	0.25 mg	1-0-1 (3 days)

Signature-
Regd No.-122xxxx

Details about Drug Interactions:

Resolutions:

Resource Used:

Activity II

Using official resources, enlist any three Pharmacodynamic drug-drug interactions.

Sr.No.	Drug Combination	Details of Pharmacodynamic drug Interactions
1		
2		
3		

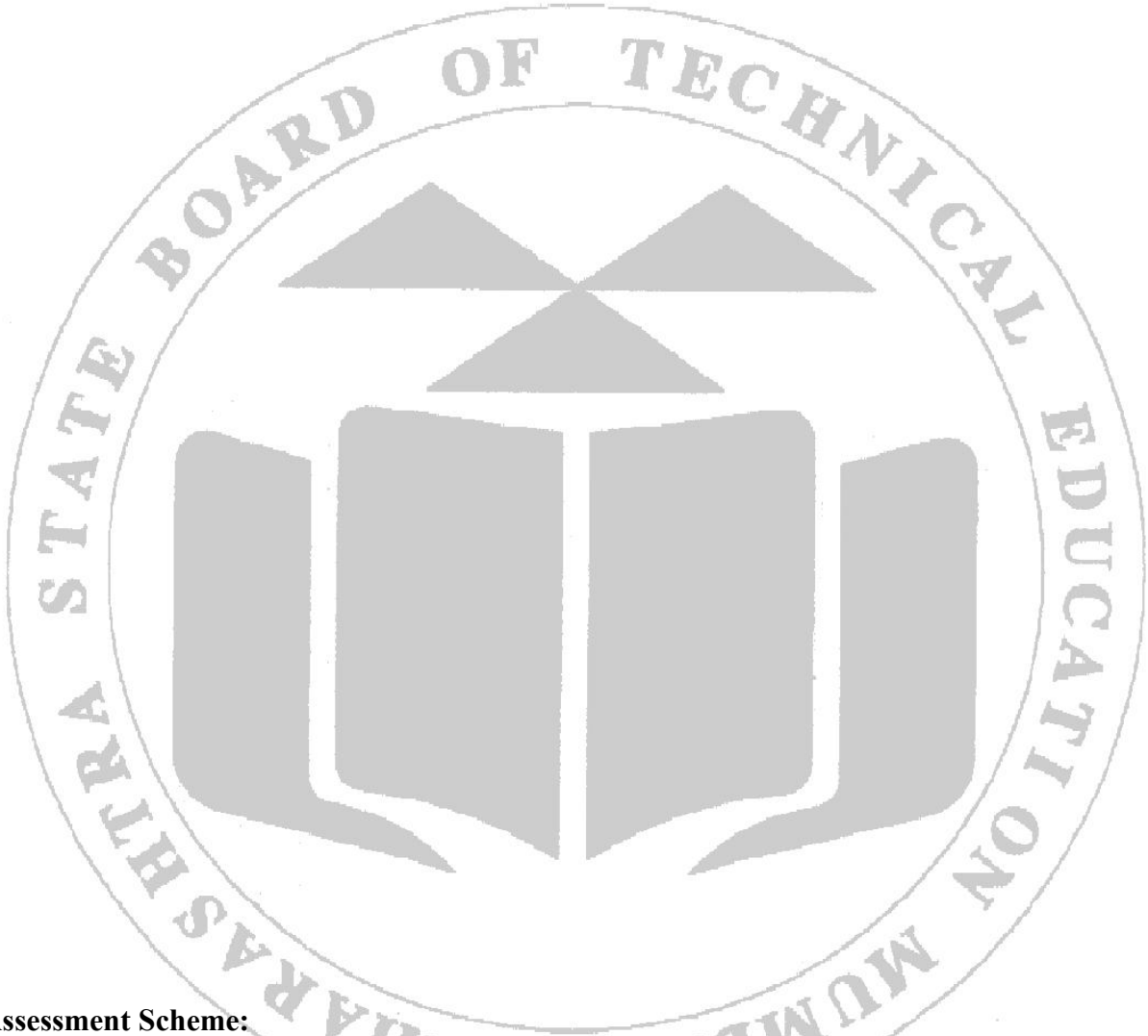
8. References/ Further reading material:

1. https://pubmed.ncbi.nlm.nih.gov/30912119/
2. A textbook of Pharmacology and Toxicology by Dr.A.V.Yadav.
3. https://ascpt.onlinelibrary.wiley.com/doi/abs/10.1002/cpt.1434
4. https://www.jiwaji.edu/pdf/ecourse/pharmaceutical/DRUG%20INTERACTIONS.pdf

9. Practical Related Questions:

1. Which are the different types of Pharmacodynamic Drug Interactions?
2. Explain the role of pharmacist in avoiding the Pharmacodynamic Drug- Drug Interactions.
3. Give any two eg. Of Pharmacodynamic Drug - Drug Interactions.
4. Define Pharmacodynamic drug interactions.
5. Define Synergism.

(Space for answers)



10. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 8

Preparation of Dispensing and Auxiliary label for Solid Dosage Form

1. Aim:

To prepare dispensing and auxiliary labels for the prescribed solid dosage form.

2. Practical Significance:

The dispensing and auxiliary label on the prescribed medications includes administration instructions as well as essential warnings. A label with incorrect information might lead to disastrous consequences. In this experiment, the students will learn to prepare dispensing and auxiliary labels for the prescribed dosage form.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define and state the components of dispensing and auxiliary label.	CO2, 3	BTL 1
PrO 2	Prepare the dispensing and auxiliary label for the prescribed dosage form in a professional manner.	CO2, 3	BTL 6
PrO 3	Check the correctness of the information on the label.	CO2, 3	BTL 5

4. Relevant Theoretical background:

Labels for dispensed medicines are important for communicating medicine-related information to consumers and ensuring effective medicine use. The dispensed medicine label must include the essential information the consumer needs to take their medicines safely and effectively.

An auxiliary label (also called cautionary and advisory label or prescription drug warning label) is a label added on to a dispensed medication package by a pharmacist in addition to the usual prescription label. The pharmacist should check the correctness of the information on the label with the major objective of determining the safety and accuracy of the prescription.

5. New Concept:

5.1 Dispensing Label:

Dispensing label is a label affixed to a prescription medicine by a pharmacist. It contains directions for administering medications as well as essential safety and efficacy warnings. Any dispensed medicine must carry a dispensing label before being given to a patient.

Dispensing label should include the following:

1. Name of the patient.
2. Name of the medicine (Generic and brand).
3. Prescription number.
4. Dosage form, strength and frequency of administration.
5. Quantity of the medicine dispensed.
6. Other specific directions for use if any (e.g. before or after meals).
7. Date of dispensing / filling and expiry
8. Refill information (if any).
9. Name and address of dispensing pharmacy.
10. Name of the pharmacist and prescriber.
11. The label should be applied to the medicine at the time of dispensing by pharmacist.

5.2 Auxiliary Label:

Auxiliary labels are cautionary labels added to a dispensed medicine to provide extra information to the patient on the safe administration, use, and storage of their medicines. In other words, auxiliary labels refer to important features of the medicine that patients must keep in mind.

They do not refer to the dose the patient has been prescribed, nor do they tell the patient what medicines to take, the dose, or at what time to take their medicine. Instead, auxiliary labels are supplementary to a prescription label – providing extra information to the patient to ensure that the administration, use, and storage of that medicine is done in a way that minimizes any harm to both the patient and their medicines.

Examples of common auxiliary labels include:

1. Do not chew or crush
2. Swallow whole
3. Take with food or milk
4. For rectal use only
5. Shake well before use
6. For external use only
7. May cause drowsiness
8. Protect from sunlight
9. Take on an empty stomach
10. Keep refrigerated
11. For the eye (or ear) only
12. May cause urine discoloration

6. Requirements:

Dummy Prescription of a solid dosage form for preparation of dispensing and auxiliary label.

7. Requirements Used:

---

8. Activities:

Activity

Identify the components of Dispensing label given below.

ABC Pharmacy
Diksha Complex, Near Municipal Hospital, Dombivali (West).
Phone-0251-2232233

R_x 0124568005 Pharmacist: Mr. Deepak Mankar Date: 24/01/2023

Ravikumar Deshpande

METOPROLOL 25 MG TABLETS Brand: Betaloc - 25

Take **ONE** tablet **TWO** times a day**.**

Qty: 30

Take regularly and complete the course.

Avoid Alcoholic Beverages	**May Cause Dizziness**

Refill: No Expiry: Dec. 2025

1. Patient's Name: ----------

2. Medicine Name: ----------

3. Dose: ----------

4. Frequency of Administration: ----------

5. Quantity of the Medicine Dispensed: ----------

6. Specific Direction: ----------

7. Date of Dispensing: ----------

8. Auxiliary Label: ----------

9. Name of Dispensing Pharmacy: ----------

10. Name of Prescriber: ----------

Activity II

From the prescription and data given below, prepare a dispensing label containing auxiliary label in the space provided below. (Consider expiry date of formulation as Sept. 2025).

XYZ CLINIC
Dr. V. R. Kulkarni MBBS, DCH

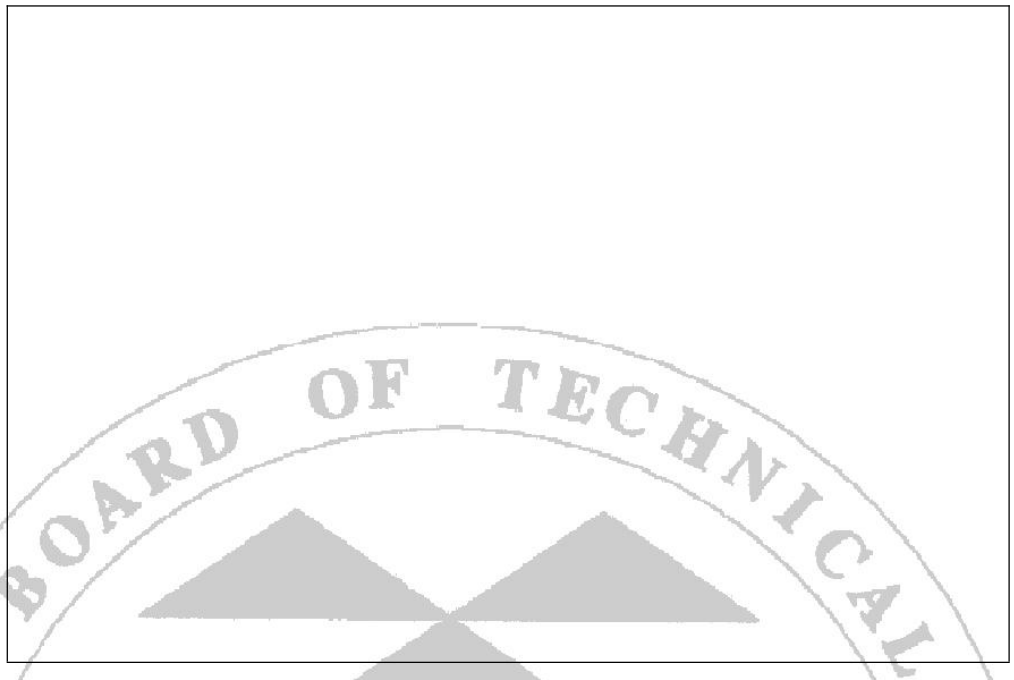
Address-Plot no.13,Arjun colon, Kharadi, Pune.Time-Monday to Saturday
Phone-02132-232233. 10.00am to 1.00 pm and
4.00pm to 9.00pm

Patient's Name-Ram Gadhave Date: 15/10/2023
Address- Nighot colony,Pune. Age: 25 Y Sex: Male
R_x

Tab. Metformin 500 mg BD (With Food) 30 Days

Signature:
Regd No. 125xxxx

Label:



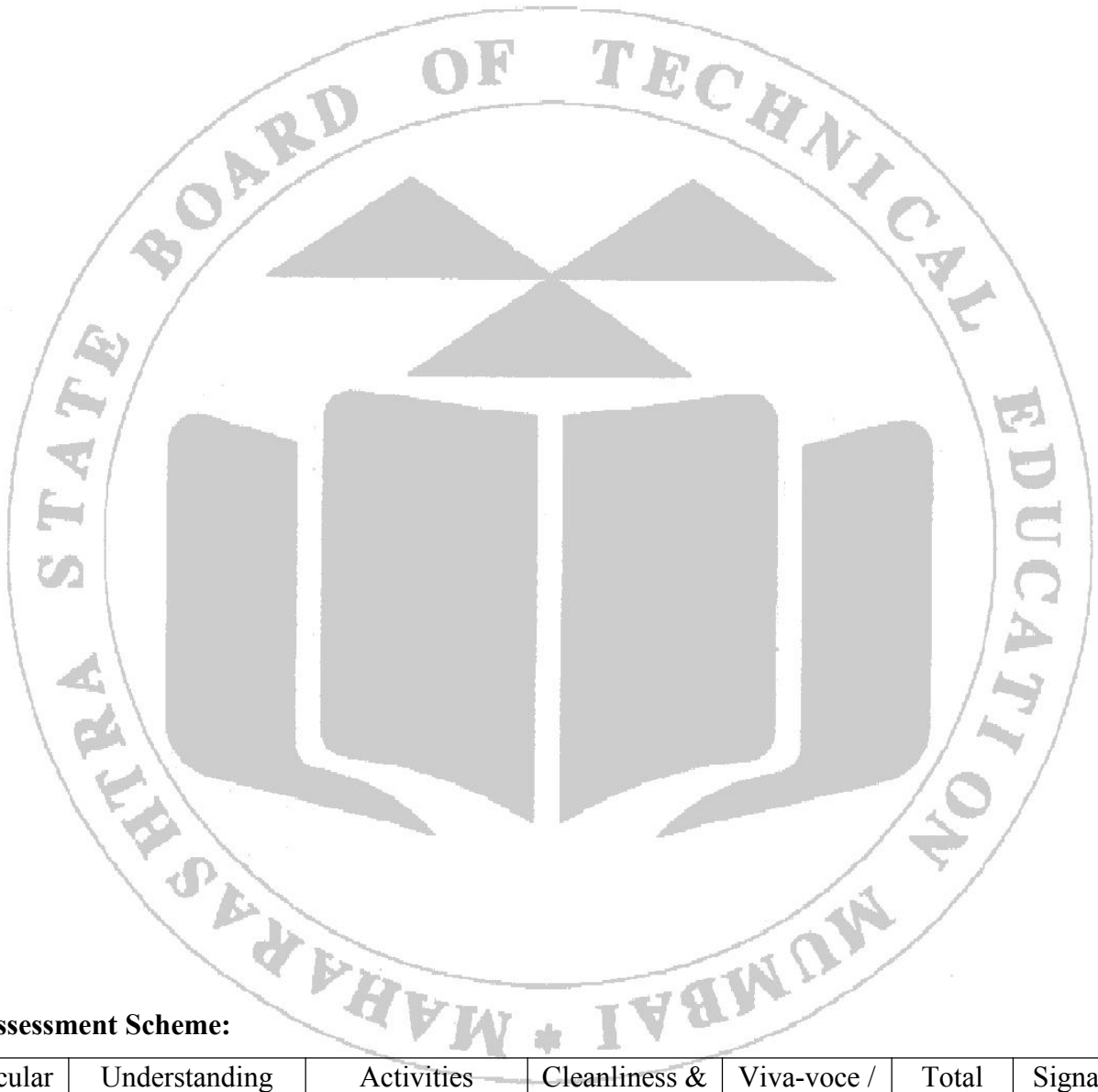
9. References/ Further Reading Material:

1. A textbook of Community Pharmacy and Management By Dr.Ashok Hajare.
2. Dispensing Pharmacy By R.M. Mehta.
3. A textbook of Pharmaceutics II By R.M. Mehta.

10. Practical Related Questions:

1. Define dispensing label.
2. State the components of dispensing label for solid dosage form.
3. Give any four examples of auxiliary label for solid dosage forms.
4. Write importance of Dispensing & Auxiliary Label.
5. Define auxiliary label.

(Space for answers)



11.Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Activities (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 9

Preparation of Dispensing and Auxiliary label for Monophasic Liquid Dosage Form

1. Aim:

To prepare dispensing and auxiliary labels for the prescribed monophasic liquid dosage form.

2. Practical Significance:

The dispensing and auxiliary label on the prescribed medications includes administration instructions as well as essential warnings. A label with incorrect information might lead to disastrous consequences. In this experiment, the students will learn to prepare dispensing and auxiliary labels for the prescribed monophasic liquid dosage form.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define and state the components of dispensing and auxiliary label.	CO2, CO3	BTL 1
PrO 2	Prepare the dispensing and auxiliary label for the prescribed dosage form in a professional manner.	CO2, CO3	BTL 6
PrO 3	Check the correctness of the information on the label.	CO2, CO3	BTL 5

4. Relevant Theoretical background:

Labels for dispensed medicines are important for communicating medicine-related information to consumers and ensuring effective medicine use. The dispensed medicine label must include the essential information the consumer needs to take their medicines safely and effectively.

An auxiliary label (also called cautionary and advisory label or prescription drug warning label) is a label added on to a dispensed medication package by a pharmacist in addition to the usual prescription label. The pharmacist should check the correctness of the information on the label with the major objective of determining the safety and accuracy of the prescription.

5. New Concept / Theory:

5.1 Dispensing Label:

Dispensing label is a label affixed to a prescription medicine by a pharmacist. It contains directions for administering medications as well as essential safety and efficacy warnings. Any dispensed medicine must carry a dispensing label before being given to a patient.

Dispensing label should include the following:

1. Name of the patient.
2. Name of the medicine (Generic and brand).
3. Prescription number.
4. Dosage form, strength and frequency of administration.
5. Quantity of the medicine dispensed.
6. Other specific directions for use if any (e.g. before or after meals).
7. Date of dispensing / filling and expiry
8. Refill information (if any).
9. Name and address of dispensing pharmacy.

10. Name of the pharmacist and prescriber.

The label should be applied to the medicine at the time of dispensing by pharmacist.

5.2 Auxiliary Label:

Auxiliary labels are cautionary labels added to a dispensed medicine to provide extra information to the patient on the safe administration, use, and storage of their medicines. In other words, auxiliary labels refer to important features of the medicine that patients must keep in mind.

They do not refer to the dose the patient has been prescribed, nor do they tell the patient what medicines to take, the dose, or at what time to take their medicine. Instead, auxiliary labels are supplementary to a prescription label – providing extra information to the patient to ensure that the administration, use, and storage of that medicine is done in a way that minimizes any harm to both the patient and their medicines.

Examples of common auxiliary labels include:

1. Do not chew or crush
2. Swallow whole
3. Take with food or milk
4. For rectal use only
5. Shake well before use
6. For external use only
7. May cause drowsiness
8. Protect from sunlight
9. Take on an empty stomach
10. Keep refrigerated
11. For the eye (or ear) only
12. May cause urine discoloration

6. Requirements:

Dummy Prescription of a monophasic liquid dosage form for preparation of dispensing and auxiliary label.

7. Requirements Used:

---

8. Activities:

Activity

Identify the components of Dispensing label given below.

ABC Pharmacy
Diksha Complex, Near Municipal Hospital, Dombivali (West).
Phone-0251-2232233

R_x 0124568005 Pharmacist: Mr. Deepak Mankar Date: 24/10/2023

Ravikumar Deshpande Dr. Abhijit Dhomse

Phenylepherine (5mg/5ml) * Chlorpheniramine Maleate (2mg/5ml) * Dextromethorphan Hydrobromide (15mg/5ml) Cough Syrup Brand: Zedex - Plus

Take **5 ml** in the **Morning** and **5 ml** in the **Evening** orally for 5 Days**.**

Qty: 50 ml. **Store below 30˚C**

Take regularly and complete the course.

Keep Out of the Reach of Children **May Cause Drowsiness**

Shake Well Before Use

Refill: No Expiry: Oct. 2025

1. Patient's Name: ----------
---

2. Medicine Name: ----------
---

3. Dose: ----------
---

4. Frequency of Administration: ----------
---

5. Quantity of the Medicine Dispensed: ----------
---

6. Route of Administration: ----------
---

7. Specific Direction: ----------
---

8. Storage Condition: ----------
---

9. Date of Dispensing: ----------
---

10. Auxiliary Label: ----------
---

11. Name of Dispensing Pharmacy: ----------
---

12. Name of Prescriber: ----------

Activity II

From the prescription and data given below, prepare a dispensing label containing auxiliary label in the space provided below. (Consider expiry date of formulation as Oct. 2025).

XYZ CLINIC
Dr.V.R.Kulkarni. MBBS, DCH.
Address-Plot no.13,Arjun colony, Kharadi, Pune. Time-Monday to Saturday
Phone-02132-232233 10.00am to 1.00 pm
4.00pm to 9.00pm

Patient's Name-Ram Gadhave Date: 15/10/2023
Address- Nighot colony,Pune. Age: 38 Y Sex: Male
℞

Tobramycin (0.3%) Eye drops 5 ml

Put 1 drop in both eyes every 4 hours while awake for 7 days.

Signature:
Regd No. 125xxx

Label:

9. References/ Further Reading Material:

1. A textbook of Community Pharmacy and Management By Dr.Ashok Hajare.
2. Dispensing Pharmacy by R.M. Mehta.
3. A textbook of Pharmaceutics II by R.M. Mehta.

10. Practical Related Questions:

1. State the components of dispensing label for monophasic liquid dosage form.
2. Give any four examples of auxiliary label for monophasic liquid dosage form.
3. Write advantages of auxiliary label.
4. What is the purpose of giving auxiliary label?
5. Define auxiliary label.

(Space for answers)

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11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Activities (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 10

Preparation of Dispensing and Auxiliary label for Biphasic Liquid Dosage Form

1. Aim:

To prepare dispensing and auxiliary labels for the prescribed biphasic liquid dosage form.

2. Practical Significance:

The dispensing and auxiliary label on the prescribed medications includes administration instructions as well as essential warnings. A label with incorrect information might lead to disastrous consequences. In this experiment, the students will learn to prepare dispensing and auxiliary labels for the prescribed biphasic liquid dosage form.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define and state the components of dispensing and auxiliary label.	CO2, CO3	BTL 1
PrO 2	Prepare the dispensing and auxiliary label for the prescribed dosage form in a professional manner.	CO2, CO3	BTL 6
PrO 3	Check the correctness of the information on the label.	CO2, CO3	BTL 5

4. Relevant Theoretical background:

Labels for dispensed medicines are important for communicating medicine-related information to consumers and ensuring effective medicine use. The dispensed medicine label must include the essential information the consumer needs to take their medicines safely and effectively.

An auxiliary label (also called cautionary and advisory label or prescription drug warning label) is a label added on to a dispensed medication package by a pharmacist in addition to the usual prescription label. The pharmacist should check the correctness of the information on the label with the major objective of determining the safety and accuracy of the prescription.

5. New Concept / Theory:

5.1 Dispensing Label:

Dispensing label is a label affixed to a prescription medicine by a pharmacist. It contains directions for administering medications as well as essential safety and efficacy warnings. Any dispensed medicine must carry a dispensing label before being given to a patient.

Dispensing label should include the following:

1. Name of the patient.
2. Name of the medicine (Generic and brand).
3. Prescription number.
4. Dosage form, strength and frequency of administration.
5. Quantity of the medicine dispensed.
6. Other specific directions for use if any (e.g. before or after meals).
7. Date of dispensing / filling and expiry
8. Refill information (if any).
9. Name and address of dispensing pharmacy.
10. Name of the pharmacist and prescriber.

The label should be applied to the medicine at the time of dispensing by pharmacist.

5.2 Auxiliary Label:

Auxiliary labels are cautionary labels added to a dispensed medicine to provide extra information to the patient on the safe administration, use, and storage of their medicines. In other words, auxiliary labels refer to important features of the medicine that patients must keep in mind.

They do not refer to the dose the patient has been prescribed, nor do they tell the patient what medicines to take, the dose, or at what time to take their medicine. Instead, auxiliary labels are supplementary to a prescription label – providing extra information to the patient to ensure that the administration, use, and storage of that medicine is done in a way that minimizes any harm to both the patient and their medicines.

Examples of common auxiliary labels include:

1. Do not chew or crush
2. Swallow whole
3. Take with food or milk
4. For rectal use only
5. Shake well before use
6. For external use only
7. May cause drowsiness
8. Protect from sunlight
9. Take on an empty stomach
10. Keep refrigerated
11. For the eye (or ear) only
12. May cause urine discoloration

6. Requirements:

Dummy Prescription of a biphasic liquid dosage form for preparation of dispensing and auxiliary label.

7. Requirements Used:

---

8. Activities:

Activity

Identify the components of Dispensing label given below.

ABC Pharmacy
Diksha Complex, Near Municipal Hospital, Dombivali (West).
Phone-0251-2232233

R_x 0124568005 Pharmacist: Mr. Deepak Mankar Date: 24/04/2023

Ravikumar Patil Dr. Dilip Desai

Liquid paraffin (3.75ml/15ml) + Magnesium Hydroxide (11.25ml/15ml) Oral Emulsion
Brand: Easylax
Take **30 ml** orally **THREE** Times a Day for 5 Days**.**
Qty: 170 ml.

Store in a Cool Dry Place

Keep Out of the Reach of Children **Shake Well Before Use**

Refill: No Expiry: Apr. 2025

1. Patient's Name: ----------
---
2. Medicine Name: ----------
---
3. Dose: ----------
---
4. Frequency of Administration: ----------
---
5. Quantity of the Medicine Dispensed: ----------
---
6. Route of Administration: ----------
---
7. Specific Direction: ----------
---
8. Storage Condition: ----------
---
9. Date of Dispensing: ----------
---
10. Auxiliary Label: ----------
---
11. Name of Prescriber: ----------
---
12. Name of Dispensing Pharmacy: ----------

Activity II

From the prescription and data given below, prepare a dispensing label containing auxiliary label in the space provided below. (Consider expiry date of formulation as Oct. 2025).

XYZ CLINIC
Dr.V.R.Kulkarni MBBS, DCH

Address-Plot no.13,Arjun colon, Kharadi, Pune. Time-Monday to Saturday
Phone-02132-232233 10.00am to 1.00 pm
4.00pm to 9.00pm

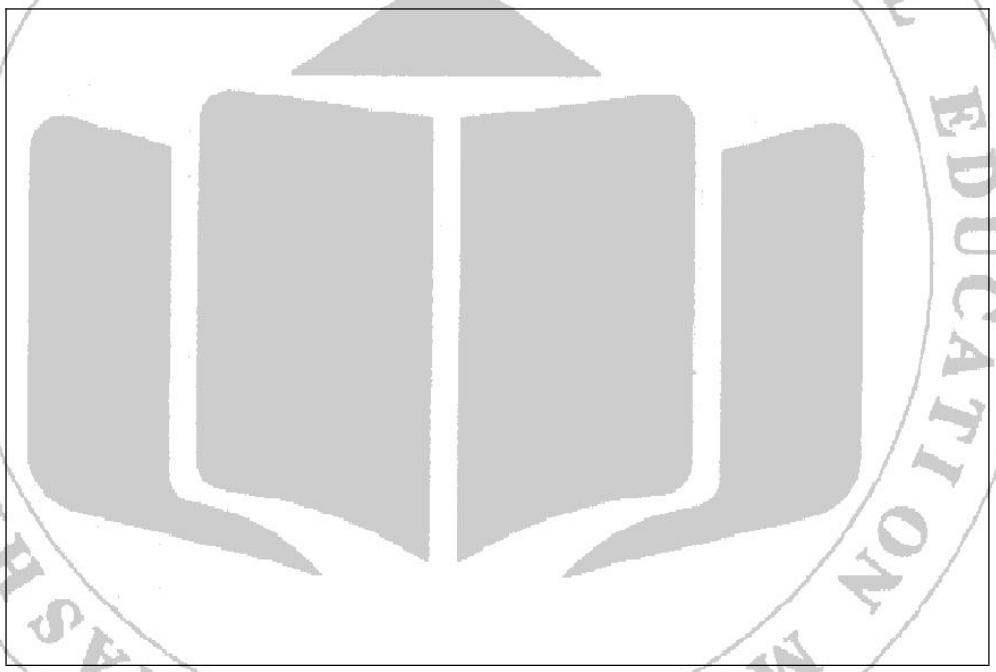
Patient's Name- Arushi Pawar Date: 15/10/2023
Address- Nighot colony,Pune. Age: 2.5 Y Sex: Female
℞

Mefenamic acid (50 mg/5 ml) and Paracetamol (325 mg/5 ml) Oral Suspension

Take 5 ml TD for 4 days.

Signature:
Regd No. 125xxxx

Label:



9. References/ Further Reading Material:

1. A textbook of Community Pharmacy and Management By Dr. Ashok Hajare.
2. Dispensing Pharmacy By R.M. Mehta.
3. A textbook of Pharmaceutics II By R.M. Mehta.

10. Practical Related Questions:

1. State the components of dispensing label for biphasic liquid dosage form.
2. Define Biphasic Dosage form. Give two eg.
3. Give any four examples of auxiliary label for biphasic liquid dosage form.
4. Why auxiliary labels are given along with Dispensing label?
5. Write the advantages of auxiliary label for biphasic liquid dosage form.

(Space for answers)

11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Activities (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 11

Preparation of Dispensing and Auxiliary label for Semisolid Dosage Form

1. Aim:

To prepare dispensing and auxiliary labels for the prescribed semisolid dosage form.

2. Practical Significance:

The dispensing and auxiliary label on the prescribed medications includes administration instructions as well as essential warnings. A label with incorrect information might lead to disastrous consequences. In this experiment, the students will learn to prepare dispensing and auxiliary labels for the prescribed semisolid dosage form.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define and state the components of dispensing and auxiliary label.	CO2, 3	BTL 1
PrO 2	Prepare the dispensing and auxiliary label for the prescribed dosage form in a professional manner.	CO2, 3	BTL 6
PrO 3	Check the correctness of the information on the label.	CO2, 3	BTL 5

4. Relevant Theoretical background:

Labels for dispensed medicines are important for communicating medicine-related information to consumers and ensuring effective medicine use. The dispensed medicine label must include the essential information the consumer needs to take their medicines safely and effectively.

An auxiliary label (also called cautionary and advisory label or prescription drug warning label) is a label added on to a dispensed medication package by a pharmacist in addition to the usual prescription label. The pharmacist should check the correctness of the information on the label with the major objective of determining the safety and accuracy of the prescription.

5. New Concept:

5.1 Dispensing Label:

Dispensing label is a label affixed to a prescription medicine by a pharmacist. It contains directions for administering medications as well as essential safety and efficacy warnings. Any dispensed medicine must carry a dispensing label before being given to a patient.

Dispensing label should include the following:

1. Name of the patient.
2. Name of the medicine (Generic and brand).
3. Prescription number.
4. Dosage form, strength and frequency of administration.
5. Quantity of the medicine dispensed.
6. Other specific directions for use if any (e.g. before or after meals).
7. Date of dispensing / filling and expiry
8. Refill information (if any).
9. Name and address of dispensing pharmacy.
10. Name of the pharmacist and prescriber.

The label should be applied to the medicine at the time of dispensing by pharmacist.

5.2 Auxiliary Label:

Auxiliary labels are cautionary labels added to a dispensed medicine to provide extra information to the patient on the safe administration, use, and storage of their medicines. In other words, auxiliary labels refer to important features of the medicine that patients must keep in mind.

They do not refer to the dose the patient has been prescribed, nor do they tell the patient what medicines to take, the dose, or at what time to take their medicine. Instead, auxiliary labels are supplementary to a prescription label – providing extra information to the patient to ensure that the administration, use, and storage of that medicine is done in a way that minimizes any harm to both the patient and their medicines.

Examples of common auxiliary labels include:

1. Do not chew or crush
2. Swallow whole
3. Take with food or milk
4. For rectal use only
5. Shake well before use
6. For external use only
7. May cause drowsiness
8. Protect from sunlight
9. Take on an empty stomach
10. Keep refrigerated
11. For the eye (or ear) only
12. May cause urine discoloration

6. Requirements:

Dummy Prescription of a semisolid dosage form for preparation of dispensing and auxiliary label.

7. Requirements Used:

---

8. Activities:

Activity

Identify the components of Dispensing label given below.

ABC Pharmacy
Diksha Complex, Near Municipal Hospital, Dombivali (West).
Phone-0251-2232233

R_x 0124568005 Pharmacist: Mr. Deepak Mankar Date: 04/07/2023

Sandip Patil Dr. Aditya Desai

Mupirocin (2 % w/w) Ointment Brand: T- Bact

Apply on the affected area **THREE** Times a Day**.**

Qty: 5 gm.

Store in a Cool Dry Place

For External Use Only | **Keep Out of the Reach of Children**

Refill: No Expiry: June. 2025

Avoid Contact with Eyes

1.Patient's Name: ----------
---

2. Medicine Name: ----------
---

3. Dose: ----------
---

4. Frequency of Administration: ----------

5.Quantity of the Medicine Dispensed: ----------

6.Route of Administration: ----------
---

7. Specific Direction: ----------
---

8. Storage Condition: ----------
---

9. Date of Dispensing: ----------

10.Auxiliary Label: ----------
---

11. Name of Dispensing Pharmacy: ----------
---

12. Name of Prescriber: ----------

Activity II

From the prescription and data given below, prepare a dispensing label containing auxiliary label in the space provided below. (Consider expiry date of formulation as Oct. 2025).

XYZ CLINIC
Dr.V.R.Kulkarni MBBS, DCH

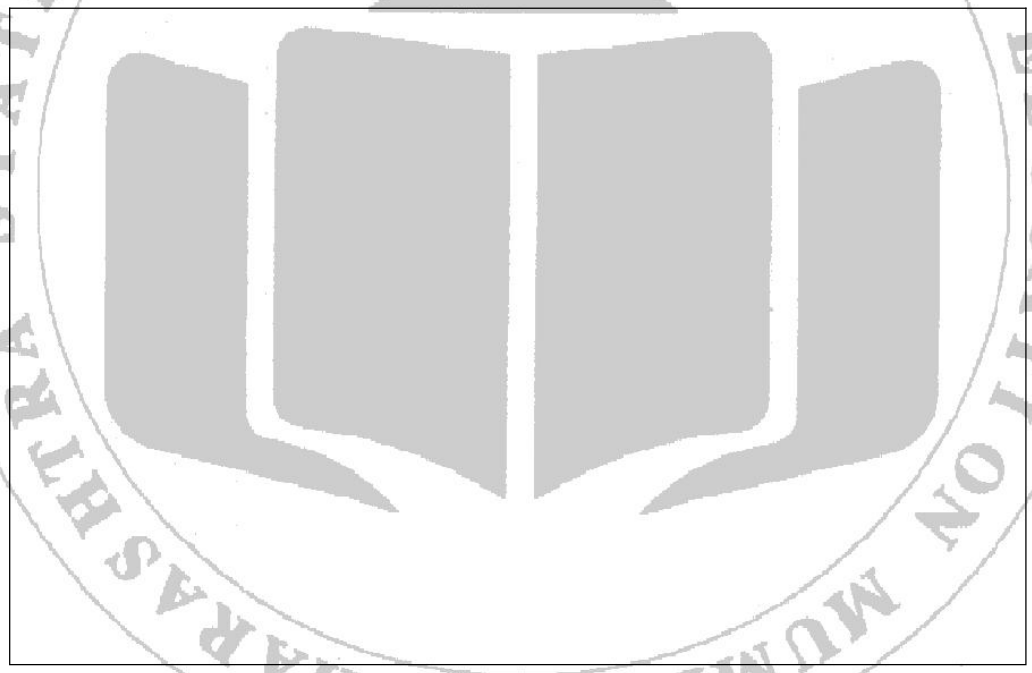
Address-Plot no.13,Arjun colon, Kharadi, Pune. Time-Monday to Saturday
Phone-02132-232233 10.00am to 1.00 pm
4.00pm to 9.00pm

Patient's Name- Ashish Pawar Date: 15/03/2023
Address- Nighot colony,Pune. Age: 25 Y Sex: Male
℞

Hydrocortisone (1 % w/w) Cream 15 gm
Apply a thin layer to the affected area **THREE** Times a Day.

Signature:
Regd No. 125xxxx

Label:



9. References/ Further Reading Material:

1. A textbook of Community Pharmacy and Management By Dr.Ashok Hajare.
2. Dispensing Pharmacy By R.M. Mehta.
3. A textbook of Pharmaceutics II By R.M. Mehta.

10. Practical Related Questions:

1. State the components of dispensing label for semisolid dosage form.
2. Give any four examples of auxiliary label for semisolid dosage form.
3. Why auxiliary instructions are given to the semisolid dosage form?
4. Define semisolid dosage form .Give any two e.g.
5. Write the advantages of auxiliary label for semisolid dosage form.

(Space for answers)

11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Activities (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 12
Preparation of Dispensing and Auxiliary label for Suppositories

1. Aim:

To prepare dispensing and auxiliary labels for the prescribed suppositories.

2. Practical Significance:

The dispensing and auxiliary label on the prescribed medications includes administration instructions as well as essential warnings. A label with incorrect information might lead to disastrous consequences. In this experiment, the students will learn to prepare dispensing and auxiliary labels for the prescribed suppositories.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define and state the components of dispensing and auxiliary label.	CO2,CO 3	BTL 1
PrO 2	Prepare the dispensing and auxiliary label for the prescribed dosage form in a professional manner.	CO2, CO3	BTL 6
PrO 3	Check the correctness of the information on the label.	CO2,CO 3	BTL 5

4. Relevant Theoretical background:

Labels for dispensed medicines are important for communicating medicine-related information to consumers and ensuring effective medicine use. The dispensed medicine label must include the essential information the consumer needs to take their medicines safely and effectively.

An auxiliary label (also called cautionary and advisory label or prescription drug warning label) is a label added on to a dispensed medication package by a pharmacist in addition to the usual prescription label. The pharmacist should check the correctness of the information on the label with the major objective of determining the safety and accuracy of the prescription.

5. New Concept:

5.1Dispensing Label:

Dispensing label is a label affixed to a prescription medicine by a pharmacist. It contains directions for administering medications as well as essential safety and efficacy warnings. Any dispensed medicine must carry a dispensing label before being given to a patient.

Dispensing label should include the following:

1. Name of the patient.
2. Name of the medicine (Generic and brand).
3. Prescription number.
4. Dosage form, strength and frequency of administration.
5. Quantity of the medicine dispensed.
6. Other specific directions for use if any (e.g. before or after meals).
7. Date of dispensing / filling and expiry
8. Refill information (if any).
9. Name and address of dispensing pharmacy.
10. Name of the pharmacist and prescriber.

The label should be applied to the medicine at the time of dispensing by pharmacist.

5.2Auxiliary Label:

Auxiliary labels are cautionary labels added to a dispensed medicine to provide extra information to the patient on the safe administration, use, and storage of their medicines. In other words, auxiliary labels refer to important features of the medicine that patients must keep in mind.

They do not refer to the dose the patient has been prescribed, nor do they tell the patient what medicines to take, the dose, or at what time to take their medicine. Instead, auxiliary labels are supplementary to a prescription label – providing extra information to the patient to ensure that the administration, use, and storage of that medicine is done in a way that minimizes any harm to both the patient and their medicines.

Examples of common auxiliary labels include:

1. Do not chew or crush
2. Swallow whole
3. Take with food or milk
4. For rectal use only
5. Shake well before use
6. For external use only
7. May cause drowsiness
8. Protect from sunlight
9. Take on an empty stomach
10. Keep refrigerated
11. For the eye (or ear) only
12. May cause urine discoloration

6. Requirements:

Dummy Prescription of a suppository for preparation of dispensing and auxiliary label.

7. Requirements Used:

---

8. Activities:

Activity

Identify the components of label given below.

ABC Pharmacy
Diksha Complex, Near Municipal Hospital, Dombivali (West).
Phone-0251-2232233

R_x 0124568005 Pharmacist: Mr. Deepak Mankar Date: 04/05/2023

Shweta Karandikar Dr. Aditya Desai

Bisacodyl 10 mg Suppository Brand: Dulcolax

Insert ONE Suppository Rectally in the morning as per requirement**.**

Qty: 5 Suppositories.Store in a cool and dry place away from sunlight.

For Rectal Use Only **Keep Out of the Reach of Children**

Refill: No **Do not exceed recommended dosage** ril. 2025

1. Patient's Name: ----------
---
2. Medicine Name: ----------
---
3. Dose: ----------
---
4. Frequency of Administration: ----------
---
5. Quantity of the Medicine Dispensed: ----------
---
6. Route of Administration: ----------
---
7. Specific Direction: ----------
---
8. Storage Condition: ----------
---
9. Date of Dispensing: ----------
---
10. Auxiliary Label: ----------
---
11. Name of Dispensing Pharmacy: ----------
---
12. Name of Prescriber: ----------

Activity II

From the prescription and data given below, prepare a dispensing label containing auxiliary label in the space provided below. (Consider expiry date of formulation as Oct. 2025).

XYZ CLINIC
Dr.V.R.Kulkarni MBBS, DCH

Address-Plot no.13,Arjun colon, Kharadi, Pune. Time-Monday to Saturday
Phone-02132-232233 10.00am to 1.00 pm
4.00pm to 9.00pm

Patient's Name-Shweta Karandikar Date: 15/03/2023
Address- Nighot colony,Pune. Age: 25 Y Sex: Female

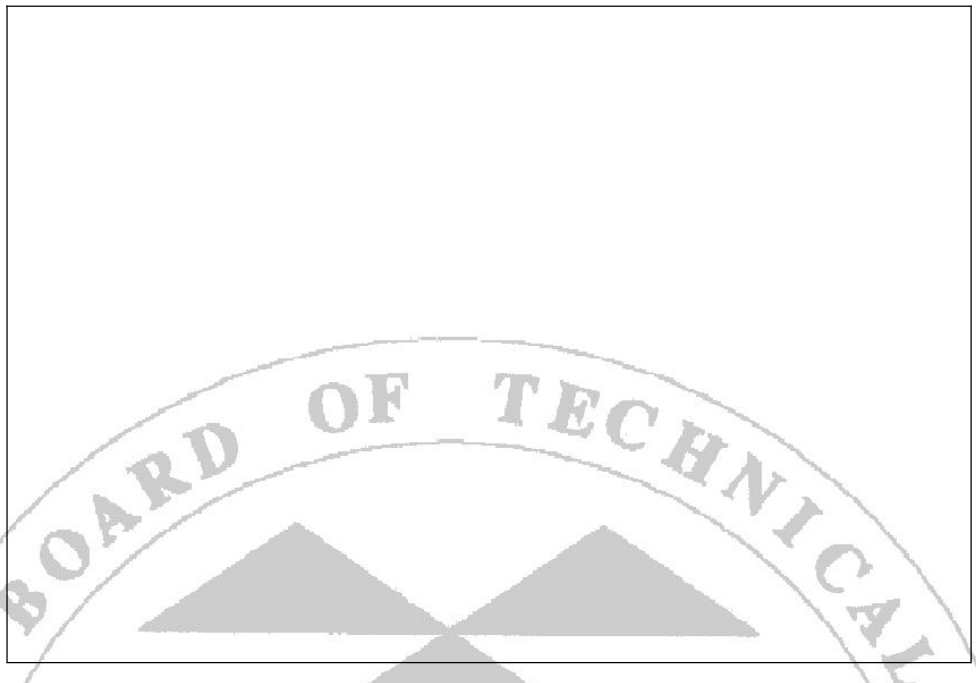
R_x

Clindamycin (100 mg) and Clotrimazole (200 mg) Vaginal Suppository 03 Suppositories

Insert one suppository into vagina before going to bed for THREE **consecutive nights**

Signature:
Regd No. 125xxxx

Label:



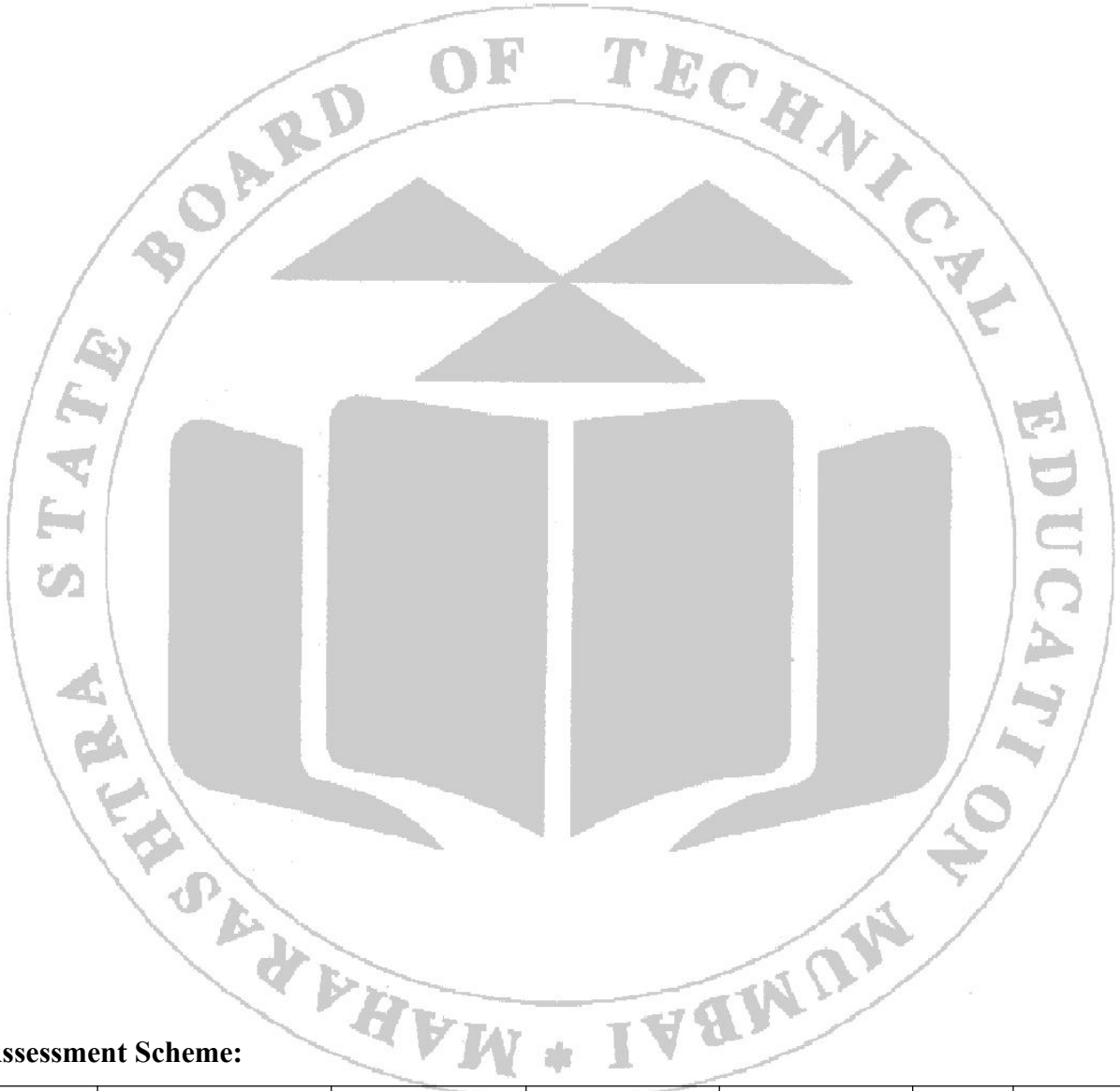
9. References/ Further Reading Material:

1. A textbook of Community Pharmacy and Management By Dr.Ashok Hajare.
2. Dispensing Pharmacy By R.M. Mehta.
3. A textbook of Pharmaceutics II By R.M. Mehta.

10. Practical Related Questions:

1. State the components of dispensing label for suppositories.
2. Give any four examples of auxiliary label for suppositories.
3. Write the important instructions to be incorporated in the label for suppositories.
4. What are suppositories? Which are the different types of suppositories?
5. Write the advantages of auxiliary label for suppositories.

(Space for answers)



11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Activities (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 13
Determination of Blood Pressure by Sphygmomanometer

1. Aim:

To determine blood pressure by using sphygmomanometer.

2. Practical Significance:

Accurate blood pressure measurements are needed for medical diagnosis, prevention and treatment of hypertension and hypotension. Blood pressure measurements are taken routinely in the clinic and at home using blood pressure monitoring device like Sphygmomanometer. It is essential for a pharmacist to understand the use of sphygmomanometer for determination of blood pressure of patient as a part of health screening service. In this experiment, the students will learn to determine blood pressure by using sphygmomanometer.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define and state the causes of hypertension and hypotension.	CO5	BTL 1
PrO 2	Record blood pressure using BP apparatus or digital monitoring device.	CO5	BTL 3
PrO 3	Counsel patients for routine monitoring of BP.	CO5	BTL 6

4. Relevant Theoretical background:

Blood pressure is the pressure exerted by the blood's circulating volume on the walls of the arteries, veins, and heart chambers. It is regulated by the body's homeostatic mechanisms, involving blood volume, the lumens of arteries and arterioles, and the force of cardiac contraction. The systemic blood pressure is at its highest level in the aorta, declining along the blood pathways, until it is at 0 mm Hg in the right atrium. The largest drop in blood pressure occurs in the arterioles, which have the most resistance to blood flow. The pressure gradient continues, even though it is small, allowing blood to flow all the way back to the heart.

The maximum pressure during ventricular contraction is called the systolic pressure, averaging 120 mm Hg in a healthy adult. The lowest pressure that remains in the arteries before the next ventricular contraction is called the diastolic pressure, which averages between 70 and 80 mm Hg in a healthy adult.

Therefore, systole refers to periods of contraction, whereas diastole refers to periods of relaxation.

The following table shows blood pressure category and blood pressure:

Sr. No	Blood Pressure Category	Systolic (mmHg)	Diastolic (mmHg)
1	Normal	120	80
2	Elevated	120 - 129	Less than 80
3	High Blood Pressure (Hypertension) Stage 1	130 - 139	80 - 89
4	High Blood Pressure (Hypertension) Stage 2	140 or Higher	90 or Higher
5	Hypertensive Crisis	Higher than 180	Higher than 90

Hypertension is a major cause of premature death worldwide. An estimated 1.28 billion adults aged 30–79 years worldwide have hypertension, most (two-thirds) living in low- and middle-income countries. An estimated 46% of adults with hypertension are unaware that they have the condition. Less than half of adults (42%) with hypertension are diagnosed and treated. Approximately 1 in 5 adults (21%) with hypertension have it under control. One of the global targets for non communicable diseases is to reduce the prevalence of hypertension by 33% between 2010 and 2030.

Things that increase the risk of having high blood pressure include older age, genetics, being overweight or obese, not being physically active , high-salt diet, drinking too much alcohol. Most people with hypertension don't feel any symptoms. Very high blood pressures can cause headaches, blurred vision, chest pain and other symptoms. Checking your blood pressure is the best way to know if you have high blood pressure. If hypertension is not treated, it can cause other health conditions like kidney disease, heart disease and stroke. People with very high blood pressure (usually 180/120 or higher) can experience symptoms including severe headaches, chest pain, dizziness, difficulty breathing, nausea, vomiting, blurred vision or other vision changes, anxiety, confusion, buzzing in the ears, nosebleeds, abnormal heart rhythm etc.

Monitoring of Blood Pressure:

The blood pressure can be monitored using digital blood pressure monitor which gives automated readings, or an instrument called sphygmomanometer for manual readings.

I. Digital Blood Pressure Monitor:

Figure 13.1:Digital Blood Pressure Monitor

Digital devices, also called monitors, will give you the systolic and diastolic blood pressures and the heart rate or pulse (number of heartbeats in a minute).

There are 2 types.

With a semi-automatic device, you will need to pump air into the cuff by squeezing a bulb.

An automatic device pumps air on its own.

They take blood pressure readings depending on changes in blood volume in the arteries. It is essential to keep hand level with the heart while recording blood pressure readings on the wrist. In patients with atrial flutter or arteriosclerosis, digital meters can be inaccurate and provide incorrect readings.

1. Sphygmomanometers:

A sphygmomanometer is an instrument used to measure blood pressure which is also known as a blood pressure meter or blood pressure gauge or blood pressure monitor. The word

sphygmomanometer is derived from the Greek word 'sphygmos' meaning beating of the heart or the pulse and manometer mean the device used for measuring the pressure or tension. This instrument was invented by Samuel Siegfried Karl Ritter von Basch in the year 1881. But in the year 1896, Scipione Riva-Rocci introduced a simplified version of the sphygmomanometer.

There are 3 types of sphygmomanometers - Mercury, Aneroid and Digital.

A. Mercury Sphygmomanometer.

Mercury sphygmomanometers are considered the gold standard. They indicate pressure with a column of mercury, which does not require recalibration. Because of their accuracy, they are often used in clinical trials of drugs and in clinical evaluations of high-risk patients, including pregnant women. A frequently used wall mounted mercury sphygmomanometer is also known as a Baumanometer. The major benefit of mercury sphygmomanometers is that they are simple to use and can last for longer duration if properly maintained. It is been banned in some countries due to the poisonous nature of mercury.

Figure 13.2:Mercury Sphygmomanometer

B. Aneroid Sphygmomanometer.

Aneroid means "without fluid" and in this instrument, there is no use of mercury. It consists of a stethoscope that is attached to the cuff which is further attached to a dial gauge with tubing. To convert the cuff pressure to gauge pressure, the gauge head has a mechanical part. The instrument needs to be recalibrated to avoid faulty readings. There are other different types of aneroid sphygmomanometer depending upon their use, and they are:

- Pocket-aneroid sphygmomanometer
- Palm aneroid sphygmomanometer
- Clock-style aneroid sphygmomanometer

Figure 13.3:Aneroid Sphygmomanometer

C. Automatic Digital Sphygmomanometer.

It is the most technologically advanced sphygmomanometer. It consists of an electronic sensor to measure the blood pressure and the readings are displayed on the digital monitor. In order to measure the blood pressure, the instrument measure the fluctuations of arteries. These need to be checked using a mercury sphygmomanometer to avoid inaccurate readings.

Figure 13.4: Digital Sphygmomanometer

5. Requirements:

Mercury Sphygmomanometer and stethoscope.

6. Requirements used:

---

7. Procedure:

1. Ensure that the apparatus is in working condition.
2. Examine the mercury column for any signs of air bubbles.
3. Instruct the subject to take a seat or lie down in supine position.
4. Wrap the cuff around the upper arm such that the lower edge of the cuff is one inch above the antecubital fossa.
5. Press the stethoscope's bell lightly over the brachial artery which is below the cuff's edge.
6. Release the air from the cuff at a moderate rate to 180mmHg.
7. Monitor the first knocking sound by listening with the help of a stethoscope and also by observing the mercury gauge.
8. This should be done for both the arms and the pressure, the position of the subject and the size of the cuff should be recorded.
9. If the pressure is more, then the blood pressure should be measured with few minutes of gaps between the two measurements.

8. Observations:

Sr.No	Position	Systolic (mmHg)	Diastolic (mmHg)
1.	Seating		
		Average:	Average:

2.	Supine		
		Average:	Average:

9. Result:

Sr. No	Position	Systolic (mmHg)	Diastolic (mmHg)
1.	Seating		
2.	Supine		

10. Conclusion:

---

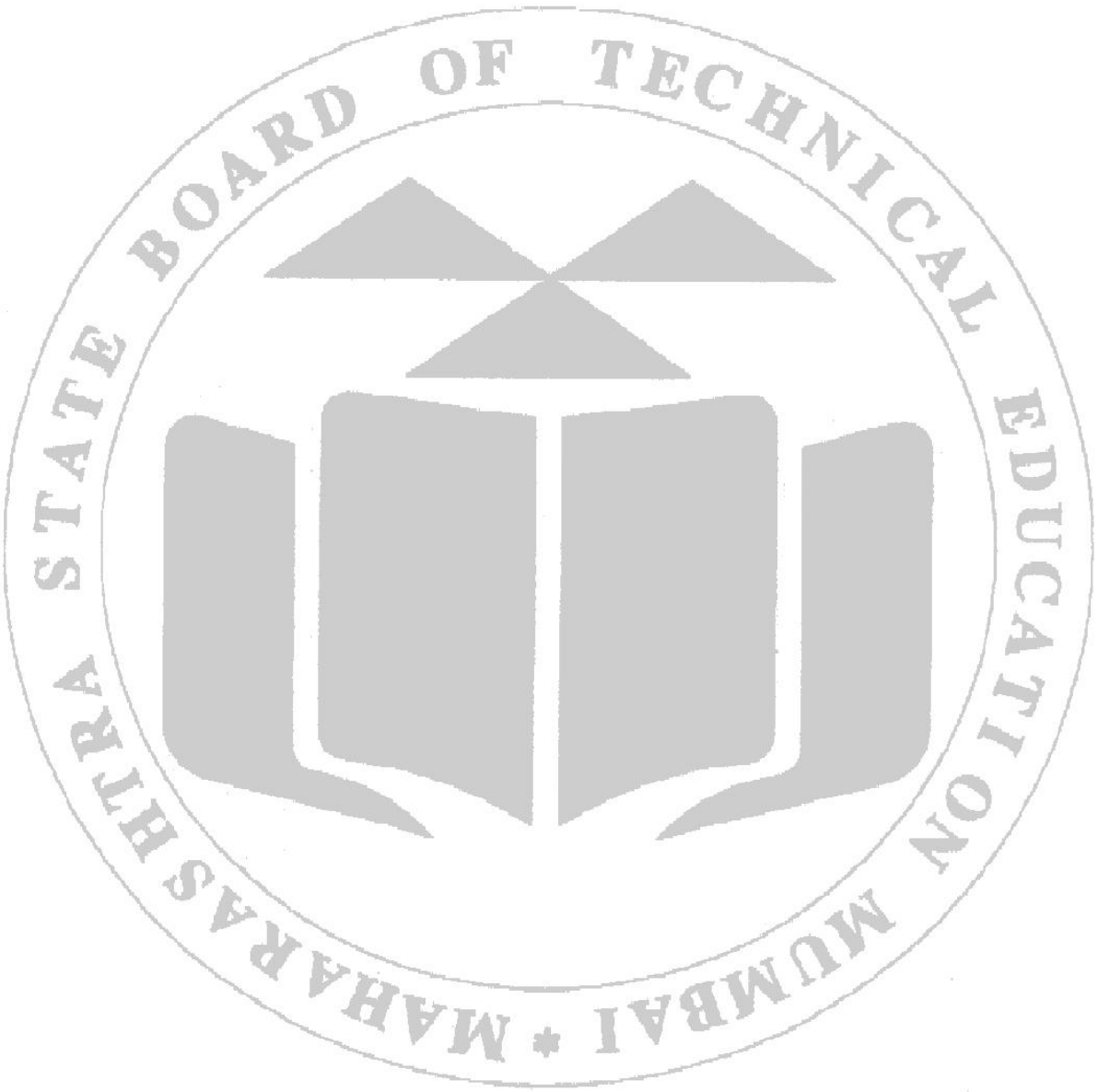
11. References/ Further reading material:

1. A Textbook of Pharmacology and Toxicology by Dr.A.V.Yadav.
2. A textbook of Community Pharmacy and Management By Dr.Ashok Hajare.

12. Practical Related Questions:

1. What is blood pressure?
2. Define hypertension and hypotension.
3. Give the causes of hypertension and hypotension.
4. Enlist the types of sphygmomanometers.
5. What are the various types of aneroid sphygmomanometer?

(Space for answers)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13.Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 14

Determination of Capillary Blood Glucose Level by Glucometer.

1. Aim:

To determine the capillary blood glucose level by using Glucometer.

2. Practical Significance:

The blood glucose levels are increased above the normal levels in diabetic patients. Therefore the estimation of blood glucose levels are important for screening and detecting new patients of diabetes or monitoring the diabetic patients. Capillary blood glucose monitoring (CBGM) is helpful in achieving control over diabetes which may reduce the risks associated with diabetic complications. In this experiment students will learn to determine capillary blood glucose level using glucometer.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Describe the components of Glucometer and its use in monitoring capillary blood glucose level.	CO5	BTL 2
PrO 2	Determine capillary blood glucose level using Glucometer.	CO5	BTL 3
PrO 3	Counsel patients for routine monitoring of blood glucose.	CO5	BTL 6

4. Relevant Theoretical background::

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood glucose. Hyperglycemia, also called raised blood glucose or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels.

Symptoms of diabetes include, feeling very thirsty, needing to urinate more often than usual, blurred vision, feeling tired and losing weight unintentionally. Over time, diabetes can damage blood vessels in the heart, eyes, kidneys and nerves. People with diabetes have a higher risk of health problems including heart attack, stroke and kidney failure. Diabetes can cause permanent vision loss by damaging blood vessels in the eyes. Many people with diabetes develop problems with their feet from nerve damage and poor blood flow. This can cause foot ulcers and may lead to amputation.

Diabetes can be classified into the following types -

Type 1 Diabetes

Type 1 diabetes (previously known as insulin-dependent, juvenile or childhood-onset) is characterized by deficient insulin production and requires daily administration of insulin. Neither its cause nor the means to prevent it are known.

Type 2 Diabetes

Type 2 diabetes affects how your body uses sugar (glucose) for energy. It stops the body from using insulin properly, which can lead to high levels of blood sugar if not treated. Over time, type 2 diabetes can cause serious damage to the body, especially nerves and blood vessels. Type 2 diabetes is often preventable. Factors that contribute to developing type 2 diabetes include being overweight, not getting enough exercise, and genetics.

Gestational Diabetes

Gestational diabetes is hyperglycaemia with blood glucose values above normal but below those diagnostic of diabetes. Gestational diabetes occurs during pregnancy. Women with gestational diabetes are at an increased risk of complications during pregnancy and at delivery. These women and possibly their children are also at increased risk of type 2 diabetes in the future.

The following table shows capillary blood glucose level:

Sr. No	Category	Blood Glucose Level (mg/dL)		
		Fasting	After Eating	2-3 Hrs after eating
1.	Normal	80 - 100	170 - 200	120 - 140
2.	Impaired Glucose	101 - 125	190 - 230	140 - 160
3.	Diabetic	126+	120 - 300	200 +

Glucometer:

A glucose meter, also referred to as a "glucometer", is a medical device for determining the approximate concentration of glucose in the blood. It can also be a strip of glucose paper dipped into a substance and measured to the glucose chart. It is a key element of glucose testing, including home blood glucose monitoring (HBGM) performed by people with diabetes mellitus or hypoglycemia. A small drop of blood, obtained from slightly piercing a fingertip with a lancet, is placed on a disposable test strip that the meter reads and uses to calculate the blood glucose level. The meter then displays the level in units of mg/dL or mmol/L.

A glucose meter is made up of two parts - an enzymatic reaction and a detector. The enzyme portion of the glucose meter is often packaged in a disposable strip or reaction cuvette in a dehydrated state. The glucose in the patient's blood sample rehydrates and combines with the enzymes to form a detectable product. Some meters produce hydrogen peroxide or an intermediate that can react with a dye to produce a colour change proportional to the concentration of glucose in solution. Other meters include the enzymes into a biosensor, which produces an electron that is detected by the meter. Current glucose meters use three main enzymatic reactions - glucose oxidase, glucose dehydrogenase and hexokinase.

Figure 14.1:Glucosemeter

5. Requirements:

Digital blood glucose monitor, reagent strips, lancet, spirit, gloves.

6. Requirements used:

---

7. Procedure:

1. Ensure that the apparatus is in working condition and if the blood glucose meter needs calibration.
2. Assess patient's/ partner's sites for skin puncture.
3. Sanitize your hands and ask the patient / partner to wash hands with soap and warm water. You may use alcohol swab to clean the puncture site instead of water.
4. Position the patient comfortably in a semi-upright position in bed or upright in a chair.
5. Before puncturing the skin, make sure the puncture site is entirely dry.
6. Remove a reagent strip from the container and reseal the container cap. Do not touch the touch pad portion of the reagent strip.
7. Place the fresh reagent strip in the glucometer with the test pad facing up.
8. Wear non-sterile gloves.
9. Select a suitable puncture site (preferably, the side of your finger, next to the fingernail) and puncture the skin with a lancet.
10. Squeeze the finger until it has produced a sufficient size blood drop.
11. Place the blood drop on the strip.
12. To stop the bleeding, blot your finger with the alcohol prep pad.
13. Allow a few moments for the glucometer to provide a reading.
14. Turn off the meter and dispose of the test strip, alcohol prep pad and lancet.
15. Remove the gloves and perform hand hygiene.

Precautions:

1. Do not leave the test strip container open after taking out a test strip.
2. Place the test strips only in original container.
3. Keep the test strips away from moisture, and store at a temperature between 4 and 30˚C.
4. Protect the test strips from getting contaminated with dust or other substances.
5. Do not expose the glucose meter directly to the sunlight.

8. Observations:

Sr.No	Time of Reading	Reading (mg/dL)
1.		
		Average:

9. Result:

The capillary blood glucose of ---------- (Name of patient) at ---------- (time) was found to be ----------mg / dL.

10. Conclusion:

---

11. References/ Further reading material:

1. A textbook of Pharmacology and Toxicology by Dr.A.V.Yadav.
2. A textbook of Community Pharmacy and Management By Dr.Ashok Hajare.

12. Related Questions:

1. What is diabetes? State different types of diabetes.
2. Which device is used to measure blood glucose?
3. What are the normal values of blood glucose?
4. Enlist the enzymatic reactions used in glucose meters.
5. Which precautions should be taken before capillary blood glucose testing?

(Space for answers)

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13. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 15

Lung Function Assessment using Peak Flow Meter and Incentive Spirometer

1. Aim:

To measure the peak expiratory flow rate using peak flow meter and maximum value of air inhaled using Incentive Spirometer.

2. Practical Significance:

Asthma is a chronic condition that affects children and adults .In asthma ,air passages in the lungs become narrow due to inflammation and tightening of the muscles creating difficulty in breathing. A peak flow meter helps in managing asthma .It can inform doctor / the pharmacist about how wide are the airways in the lungs. After studying this experiments students will learn to assess efficiency of lungs by estimation of peak expiratory flow rate by using peak flow meter.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define asthma, incentive spirometry, spirometer and state symptoms of asthma.	CO 5	BTL 1
PrO 2	State the diagnostic test in asthma	CO 5	BTL 1
PrO 3	Describe peak flow meter and it's use in estimation of severity of asthma	CO 5	BTL 2, BTL 3
PrO 4	Use peak flow meter to measure peak expiratory flow rate and use incentive spirometer for measuring the maximum volume of air inhaled.	CO 5	BTL 2,

4. Relevant Theoretical background:

Asthma is a chronic disease of the air passages characterized by inflammation and narrowing of the airways. Symptoms of asthma include shortness of breath, cough, and wheezing. It commonly presents in childhood and is usually associated with conditions such as eczema and hay fever. This activity outlines the evaluation and treatment of asthma.

Symptoms of asthma:

a)Cough b) Breathlessness c)Tightness of chest d)Wheezing e)Thick mucus sputum f)Aggravation of above symptoms during night and early morning)sleeplessness (discomfort during lying down on bed) h) comfort while sitting

Diagnostic tests in Asthma-

a) Pulmonary Function Test-Peak flow measurement and Spirometry
b) Chest X-ray
c) Allergy test
d) Methacholine challenge test
e) Fractional Exhaled Nitric Oxide test
f) Chest CT scan

Peak Expiratory Flow rate:

Peak Expiratory Flow rate (PEFR) is volume of air forcefully expelled from lungs in one quick exhalation. It is a reliable indicator of ventilation adequacy as well as airflow obstructions. The normal PEFR value varies from person to person and is affected by characteristics such as gender, age and height. PEFR is often higher in men than in women and it is also higher in taller patients.

After 30-40 years of age PEFR starts declining. A patient with normal PEFR should be within 20% of that of healthy person of the same age, gender and height.

Peak Flow Meter:

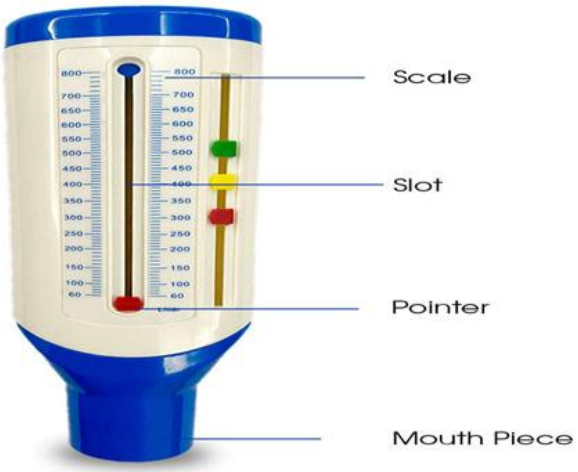


Figure 15.1: Peak flow meter

A peak flow meter is made up of housing with channel through which a pointer can moved to a specific distance along the scale depending upon lungs function of patient. The scale of peak flow meter can be divided into three zones:

1. Green zone: A reading in this zone indicates that asthma is in good condition.
2. Yellow zone: A reading in this zone indicates that there is severe airways are narrowing and action must be taken.
3. Red Zone: A reading in this zone indicates that there is severe airways narrowing and needs medical emergency.

Incentive spirometry:

Incentive spirometry is a respiratory exercise that helps patients improve lung expansion, prevent fluid and mucus from collecting in the lungs, and lower their risks of respiratory problems like pneumonia and atelectasis. It is a simple test that measures the volume of air inhaled, exhaled and rate of exhalation. This test is performed using a hand held device known as incentive spirometer.

Figure 15.2: Incentive Spirometer

An incentive spirometer is a handheld medical device used to help patients improve the functioning of their lungs. By training patients to take slow and deep breaths, this simplified spirometer facilitates lung expansion and strengthening. Patients inhale through a mouthpiece, which causes a piston inside the device to rise. This visual feedback helps them monitor their inspiratory effort. Incentive spirometers are commonly used after surgery or certain illnesses to prevent pulmonary complications.

5. Requirements:

Peak flow Meter, Incentive spirometer

6. Requirements used:

---

7. Procedure:

To measure your peak flow:

1. Find a comfortable position, either sitting or standing, Do this same for every time .
2. Push the pointer back to the first line of the scale nearest the mouthpiece.
3. Hold the peak flow meter so it's horizontal and make sure that your finger is not obstructing the measurement scale.
4. Breath out as quickly and as hard as you can
5. When you have finished breathing out ,make a note of your reading.
6. This should be repeated 3 times and highest of the 3 measurements should be recorded as your peak flow score.

Incentive Spirometer:

1. Be seated in a upright position.
2. Exhale completely before using device.
3. Place the mouthpiece into the mouth and seals the lips tightly around it.
4. Breathe in from the device as slowly and as deeply as possible.
5. Hold that breathe in for 2–6 seconds. While the patient is holding their breath, the indicator piston will slowly return to the bottom of the column.
6. Then removes the mouthpiece from the mouth and exhale normally.
7. Coughing can be expected to clear the airway and lungs of mucus.
8. Rest if you begin feeling dizzy.
9. Repeat steps 1 to 5 at least 10 times every hour.
10. Note down the readings in the observation table after each cycle.

8. Observations:

Sr.No	Peak Expiratory Flow Rate (L/min)
1	
2	
3	
High Value	(L/min)

Table No.1

Sr. No	Target Goal	Remark (Achieved / Not Achieved)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Table No.2

9. Result:

The Maximum value of PEFR using Peak Flow Meter was found to be_____L/min.

The Maximum volume of air inhaled (peak expiratory value) was found to be ----------L.

10. Conclusion:

---

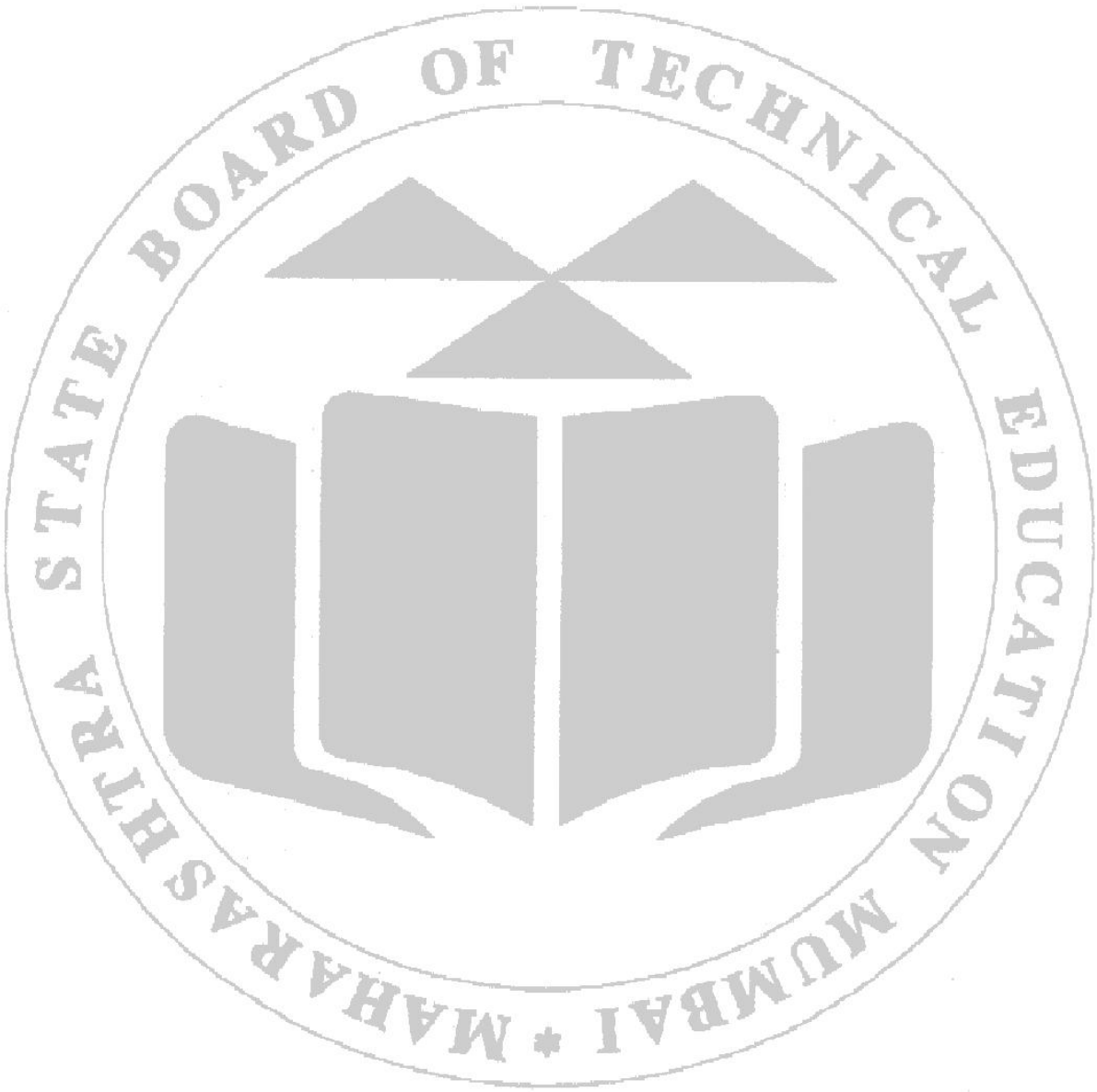
11. References/ Further reading material:

1. https://www.nhlbi.nih.gov/health/asthma/diagnosis
2. A textbook of Pharmacology and Toxicology by Dr.A.V.Yadav.
3. https://www.nhs.uk/conditions/peak-flow-test/
4. Atextbook of Community Pharmacy and Management By Dr. Ashok Hajare

12. Practical Related Questions:

1. What is asthma ?
2. Give the symptoms of asthma.
3. Give the diagnostic test for asthma.
4. What do you mean by PEFR?
5. What are the three zones of peak flow meter? Give their meaning.
6. What is incentive Spirometry?
7. What are the precautions to be taken while using the incentive spirometer?

(Space for answers)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13. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 16

Measurement of Capillary Oxygen Level using Pulse Oximeter

1. Aim:

To measure the capillary oxygen level using pulse oximeter.

2. Practical Significance:

Pulse oximetry is a test used to measure the oxygen level (oxygen saturation) of the blood. It can helps to the doctor / the pharmacist to monitor the patients with any disorder that can affect the blood oxygen level. After studying this experiment students will learn to measure the blood oxygen level using pulse oximeter.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define pulse oximetry and state its purpose and use.	CO 5	BTL 1
PrO 2	Describe pulse oximeter and it's working .	CO 5	BTL 2,BTL 3
PrO 3	Use pulse oximeter for measuring the oxygen saturation level.	CO 5	BTL 3

4. Relevant Theoretical background:

A change in blood oxygen level can have significant impact on the health of person. When blood oxygen level drops below average for a healthy person it leads to hypoxemia(SpO2 < 85)..In hypoxemia the body has trouble supplying oxygen to all its cells tissues and organs. The percentage of oxygen in the blood is known as oxygen saturation (SpO2). A healthy oxygen saturation level ranges in between 95 and 100%.

Pulse oximetry:

Pulse oximetry may be used to see if there is enough oxygen in the blood. It is an easy, painless measure of how well oxygen is being sent to parts of your body furthest from your heart, such as the arms and legs.

Purpose of pulse oximetry:

Pulse oximetry helps the health professionals to monitor the patient with conditions that can affect the levels of oxygen in blood .Such conditions include-COPD, Asthma, Pneumonia, lung Cancer ,Anemia, Heart attack, Congestive cardiac failure.

Uses of pulse oximetry:

1. To assess the efficiency of lung medication.
2. To identify the need of breathing aid/oxygen therapy.
3. To evaluate the Performance of ventilator.
4. To monitor oxygen levels during or after surgical procedures that require sedation.
5. To determine the efficiency of newly started supplemental oxygen therapy.
6. To assess the tolerance of patient towards increased physical activity .
7. To evaluate breathlessness in patient while sleeping (sleep apnea).

Pulse Oximeter:

Instrument which is used for the measurement of oxygen level in the blood is called pulse oximeter .Pulse oximeter is a tiny lightweight, stapler like device that help you to know blood oxygen level,blood pressure heart rate within second.

Figure 16.1: Pulse Oximeter

5. Requirements:

Pulse oximeter

6. Requirements used:

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7. Procedure:

1. Remove any jewellery or fingernails polish on your finger if measuring from this location.
2. Make sure your hand is warm, relaxed and below heart level if attaching the device here..
3. Place a device on your finger, earlobe or toe.
4. Keep a device on If the reading is not stable ,keep the oximeter in place for at least a minute.
5. Record the SpO2 if the reading do not change for 5 seconds.

This should be repeated 3 times and average of the 3 measurements should be recorded as your peak flow score.

8. Observations:

Sr.No	SpO2 Level (%)	Remark
1		
2		
3		
High Value		

9. Result:

The average SpO2 level of_____ was found to be_____%

10. Conclusion:

---

11. References/ Further Reading Material:

1. https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/pulse-oximetry
2. https://www.healthline.com/health/pulse-oximetry#purpose-and-uses
3. https://www.webmd.com/lung/pulse-oximetry-test
4. https://resources.wfsahq.org/atotw/pulse-oximetry-part-1/

12. Practical Related Questions:

1. What is Pulse Oximetry?
2. Define Hypoxemia.
3. State the uses of Pulse Oximetry.
4. Describe the working of Pulse Oximeter.
5. List out the uses of Pulse Oximeter.

(Space for answers)

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13. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 17
Measurement of Body Mass Index (BMI)

1. Aim:

To determine the body mass index (BMI) of subject and interpret the body weight status.

2. Practical Significance:

Body mass index (BMI) is a measure of body fat based on height and weight that applies to adult men and women. After studying this experiment students will learn to measure the BMI from weight and height reading .They will also be able to identify the body weight status on the basis of the reading of BMI.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcome	Mapped CO	BTL
PrO 1	Define obesity and state its causes.	CO 5	BTL 1,
PrO 2	Enlist the health problems associated with obesity.	CO 5	BTL 2,
PrO 3	Describe body mass index and state it's drawback.	CO 5	BTL 2,
PrO 4	Calculate BMI of a subject from his/her weight and height.	CO 5	BTL 3, BTL 4. BTL 5

4. Relevant Theoretical background:

Obesity:

Obesity is a chronic complex disease defined by excessive fat deposits that can impair health. Obesity can lead to increased risk of type 2 diabetes and heart disease, it can affect bone health and reproduction, it increases the risk of certain cancers. Obesity influences the quality of living, such as sleeping or moving.

The diagnosis of overweight and obesity is made by measuring people's weight and height and by calculating the body mass index (BMI).The body mass index is a surrogate marker of fatness and additional measurements, such as the waist circumference, can help the diagnosis of obesity.

Causes of Obesity:

1. Genetic Disorder
2. Lack of physical Activity
3. Unhealthy eating behaviors
4. Not getting good quality sleep.
5. Stress
6. Health Conditions
7. Medicines
8. Psychological factors

Health Problems Associated with obesity:

1. Shortness of Breath
2. Increased sweating
3. Insomnia
4. Inefficiency in case of sudden physical activity
5. Tiredness

6. Back and Joints Pain
7. Hypertension
8. High level Cholesterol

Body Mass Index:

Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. A high BMI can indicate high body fatness. BMI screens for weight categories that may lead to health problems, but it does not diagnose the body fatness or health of an individual.

Body Mass Index = Weight (kg) / Height (m^2).

According to WHO BMI having following category-

Category	**BMI (kg/ m^2).**
Underweight	Below 18.5
Normal range (Healthy weight)	18.5-24.9
Overweight	25.0-29.9
Obesity class I	30.0 -34.5
Obesity class II	35.0 -39.9
Obesity class III	40 and above

Drawbacks of body mass index:

1. Overestimation of body fat in people who are extremely muscular.
2. Underestimation of body fat in people who have lost muscular mass (eg. many elderly)
3. BMI does not consider age and gender during calculation. There may be people with below average height and muscular mass who categorized as overweight after BMI calculation.

5. Requirements:

Weighing scale and measuring tape.

6. Requirements used:

---

7. Procedure:

a) Measurement of the weight:

1. The scale should be placed on a hard floor surface.
2. Follow the instructions of your specific device for turning on the scale.
3. Ask him/her to take off the shoes and heavy garments (jacket, belt, etc.). Document the clothing worn during measurement.
4. Ask the participant to stand in the centre of the platform, arms hanging loosely and weight evenly on both feet.
5. Ask the participant to stand still facing ahead and look straight without any movement.
6. Document the measured weight. Inform the participant of his/her weight.
7. Clean the scale after use.

b) Measurement of the height:

1. Ask participant to remove his/her shoes and heavy clothing.
2. Ask participant to stand with his/her back to the wall look directly forward.
3. The back of their feet, calves, bottom, upper back and back of their head should all be in contact with the wall.
4. They should be positioned directly underneath the dropdown measuring device.

5. Place ruler perpendicular to the wall above the head of participant and lower it until it rest gently on top of his /her head.
6. With the help of pencil lightly mark the wall at the point where the ruler rest on the subject head
7. Using a measuring tape measure the distance from floor to the floor to the mark on the wall.
8. Record the height of the subject in manner.

8. Observations:

Sr. No	Weight (Kg)	Height (meter)
1		
2		
3		
Average		

9. Calculations:

Body Mass Index = Weight (kg) / Height (m^2).

Body Mass Index = ---------- (kg) /(m^2).

10. Result:

The Body Mass Index (BMI) of Subject was found to be_____(kg) /(m^2).

11. Conclusion:

---

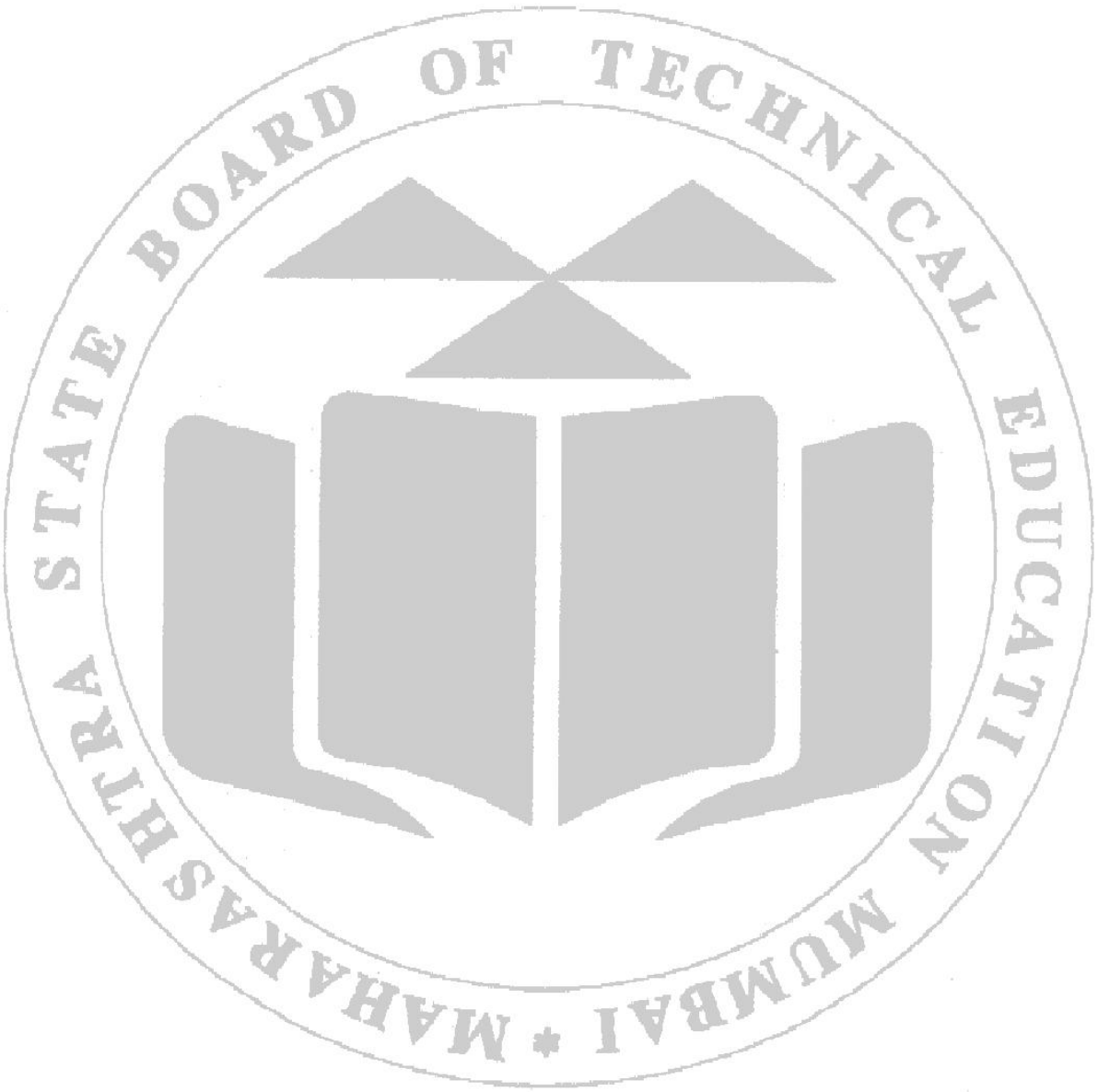
12. References/ Further Reading Material:

1. https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm
2. https://www.cdc.gov/healthyweight/assessing/bmi/index.html
3. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
4. https://anticov.org/wpcontent/uploads/2021/08/WI_ANTICOV_Anthropometry_v1.0_24.07.2020-1.pdf

13. Practical Related Questions:

1. Describe the classification given by WHO for obesity.
2. Define Obesity.
3. Give the formula for calculation of obesity.
4. What is BMI?
5. Give any four causes of Obesity.
6. What are the risk factors for obesity?

(Space for answers)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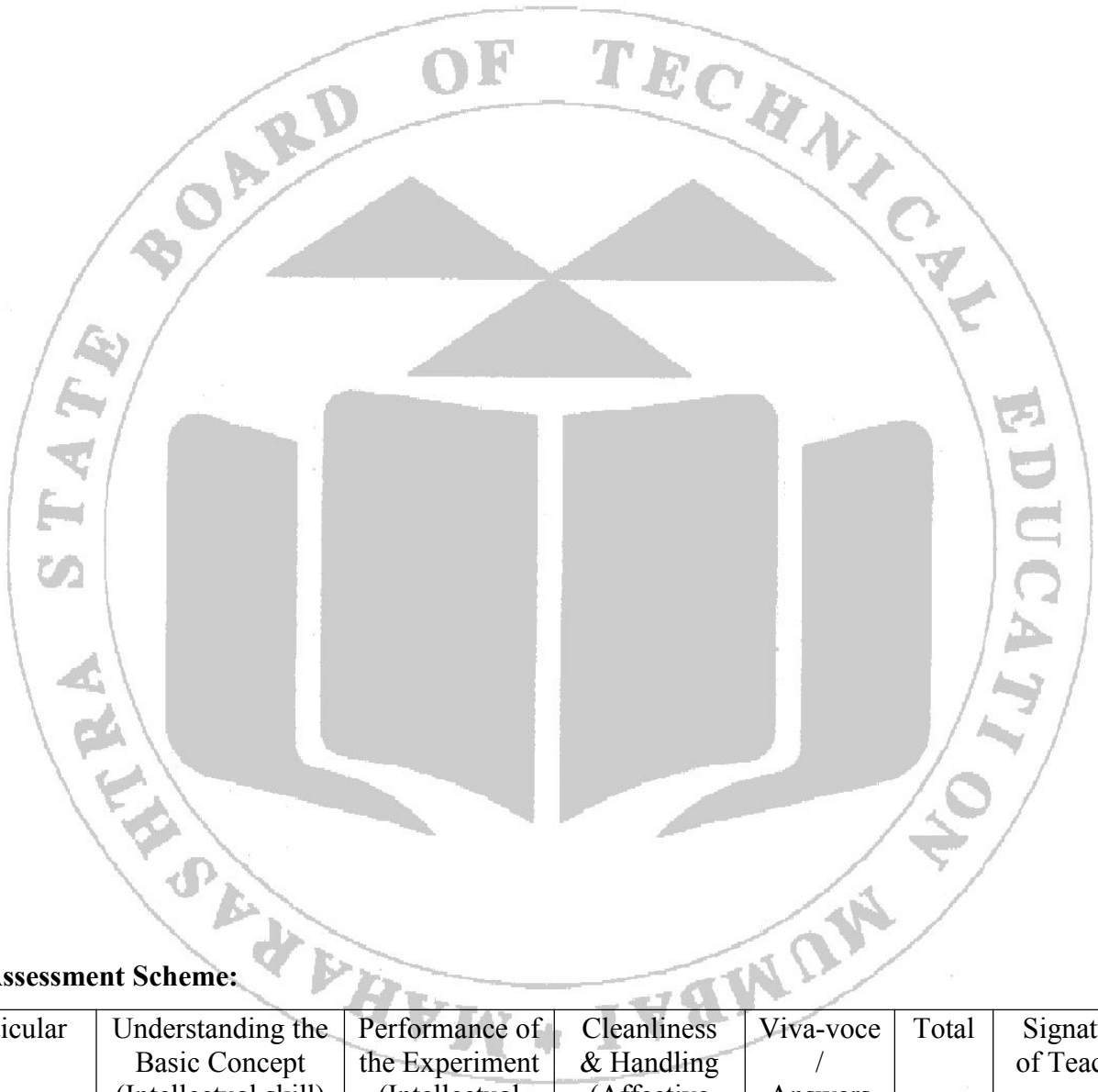

14. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 18

Patient Counseling for the Management of Diabetes Mellitus (Type 2)

1. Aim:

To counsel the simulated patient for the management of Diabetes Mellitus (Type 2).

2. Practical Significance:

Diabetes mellitus, commonly referred to simply as diabetes, is a metabolic disease that causes high blood sugar. The hormone insulin moves sugar from the blood into the cells to be stored or used for energy. With diabetes, the body either does not make enough insulin or can't effectively use the insulin it does make. Untreated high blood sugar from diabetes can damage your nerves, eyes, kidneys, and other organs. In this experiment, the students will perform the role of Patient Educator on a clinical case of Diabetes mellitus and learn the important aspects of counseling to a diabetic patient.

3. Practical Outcomes (PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Explain various aspects related to the counseling of type 2 diabetic patients.	CO2, CO3, CO4	BTL2
PrO 2	Counsel the patients about proper management of type 2 diabetes mellitus.	CO2, CO3, CO4	BTL6
PrO 3	Prepare informative leaflet about care to be taken by patients in type 2 diabetes mellitus to avoid complications.	CO2, CO3, CO4	BTL6

4. Relevant Theoretical background:

4.1 Types of Diabetes Mellitus:

I. IDDM type 1 i.e. Insulin Dependent Diabetes Mellitus or Juvenile diabetes

II. NIDDM type 2 i.e. Non-insulin Dependent Diabetes Mellitus or Maturity onset

III. GDM i.e. Gastrointestinal Diabetes Mellitus.

4.2 Symptoms of Diabetes Mellitus:

1. Polyuria (Frequent urination)
2. Polydipsia (Excessive thirst)
3. Polyphagia (excessive hunger)
4. Delayed wound healing
5. Loss of weight
6. Weakness
7. Fatigue
8. Prone to infections.

4.3 Causes of Diabetes Mellitus:

1. Pancreatic disease: defect in the synthesis of insulin or decrease in the number of beta cells.
2. Heredity.
3. Sedentary life style: Lack of exercise.
4. Diet: Rich in carbohydrate and fats
5. Obesity
6. Viral infections: This may lead to beta cells destruction.
7. Stress

4.4 Risk Factors:

Risk factors of Diabetes mellitus are as follows:

1. Pancreatic diseases, defect in the synthesis of insulin or decrease in the number of beta cells.
2. Heredity
3. Sedentary life style and lack of exercise.
4. Diet rich in carbohydrates and fats.
5. Obesity
6. Infections with viruses like rubella and mumps.

4.5 Prevention and Control:

Though diabetes cannot be cured it can be effectively controlled by adopting following measures:

1. Maintenance of normal body weight by exercise and dietary control.
2. Regular check up of urine sugar and blood sugar should be done.
3. Taking care of personal hygiene including care of feet and skin.
4. Treatment with insulin and oral anti diabetic agents like Tolbutamide, Glipizide, Glibenclamide etc
5. Since NIDDM appears to be linked with sedentary life style, over nutrition, obesity, correction of these may reduce the risk of diabetes and its complications.
6. Alcohol should be avoided, as it indirectly increases the risk of diabetes.

4.6 Treatment of Diabetes:

I. Type 1 diabetes:

Insulin is the main treatment for type 1 diabetes. It replaces the hormone your body isn't able to produce.

Various types of insulin are commonly used by people with type 1 diabetes. They differ in how quickly they start to work and how long their effects last:

1. Rapid-acting insulin: starts to work within 15 minutes and its effects last for 2 to 4 hours.
2. Short-acting insulin: starts to work within 30 minutes and lasts 3 to 6 hours.
3. Intermediate-acting insulin: starts to work within 2 to 4 hours and lasts 12 to 18 hours.
4. Long-acting insulin: starts to work 2 hours after injection and lasts up to 24 hours.
5. Ultra-long acting insulin: starts to work 6 hours after injection and lasts 36 hours or more.
6. Premixed insulin: starts working within 5 to 60 minutes and lasts 10 to 16 hours.

II. Type 2 Diabetes:

Oral hypoglycemic agents are usually used in Type 2 Diabetes mellitus.

1. Sulphonylureas: These agents act on pancreas and stimulate insulin secretion. They are effective only if some Beta cells are functional. Side effects include hypoglycemia and weight gain. Eg; Tolbutamide, Glibenclamide,Gliclazide.
2. Biguanides: These agents act on liver. Increase glucose uptake in muscles & inhibit gluconeogenesis. They cause anorexia & lead to weight loss. Can be combined with Sulphonylueas.Eg: Metformin,Phenformin.
3. Thiazolidinediones: Increase insulin sensitivity. Can cause weight gain & edema. Eg; Pioglitazone,Rosiglitazone.
4. Alpha glucosidase inhibitor: Reduce carbohydrate absorption. Cause flatulence & diarrhea. Eg;Acarbose.
5. Newer agents include Gliptins,Meglitinides etc.

4.7 Essential Components of Diabetic Counseling:

I. Counseling Regarding Disease:

Patients with diabetes should be informed that the disease will remain lifelong and they should modify their lifestyle. Pharmacist should also explain the value of pharmacotherapy, particularly the necessity of careful adherence to the recommended course of treatment. Patients should be informed that if the disease is not effectively controlled, it may cause serious complications.

II. Counseling Regarding Lifestyle Modification:

The pharmacist should concentrate on the important aspects of food, exercise, smoking, alcohol consumption, while counseling the patient.

1. Diet:

Dietary control is the basis for treatment of Type 2 diabetes. No foods are strictly off-limits. Ask the patient to focus on eating only as much as his/her body needs. Advise the patient to have plenty of vegetables, fruits, and whole grains. Ask him/her to choose nonfat dairy and lean meats. Advise them to limit foods that are high in sugar and fat.

2. Exercise and Physical Activity:

When combined with calorie restriction, exercise can support weight loss and help maintain a healthy weight. The effective weight loss plan includes regular exercise for atleast 30 minutes. Exercise should be avoided if the patient is at an elevated risk of diabetic complications.

3. Alcohol Intake and Smoking Cessation:

A small amount of alcohol will drastically change blood glucose levels, even if the patient's blood glucose is under control. Alcohol can significantly alter blood sugar levels, especially when combined with oral diabetic medicines. Cardiovascular issues are more likely to occur in diabetic patients who smoke. Additionally smoking can result in severe side effects like such as infections, ulcers, gangrene and even amputations. Discuss the negative effects of smoking and alcohol consumption with the patient and develop strategies to persuade him to quit smoking and drinking alcohol.

III. Counseling Regarding Medication:

Strict glycemic control is the best way to avoid long term problems. A pharmacist can play a crucial role in providing diabetic patients with pharmacological counseling. The patients must be counseled about administration of oral anti-diabetic medications and insulin.

Table 1: Counseling Points for Oral Anti-diabetic Drugs.

Drugs	Administration Time	Dosing Schedule	Possible Side Effects	Comments
Glibenclamide	Take with meal or 15 to 30 mins before food.	Usually taken in one or two doses.	Hypoglycemia, obesity.	Interacts with oral anti coagulants.
Glimiperide	Taken with meal.	Usually taken in a single dose.	Hypoglycemia.	Interacts with oral anti coagulants.
Gliclazide	Taken with meal.	Usually taken in one or two doses.	Hypoglycemia.	Interacts with oral anti coagulants.
Glipizide	Taken with meal.	Usually taken in one or two doses.	Hypoglycemia.	Interacts with oral anti coagulants.
Metformin	Take during or immediately after meals to minimize	Usually taken in one or three doses.	GI Disturbances.	Should be stopped before surgery and

	GIT effects.			radiological investigation involving contrast media.
Acarbose	Swallow whole with liquid before meal or chew with first few mouthfuls of food.	Usually taken in one or three doses.	GI Disturbances.	Sucrose should not be administered if the patient experiences hypoglycemia.
Repaglinide	Taken with meal.	Usually taken three times in a day.	Hypoglycemia.	--
Pioglitazone	Taken with meal.	Usually taken in a single dose.	Hypoglycemia.	--

Insulin:

A pharmacist should guide the patient about site to be selected for self-injection and educate them about proper steps to be followed while injecting themselves.

1. Steps to be followed During Insulin Injection Using Syringe.

1. Wash your hands with soap and water. Dry them well.
2. Check the insulin bottle label. Make sure it is the right insulin. Make sure it is not expired.
3. Know the dose of insulin you are going to use. Take the cap off the needle, being careful not to touch the needle to keep it sterile. Pull back the plunger of the syringe to put as much air in the syringe as the dose of medicine you want.
4. Put the needle into and through the rubber top of the insulin bottle. Push the plunger so the air goes into the bottle.
5. Keep the needle in the bottle and turn the bottle upside down.
6. With the tip of the needle in the liquid, pull back on the plunger to get the right dose of insulin into the syringe.
7. Check the syringe for air bubbles. When there are no bubbles, take the syringe out of the bottle. Put the syringe down carefully so the needle does not touch anything.
8. Choose where to give the injection.
9. The site you choose for the injection should be clean and dry. If your skin is visibly dirty, clean it with soap and water. Do not use an alcohol wipe on your injection site.
10. The insulin needs to go into the fat layer under the skin.
11. Pinch the skin and put the needle in at a 45º angle.
12. If your skin tissues are thicker, you may be able to inject straight up and down (90º angle). Check with your provider before doing this.
13. Push the needle all the way into the skin. Let go of the pinched skin. Inject the insulin slowly and steadily until it is all in.
14. Leave the syringe in place for 5 seconds after injecting.
15. Pull the needle out at the same angle it went in. Put the syringe down.

Pharmacist must guide the patients to administer the insulin as per doctor's advice.

IV. Counseling Regarding Acute and Chronic Complications:

The pharmacist should concentrate on strategies to prevent the emergence of acute and chronic complications, as well as measures to overcome and manage them if they do occur.

These complications include hypoglycemia, Ketoacidosis, retinopathy, diabetic foot, nephropathy, neuropathy, gum disease, heart attack and stroke.

IV. Counseling Regarding Self - monitoring of Blood Glucose.

Pharmacists should explain in detail the usage of blood glucose meters. He can assist the patients by selecting the best glucose meter and educating them on how to use the glucose meters correctly. The pharmacist should explain the importance of regulating blood glucose levels.

5. Requirements:

Insulin syringe, any marketed vial of insulin injection, oral antidiabetic drugs, insulin pen etc.

6. Requirements used :

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7. Activities:

Activity – I

The subject teacher must demonstrate the steps for using insulin syringe and insulin pen to the students. Teachers can also use You tube videos for demonstration.

The subject teacher must form groups of students and give a dummy prescription of insulin / oral ant diabetic drugs to each group.

Assign following counseling task to the students After enacting the counseling task ,the students note down the key points which must be considered while counseling.

A patient with type 2 diabetes mellitus has come to your pharmacy with a prescription. Dispense the prescribed medication and counsel him /her for lifestyle modification, medication, complications and glucose monitoring.

Prescribed drugs:

Key points to be considered while counseling:

Activity – II

Create an e-leaflet containing pictorial and textual information about lifestyle modification in Type 2 Diabetes mellitus using MS PowerPoint / MS Publisher or suitable software's (e.g. Canva).

8. Result:

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9. References/ Further reading material:

1. https://www.mayoclinic.org/diseases-conditions/type-2-diabetes/symptoms-causes/syc-20351193.
2. https://www.nhp.gov.in/disease/digestive/pancreas/diabetes-mellitus.

10. Practical Related Questions:

1. What is diabetes mellitus? State its types.
2. Give any four symptoms and causes of type 2 diabetes mellitus.
3. What is the role of pharmacist in management of type 2 diabetes mellitus?
4. Enlist any two acute and chronic complications in type 2 diabetes mellitus.
5. Write four counseling points for counseling patients with diabetes.

(Space for answers)

11.Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 19

Patient Counseling for the Management of Primary Hypertension

1. Aim:

To counsel the simulated patient for the management of Primary Hypertension.

2. Practical Significance:

Hypertension or elevated blood pressure is a serious medical condition that significantly increases the risks of heart, brain, kidney and other diseases. It is actually called a "silent killer". Most people with hypertension are unaware of the problem because it may have no warning signs or symptoms. For this reason, it is essential that blood pressure is measured regularly. Since patient counseling advocates medication adherence and patient educators effectively communicate with both patients and their physicians, pharmacists are ideally positioned to counsel patients on Hypertension. In this experiment, the students will perform the role of Patient Educator on a clinical case of primary hypertension and learn the important aspects of counseling to a hypertensive patient.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Discuss the management of primary hypertension through life style modifications, exercises and medications.	CO2, CO3, CO4	BTL2
PrO 2	Counsel the patients about proper management of primary hypertension.	CO2, CO3, CO4	BTL6
PrO 3	Prepare informative leaflet about life style modifications to prevent primary hypertension.	CO2, CO3, CO4	BTL6

4. Relevant Theoretical background:

4.1 Hypertension:

Hypertension means consistent high blood pressure, more than 140/90 mm of mercury systolic/diastolic. Hypertension may also be defined as “a systolic pressure equal to or greater than 140 mm of mercury and/or a diastolic pressure equal to or greater than 90 mm of mercury”.

Blood pressure measurements currently are categorized as follows:

Normal: systolic less than 120 mm Hg and diastolic less than 80 mm Hg.

Elevated: systolic between 120-129 mm Hg and diastolic less than 80 mm Hg

Stage 1: systolic between 130-139 mm Hg or diastolic between 80-89 mm Hg

Stage 2: systolic at least 140 mm Hg or diastolic at least 90 mm Hg.

The new classification system puts more people into the elevated category who were previously considered prehypertensive.

There are two main types of high blood pressure or hypertension: primary and secondary high blood pressure:

1. **Primary, or essential hypertension:**

This is the most common type of high blood pressure. It is referred as essential hypertension since the exact cause of this elevated blood pressure is not known.

2. **Secondary hypertension:**

The high blood pressure is caused by another medical condition like renal diseases, cardio vascular diseases, endocrine disorders or use of certain medicines like oral contraceptives, NSAIDS, steroids, etc.

4.2 Symptoms of Hypertension:

1. Severe headache
2. Fatigue or confusion
3. Vision problems
4. Chest pain
5. Difficulty breathing
6. Irregular heartbeat
7. Blood in the urine
8. Pounding in your chest, neck, or ears.

4.3 Risk Factors:

This includes a combination of genetics, diet, lifestyle, and age.

Lifestyle factors include smoking, drinking too much alcohol, stress, being overweight, eating too much salt, and not getting enough exercise.

The underlying causes of secondary hypertension includes a varity of factors like narrowing of the arteries that supply blood to your kidneys, adrenal gland diseases, side effects of some medications, including birth control pills, diet aids, stimulants, antidepressants, and some over-the-counter medications, obstructive sleep apnea, hormone abnormalities, thyroid abnormalities, constriction of the aorta etc.

4.4 Prevention and Control:

1. Reduction in consumption of salt, saturated fats in the diet (Balanced diet).
2. Reduction of weight and taking regular exercise.
3. Avoid smoking and alcohol.
4. Avoid stress and strain in life. Meditate and do yogas.
5. Detected cases of hypertension can be treated with various antihypertensive drugs.

4.5 Treatment of Hypertension:

Antihypertensive drugs are the agents used in treatment of hypertension.

Classification (According to site of action):

The Anti hypertensive drugs are classified as follows-

I. Centrally acting Drugs: Clonidine, Methyl Dopa

II. Drugs acting on autonomic ganglia: Hexamethonium

III. Drugs acting on post ganglionic sympathetic nerve endings

a) Adrenergic neuron blockers; Guanethidine

b) Catecholamine depletors: Reserpine

IV. Drugs acting on adrenergic receptors:

a)Alpha adrenergic blockers: Phentolamine

b) Beta adrenergic blockers: Propranolol

V. Vasodilators: Hydralazine

VI. Drugs acting reflexly by stimulating baroreceptors: Veratrum

VII. Oral Diuretics: Thiazides, Frusemide, spironolactone, amilorideetc

VIII. Calcium Channel Blockers: Nifedipine, Amlodipine, Felodipine

IX. Drugs acting on rennin angiotensin system:

a) ACE inhibitors: Enalapril, Ramiprilb) Angiotensin Receptor Blockers: Losartan, Telmisartan

X. Miscellaneous: MAO inhibitors (Pargyline).

4.6 Essential Components of Counseling Patients with Primary Hypertension:

I. Counseling Regarding Disease:

Patients with primary hypertension should be educated about the disease. They should be given an idea about systole, diastole and pressure created in the blood vessels.The patients should also be explained about the blood pressure readings under normal condition and in hypertension.

II. Counseling Regarding Lifestyle Modification:

The pharmacist should concentrate on the important aspects of food, exercise, smoking, alcohol consumption, while counseling the patient.

1. Weight Reduction:

BMI (Body Mass Index) must be less than 25 kg/m^3.Patients who are overweight or obese should be encouraged to adopt a long term goal for losing weight slowly and gradually. Patients who are extremely obese should be advised to contact a specialist.

2. Healthy Diet:

A diet that is low in sodium and high in fruits, vegetables, and whole grains can be helpful. The pharmacist should counsel the patients on adopting a healthy diet, such as the DASH (Dietary Approaches to Stop Hypertension) diet which is low in sodium and high in fruits, vegetables, and whole grains. The maximum limit of salt consumption should be not more than 6 gm per day. Patients should avoid eating processed, cured, pickled, salted and smoked food as well as avoid adding salt to meals before or after cooking.

3. Exercise and Physical Activity:

Regular exercise can also be beneficial in reducing blood pressure.Brisk walking, swimming, cycling, jogging, rowing, step climbing, and hiking is advised for 30 - 45 minutes everyday. Heavy weight lifting and other isometric exercises should be avoided.

4. Alcohol Intake and Smoking Cessation:

Discuss the negative effects of smoking and alcohol consumption with the patient and develop strategies to persuade him to quit smoking and drinking alcohol.

III. Counseling Regarding Medication:

Strict Drug adherence is the best way to avoid long term problems. A pharmacist can play a crucial role in providing hypertensive patients with pharmacological counseling.

Table 1: Side Effects and Contra indications of Anti-hypertensive Drugs.

Drugs	Common Side Effects	Precautions
ACE Inhibitors	Persistent dry cough, dizziness, taste disturbance and rashes.	Not suitable during pregnancy. The concomitant use of potassium supplements and potassium containing salt substitutes is not recommended.
Angiotensin II receptor blockers	Dizziness, headache.	Not suitable during pregnancy. The concomitant use of potassium supplements and potassium containing salt substitutes is not recommended.
Calcium channel blockers	Flushed face, headaches, swollen ankles, constipation, dizziness and tiredness.	Avoid drinking large quantities of grapefruit juice. Have high fibre diet and drink plenty of fluid to reduce the side effect of constipation.
Diuretics	Urinary frequency, dizziness, gastrointestinal disturbances.	Take the tablet in the morning. Hypokalaemia can occur with some diuretics.
Beta-blockers	Tiredness, cold hands and feet, slow	May trigger asthmatic attacks in patients

	heart beat, diarrhea and nausea, sleep disturbances, nightmares.	with asthma or chronic bronchitis.
Alpha-blockers	Drowsiness, postural hypotension, syncope, asthenia, dizziness, headache and dry mouth.	Take first dose at bedtime to avoid postural hypotension.
Centrally acting antihypertensive drugs	Dizziness, headache and dry mouth.	May cause drowsiness. If affected do not drive or operate machinery. Do not drink alcohol because this may worsen the side effects.
Vasodilator	Headache, nausea, vomiting, tachycardia.	Report to the doctor if symptoms of arthritis, unexplained fever or tiredness develops.

I. Counseling Regarding Self - monitoring of Blood Pressure.

Pharmacists should educate the patients or their relatives about measurement of blood pressure. They must be instructed to keep a log and record their blood pressure at the same time everyday.

5. Requirements:

Mercury sphygmomanometer, oral antihypertensive drugs etc.

6. Requirements used :

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7. Activities:

Activity – I

The subject teacher must demonstrate the steps for using digital sphygmomanometer to the students. Teachers can also use YouTube videos for demonstration.

The subject teacher must form groups of students and give a dummy prescription of antihypertensive drugs to each group.

Assign following counseling task to the students After enacting the counseling task ,the students note down the key points which must be considered while counseling.

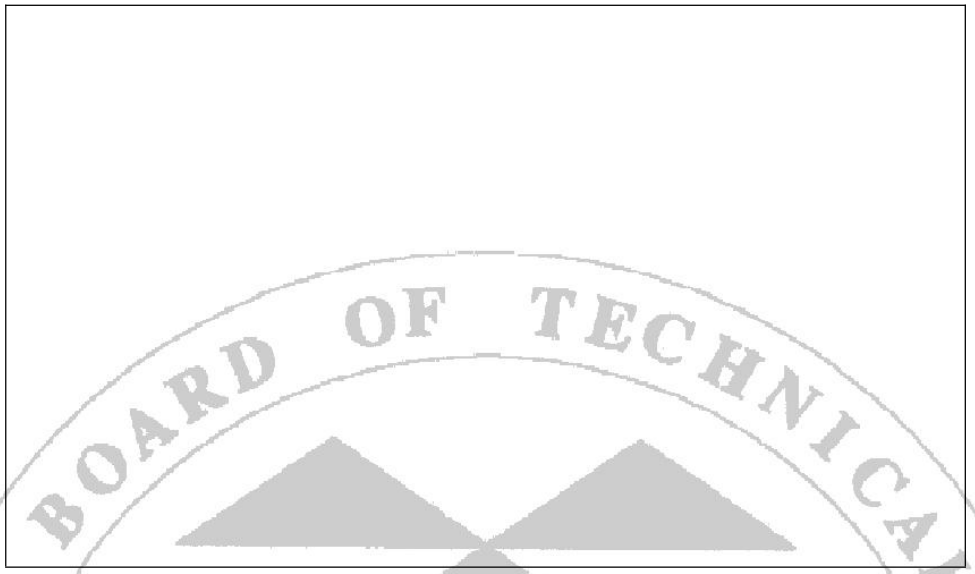
A patient of 45 years with primary hypertension has come to your pharmacy with a prescription. Dispense the prescribed medication and counsel him /her for lifestyle modification, medication, complications and self monitoring of hypertension.

Prescribed drugs:

Key points to be considered while counseling:

Activity – II

Create an e-leaflet containing pictorial and textual information about lifestyle modification in Primary hypertension using MS PowerPoint/ MS Publisher or suitable software's (e.g. Canva).



8. Result:

---

9. References/ Further reading material:

1.https://my.clevelandclinic.org/health/diseases/22024-primaryhypertension-formerly-known-as-essential-hypertension.

2.https://www.pharmacytimes.com/view/2004-12-909.

3. https://apps.who.int

10. Practical Related Questions:

1. Define primary hypertension.
2. State the symptoms and causes of primary hypertension.
3. Give the stages of hypertension.
4. Enlist any four categories of antihypertensive medications with two examples of each category.
5. Write four counseling points for counseling patients with hypertension.

(Space for answers)

11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 20
Patient Counseling for the Management of Asthma

1. Aim:

To counsel the simulated patient for the management of Asthma.

2. Practical Significance:

Asthma is a condition in which your airways narrow and swell and may produce extra mucus. This can make breathing difficult and trigger coughing, a whistling sound (wheezing) when you breathe out and shortness of breath. For some people, asthma is a minor nuisance. For others, it can be a major problem that interferes with daily activities and may lead to a life-threatening asthma attack. Asthma can't be cured, but its symptoms can be controlled. Pharmacists can assist patients in managing their asthma by educating them about potential triggers and ways to avoid them, medications and inhalation techniques.

In this experiment, the students will perform the role of Patient Educator on a clinical case of asthma and learn the important aspects of counseling to an asthma patient.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Discuss the counseling tips to be given for asthmatic patients.	CO2, CO3, CO4	BTL2
PrO 2	Counsel the patients about proper management of asthma.	CO2, CO3, CO4	BTL6
PrO 3	Prepare informative leaflet about risk factors, symptoms and treatment of asthma.	CO2, CO3, CO4	BTL6

4. Relevant Theoretical background:

4.1 Asthma:

Asthma is a chronic lung disease affecting people of all ages. It is caused by inflammation and muscle tightening around the airways, which makes it harder to breathe. Asthma is a major noncommunicable disease (NCD), affecting both children and adults, and is the most common chronic disease among children.

4.2 Symptoms of Asthma:

Asthma symptoms vary from person to person. You may have infrequent asthma attacks, have symptoms only at certain times — such as when exercising — or have symptoms all the time.

Asthma signs and symptoms include:

1. Shortness of breath.
2. Chest tightness or pain.
3. Wheezing when exhaling, which is a common sign of asthma in children.
4. Trouble sleeping caused by shortness of breath, coughing or wheezing.
5. Coughing or wheezing attacks that are worsened by a respiratory virus, such as a cold or the flu.

Signs that your asthma is probably worsening include:

1. Asthma signs and symptoms that are more frequent and bothersome
2. Increasing difficulty breathing, as measured with a device used to check how well your lungs are working (peak flow meter)
3. The need to use a quick-relief inhaler more often

For some people, asthma signs and symptoms flare up in certain situations:

4. Exercise-induced asthma, which may be worse when the air is cold and dry

5. Occupational asthma, triggered by workplace irritants such as chemical fumes, gases or dust

6. Allergy-induced asthma, triggered by airborne substances, such as pollen, mold spores, cockroach waste, or particles of skin and dried saliva shed by pets (pet dander)

4.3 Causes:

Many factors have been linked to an increased risk of developing asthma, although it is often difficult to find a single, direct cause.

1. Asthma is more likely if other family members also have asthma – particularly a close relative, such as a parent or sibling.

2. Asthma is more likely in people who have other allergic conditions, such as eczema and rhinitis (hay fever).

3. Urbanization is associated with increased asthma prevalence, probably due to multiple lifestyle factors.

4. Events in early life affect the developing lungs and can increase the risk of asthma. These include low birth weight, prematurity, exposure to tobacco smoke and other sources of air pollution, as well as viral respiratory infections.

5. Exposure to a range of environmental allergens and irritants are also thought to increase the risk of asthma, including indoor and outdoor air pollution, house dust mites, moulds, and occupational exposure to chemicals, fumes or dust.

6. Children and adults who are overweight or obese are at a greater risk of asthma.

4.4 Treatment of Asthma:

Asthma cannot be cured but there are several treatments available. The most common treatment is to use an inhaler, which delivers medication directly to the lungs. Inhalers can help control the disease and enable people with asthma to enjoy a normal, active life.

There are two main types of inhaler:

1. Bronchodilators (such as salbutamol), that open the air passages and relieve symptoms; and

2. Steroids (such as beclometasone) that reduce inflammation in the air passages, which improves asthma symptoms and reduces the risk of severe asthma attacks and death.

People with asthma may need to use their inhaler every day. Their treatment will depend on the frequency of symptoms and the types of inhalers available.

4.5 Essential Components of Counseling Patients with Asthma:

I. Counseling Regarding Disease:

Patients should be informed that the disease will not affect their children or neighbours. Additionally it will not spread by eating together in the same plates or using each other's belongings. If medications are used as prescribed, the disease's progression can be controlled, which could lead to better outcomes and symptom free living.

II. Counseling Regarding Lifestyle Modification:

The pharmacist should concentrate on the important aspects of food, exercise, smoking, alcohol consumption, while counseling the patient.

1. Knowledge About Asthma Triggers:

Exposure to various irritants and substances that trigger allergies (allergens) can trigger signs and symptoms of asthma. Asthma triggers are different from person to person and can include:

Airborne allergens, such as pollen, dust mites, mold spores, pet dander or particles of cockroach waste

Respiratory infections, such as the common cold, physical activity, cold air, air pollutants and irritants, such as smoke, certain medications, including beta blockers, aspirin, and nonsteroidal anti-

inflammatory drugs, such as ibuprofen (Advil, Motrin IB, others) and naproxen sodium (Aleve), strong emotions and stress, sulfites and preservatives added to some types of foods and beverages, including shrimp, dried fruit, processed potatoes, beer and wine, gastro esophageal reflux disease (GERD), a condition in which stomach acids back up into your throat. The patient should be counseled to identify their asthma trigger.

2. Wearing Masks:

When the patient cannot avoid being exposed to his/her asthma trigger, it is best to suggest that they can use masks during these situations.

3. Over the Counter Drugs:

The patient should be counseled not to take any medicine that could make them more likely to experience an asthma attack. These drugs include aspirin, ibuprofen, naproxen, indomethacin etc.

4. Alcohol Intake and Smoking Cessation:

Discuss the negative effects of smoking and alcohol consumption with the patient and develop strategies to persuade him to quit smoking and drinking alcohol as both are asthma triggers.

5. Cold:

Asthma patients should be advised to wear warm clothes during winter as cold weather can trigger an attack.

6. Emotional Stress:

Patients should be advised to stay away from situations where they can experience emotional tension, anger, etc. Because these can also trigger an asthma attack.

III. Counseling Regarding Medication:

Strict Drug adherence is the best way to avoid long term problems. A pharmacist can play a crucial role in providing asthma patients with pharmacological counseling.

Table 1: Use and Side Effects of Asthma Medications Along With Special Advice.

Drugs	Use	Potential Adverse Effects	Special Advice
β 2 Agonists (Salbutamol)	Long-acting inhaled forms for moderate to severe asthma. Also available as tablets and oral liquids.	Skeletal muscle tremor, tachycardia, tolerance.	Avoid salbutamol in case of adverse reaction. Take missed dose as soon as possible. In case of delay skip the missed dose.
Methyl xanthines (Theophylline)	Orally for severe asthma, secondary choice in mild to moderate persistent asthma.	Dose dependent cardiac stimulation, CNS stimulation, seizure, gastric upset, weak diuresis.	Do not chew or crush the tablet which is meant to be swallowed as a whole.

IV. Counseling on Inhalation Techniques:

Most asthma medicines are inhaled through the mouth using an inhaler or puffer. There are several types of inhalers available and the device you use will depend on your age, how your lungs work and which device you find easiest to use. A pharmacist will show you how to take your asthma medicine.

Some medicines are breathed in directly from the inhaler; others are breathed in through a 'spacer' — you puff the medicine into a container and breathe through a mouthpiece at the other end.

This increases the amount of medicine that reaches the small airways of the lungs.

1. Metered dose inhalers (puffers)

A puffer, or a metered dose inhaler, is the most common type of inhaler. Using it with a spacer will get more medicine into the lungs.

Steps for Use of Inhaler.

1. Shake the inhaler before use.
2. Breathe out fully.
3. Hold the inhaler in the right position.
4. Breathe in deeply as you puff the medicine into your mouth, then hold your breath for as long as possible (and for at least 5 seconds).
5. Make sure you shake the inhaler in between puffs.

2. Autohalers

An Autohaler is an alternative way to take some asthma medicines. The inhaler is activated by breathing in.

Steps for Use.

1. Make sure you hold the inhaler in the right position.
2. Breathe out fully before you breathe in, and continue to breathe in after you hear the click.
3. Try not to breathe out into the inhaler and replace the cap after use.
4. Make sure you shake the inhaler in between puffs**.**

3. Other types of inhaler (dry powder inhalers).

There are many other types of inhaler. These include the Accuhaler, Turbuhaler, HandiHaler, Ellipta and Genuair. These inhalers all come with instructions. A doctor or nurse should teach you how to use them.

Steps for Use.

1. Make sure you do not tilt the inhaler while you are loading the dose.
2. Breathe out fully before you breathe in, and make sure you breathe in with a strong, complete breath.
3. Do not breathe out into the inhaler.
4. Make sure you close the inhaler after you use it.

5. Requirements:

Asthma medications, Metered dose Inhaler, Spacer, Dry Powder Inhaler, Rotacap capsules, Nebulizer etc.

6. Requirements used:

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7. Activities:

Activity – I

The subject teacher must demonstrate the steps for using MDI, DPI and Nebulizer to the students.

Teachers can also use You tube videos for demonstration.

The subject teacher must form groups of students and give a dummy prescription of antiasthmatic drugs to each group.

Assign following counseling task to the students After enacting the counseling task ,the students note down the key points which must be considered while counseling.

A young patient of 20 years with primary asthma has come to your pharmacy with a prescription. Dispense the prescribed medication along with inhalation device (if Any) to the patient and counsel

him /her for lifestyle modification, medication, complications and technique to use the inhalation device.

Prescribed drugs:

Prescribed Inhalation Device:

Key points to be considered while counseling:

Activity – II

Create an e-leaflet containing pictorial and textual information about risk factors, symptoms and treatment of asthma using MS PowerPoint/ MS Publisher or suitable software's (e.g. Canva).

8. Result:

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9. References/ Further reading material:

1. https://www.pharmacytimes.com/view/2005-04-9490.
2. https://www.healthdirect.gov.au/how-to-use-an-asthma-inhaler

3. https://www.mayoclinic.org/diseases-conditions/asthma/symptoms-causes/syc-20369653

10. Practical Related Questions:

1. Define asthma.
2. State the symptoms and causes of asthma.
3. Which environmental factors are responsible for triggering asthma attack?
4. Enlist any four marketed formulations used in the treatment of asthma.
5. Enlist any four counseling point regarding lifestyle modification to asthma patient.

(Space for answers)

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11.Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 21
Patient Counseling for the Management of Hyperlipidemia

1. Aim:

To counsel the simulated patient for the management of Hyperlipidemia.

2. Practical Significance:

Hyperlipidemia (high cholesterol) is an excess of lipid or fats in your blood. This can increase the risk of heart attack and stroke because blood can't flow through your arteries easily. Adding exercise and healthy food can lower your cholesterol. Some people need medication as well for managing Cholesterol in blood. In these experiments students will learn about various aspects essential for counseling of the patients with hyperlipidemia and also learn to counsel the patients through role-play.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Describe hyperlipidemia and cholesterol along with its types.	CO2,CO3, CO4	BTL 2
PrO 2	Discuss the counseling tips to be given for management of hyperlipidemia.	CO2,CO3, CO4	BTL 2

4. Relevant Theoretical background:

Hyperlipidemia:

Hyperlipidemia, also known as dyslipidemia or high cholesterol, means you have too many lipids (fats) in your blood. Your liver creates cholesterol to help you digest food and make things like hormones. But you also eat cholesterol in foods from the meat and dairy aisles. As your liver can make as much cholesterol as you need, the cholesterol in foods you eat is extra. Too much cholesterol (200 mg/dL to 239 mg/dL is borderline high and 240 mg/dL is high) isn't healthy because it can create roadblocks in your artery highways where blood travels around to your body. This damages your organs that don't receive enough blood from your arteries.

Cholesterol:

is a waxy white form of fat or lipid which in optimum concentration is vital for our health .although cholesterol has no energy value ,it is essential for several important substances ,including cell membrane, vitamin D, and various sex hormone. Our diet contains animal foods that contain cholesterol but our bodies are also capable of producing some cholesterol on their own. Over a time extra cholesterol is not utilized by the body and might have harmful impact on your arteries.

Types of Cholesterol:

1. **Low density lipoprotein (LDL)**:

It is known as Bad Cholesterol. LDL is a portion of total cholesterol that produces plague which can clog arteries. The ideal LDL is less than 130mg/dL or in high risk of individuals, less than 100 mg/dL.

2. **High density lipoprotein (HDL)**:

It is known as good Cholesterol .It prevents cholesterol from accumulating in our arteries. For men ideal HDL level is greater than 40mg/ dL,while for women it is greater than 50mg/dL.

Symptoms:

Hyperlipidemia does not produce symptoms by itself but may eventually leads coronary heart disease (CHD) or atherosclerosis. The symptoms of coronary artery disease includes chest pain, jaw pain and shortness of breath.

Causes of Hyperlipidemia:

1. Smoking
2. Drinking a lot of alcohol
3. Eating food that have lot of saturated fat or trans fat
4. Sitting too much instead of being active
5. Being Stressed
6. Inheriting genes that makes your cholesterol level unhealthy
7. Being Overweight
8. Sedentary lifestyle

Essential Component for Counseling Of Patients With Hiperlipidemia:

I) Counseling Regarding Diseases:

Patients should be counseled regarding types (good and bad)and target levels of cholesterol for living healthy life .They should be made aware about causes and symptoms of hyperlipidemia.

II) Counseling Regarding Lifestyle Modification:

1. Healthy Diet:

Reducing the intake of saturated and trans fat is the greatest strategy to lower your cholesterol from dietary perspective .Red meat and dairy product with whole milk should be reduced. The dairy product with skim milk reduced fat or no fat should be reduced .Avoid fries food and use healthy oil for cooking. Eat fruits, vegetables whole grain ,chicken and nuts.

2. Physical Activity:

HDL cholesterol is decreased by a sedentary lifestyle. Less HDL indicates there is less good cholesterol to eliminate artery clogging bad cholesterol. Along with healthy diet physical activity is most important to avoid hyperlipidemia.

3. Smoking Cessation:

Smoking reduces HDL Cholesterol and increases risk of coronary artery disease. Additionally smoking increases the risk of heart disease in combination with other risk factors including diabetes and high blood pressure. Smokers can lower their LDL cholesterol and raise their HDL cholesterol by giving up smoking.

4. Weight Loss:

Obesity tends to increase bad cholesterol while lowering good cholesterol. However even a small weight loss of between 5 and 10% can help lower cholesterol.

III) Counseling Regarding Medication:

The patients of hyperlipidemia should be counseled for the possible side effects and contraindications of the prescribed medication and should be advised to meet the doctor in case of any adverse reaction.

Following are some points given in the table below discussed with patients:

Drug Classes	Side Effects	Contraindications
HMG CoA Reductases Inhibitors (Statins)	Myopathy , increase liver enzyme.	Absolute :Active or Chronic disease Relative :Concomitant use of certain drugs.
Bile acid Sequestrants	GI stress ,constipation ,decreased absorption of other drugs.	Absolute :Disbetalipoproteinaemia TG>400mg/dl Relative : TG > 200mg/dl
Nicotinic acid	Flushing, Hyperglycemia, hyperuricemia or gout,GI distress, hepatotoxicity.	Absolute: Chronic Liver disease, severe gout. Relative: Diabetes, Hyperuricaemia, peptic ulcer disease.
Fibric acid	Dyspepsia, gallstones, myopathy	Absolute: Severe renal disease, Severe hepatic disease.
Fibrates	Abdominal Pain, Diarrhea,constipation, dizziness, headache	Severe Hepatic impairment, hypoalbuminaemia, primary biliary cirrhosis, gall bladder disease ,nephritic syndrome, pregnancy

5. Requirements:

Dummy prescriptions containing lipid lowering medications, card sheet, computer etc.

6. Requirements used:

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7. Activities:

Activity – I

Assign following counseling task to the students After enacting the counseling task ,the students note down the key points which must be considered while counseling.

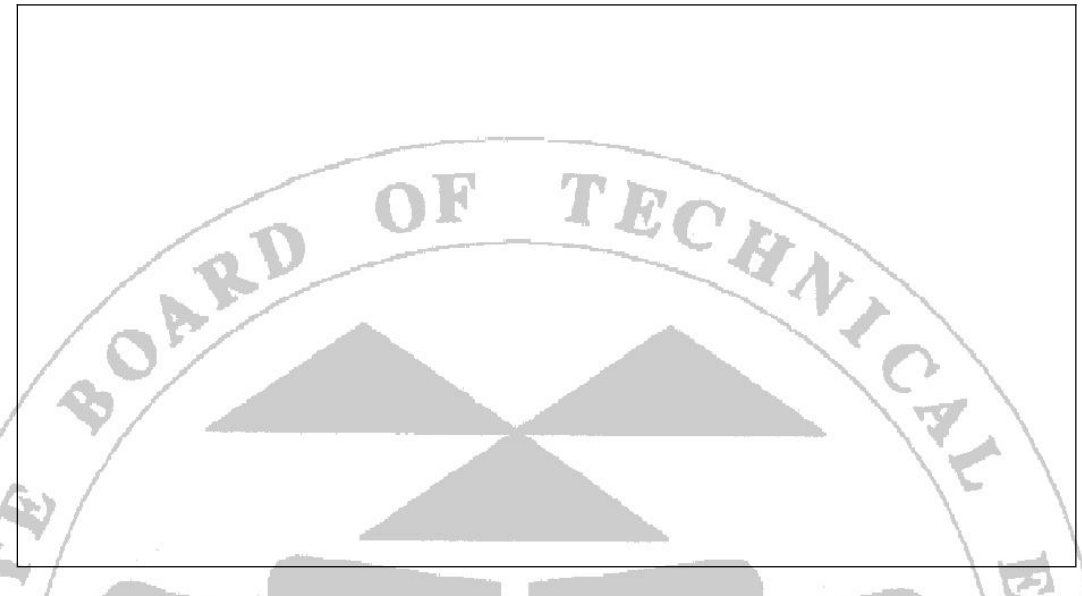
A patient of 55 years with hyperlipidemia has visited your pharmacy with a prescription. Dispense the prescribed medication and counsel him /her for lifestyle modification.

Prescribed drug:

Key points to be considered while counseling:

Activity – II

Create an e-leaflet containing pictorial and textual information about diet for the management of hyperlipidemia using MS power/ suitable software.



8. Result:

---

9. References/ Further Reading Material:

1. https://my.clevelandclinic.org/health/diseases/21656-hyperlipidemia
2. https://my.clevelandclinic.org/health/drugs/22385-fibrates
3. https://www.ncbi.nlm.nih.gov/books/NBK547756/
4. https://www.ncbi.nlm.nih.gov/books/NBK549906/

10. Practical Related Questions:

1. Describe medication used for treatment of hyperlipidemia.
2. Describe lifestyle modification in hyperlipidemia treatment.
3. Describe hyperlipidemia and explain types of Cholesterol.
4. Give the causes of hyperlipidemia.
5. What type of food must be consumed to manage hyperlipidemia.

(Space for answers)

11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 22

Patient Counseling for the Management of Rheumatoid Arthritis

1. Aim:

To counsel the simulated patient for the management of Rheumatoid Arthritis.

2. Practical Significance:

Rheumatoid arthritis inflammatory autoimmune disorder that mostly affect the joints RA results in joints discomfort joints stiffness, edema and loss of function. By educating the patients of RA about lifestyle modification and medications, pharmacist can improve the quality of their life. In these experiments students will learn about various aspects essential for counseling of the patients with RA and also learn to counsel the patients through role-play.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Define rheumatoid arthritis and state the risk factors for rheumatoid arthritis.	CO2,CO3, CO4	BTL 1
PrO 2	Discuss the management of rheumatoid arthritis.	CO2,CO3, CO4	BTL 2

4. Relevant Theoretical background:

Rheumatoid Arthritis:

Rheumatoid Arthritis is a chronic autoimmune disorder that impairs joints movements and produces joint pain, stiffness and edema. It commonly affects the joints in the hands and feet. RA can also affects other organs like the eyes, skin, or lungs under certain circumstances. The joints stiffness is worst in the morning. The stiffness might extend for an hour or two. The joints movements help to temporarily relieve the stiffness. As a morning sickness is uncommon in other disorders it is an indication of RA.

Symptoms of Rheumatoid Arthritis-

1. Pain /aching in more than one joints
2. Stiffness in more than one joints
3. Tenderness or swelling in more than one joints
4. Weight loss
5. Fever
6. Fatigue or tiredness
7. Weakness

Risk Factors for Rheumatoid Arthritis:

Rheumatoid Arthritis is caused by immunological reactions in which the immune system attacks the body's own healthy cells. Although the precise causes of RA are unknown ,some factors can increase the likelihood of developing the disease.

1. Age: Although RA can start at any age, the like live hood increases with age. Adults in their sixties are most likely to get RA.
2. Sex: Women are two to three times as likely than males to have RA.
3. Genetics inherited traits: People who inherit certain genes like HLA (Human leukocyte antigen) class II genotype, are more to develop RA. The risk of RA will increase in these people if they are obese or are smokers.
4. Smoking: Cigarette smoking raises a chance of having RA and can make the conditions worse .

5. Not giving birth: Women who have never given birth may be more likely to get RA.
6. Early life exposure: Some childhood exposures may raise the likelihood of acquiring RA as an adult.
7. Obesity: Obesity can increase the possibility of developing RA.

Essential Component for Counseling of Patients with Rheumatoid Arthritis:

I) Counseling Regarding Diseases:

Patients should be counseled regarding the rheumatoid Arthritis as is a autoimmune can not be cured however with the proper management strategies, the quality of life can be improved.

II) Counseling Regarding Lifestyle Modification:

1. Rest When Needed:

Rest is important if your joints are painful. Limit your activities until your symptoms improve. Gradually start your normal activities when you can do them without pain. Avoid motions and activities that cause strain on your joints, such as heavy exercise and lifting.

2. Use Ice or Heat:

Both can help decrease swelling and pain .Ice may also help prevent tissue damage. Use an ice pack, or Put crushed ice in a plastic bag. Cover it with towel and place it on your joint for 15 to 20 min every hour or as directed .You can apply heat for 20 min every 2 hours. Heat treatment includes hot packs, heat lamps, warm bath, showers.

3. Elevate Your Joints:

Elevation helps reduce swelling and pain. Raise your joints above the level of your heart. as often as you can. Prop your joints on pillows to keep it above your heart comfortably.

4. Eat Variety of Healthy Food:

Healthy food includes fruits, vegetables, whole grain breads, low fat dairy product ,beans, lean meat and fish. Ask if you need to be special diet .A diet rich in Vit.D and calcium may decrease your risk of osteoporosis. Foods high in calcium include milk, cheese broccoli and tofu. Vit. D may found in meat ,fish, fortified milk ,cereals and bread. Ask if you need calcium or Vit.D supplements.

5. Maintain Healthy Weight:

This may decrease strain on joints in your back, knees, ankle and feet. Ask your healthcare provider what a healthy weight is for you. Ask him / her to help you create weight loss plan if you are overweight .Exercise can help you maintain healthy weight.

III) Counseling Regarding Medication:

The patients of hyperlipidemia should be counseled for the possible side effects and contraindications of the prescribed medication and should be advised to meet the doctor in case of any adverse reaction.

Following are some points given below discussed with patients:

1. Disease modifying anti-rheumatic drugs (DMARD's)-

One of the most important drugs in the arsenal for treating rheumatoid arthritis, DMARDs can often slow or stop RA from getting worse by interrupting the immune process that promotes inflammation. But they may take up to 6 months to be fully effective. eg. Hydroxy chloroquine sulphate (plaquenil), Leflunomide (Arava) ,Methotrexate (Rheumatrex), Tofacinib(Xeljanz).

2. Biologic Response Modifiers (a type of DMARD's):

Biologic Response Modifiers are a type of DMARD.The target part of the immune system response that leads to inflammation and joint damage. By doing this they can improve your condition and help to relieve symptoms. Eg. Abatacept (Orencia),Adalimumab (Humira),Anakira(Kineret).

3.Steroids -

They are strong anti-inflammatory drugs that can also block other immune responses.Several man made steroid called corticosteroids help relieve symptoms and may stop or may slow joint damage.we receive this RA drugs by pill .eg.Betamethasone Injectable(celstone),Prednisone (Rayos),Methylprednisolone(Medrol).

4. NSAIDS:

NSAID'S works by blocking an enzyme that promote inflammation.By reducing inflammation.NSAID's help to reduce swelling and pain ,but they are not effective in reducing joint pain.These drugsshould be taken with other RA drugs. eg. Celecoxib (Celebrex),Diclofenac Sodium(Voltaren),Ibuprofen (Advil,Motrin).

5. Surgery:

Surgery may be done to take out all parts of the joints and put in artificial joints .this may help toreduce the pain and repair the joints.Surgery may also be done if you have joint infection or if the bones in your spine are pressing on nerves.

5. Requirements:

Anti Rheumatic drugs.

6. Requirements used:

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7. Activities:

Activity – I

Assign following counseling task to the students After enacting the counseling task, the students note down the key points which must be considered while counseling.

A patient of 45 years with RA has visited your pharmacy with a prescription .Dispense the prescribed medication and counsels him /her for lifestyle modification.

Prescribed drug-

Key points to be considered while counseling:

Activity – II

Create an e-leaflet containing pictorial and textual information about diet for the management of Rheumatoid Arthritis using MS power/ suitable software.

8. Result:

---

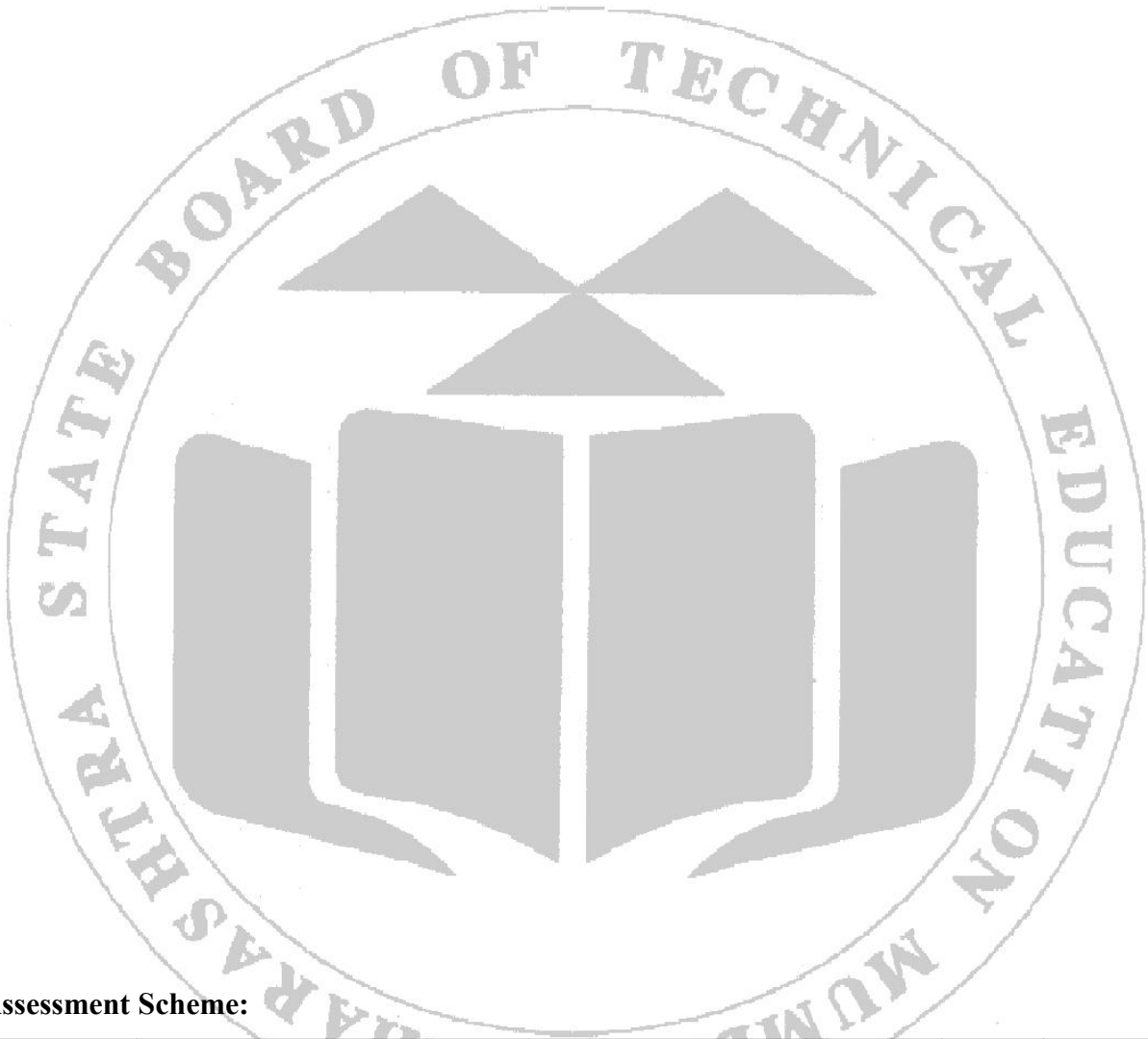
9. References/ Further Reading Material:

1.https://www.arthritis.org/health-wellness/treatment/treatment-plan/tracking-your-health/foods-that-can-help-ra-symptoms
2. https://www.webmd.com/rheumatoid-arthritis/rheumatoid-arthritis-medications
3. https://versusarthritis.org/about-arthritis/treatments/drugs/
4. https://www.healthline.com/health/rheumatoid-arthritis/medications-list

10. Practical Related Questions:

1. What is rheumatoid arthritis?.
2. State the symptoms and risk factors for rheumatoid arthritis.
3. What are DMARD'S Agents?
4. Define arthritis and give it's types.
5. What changes should be made in the lifestyle of a patient suffering from R.A.?

(Space for answers)



11. Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 23

Patient Counseling for the Management of Minor Ailments

1. Aim:

To counsel the simulated patient for the management of Minor Ailments.

2. Practical Significance-:

Minor ailments are medical condition that resolve on their own and can be reasonably self diagnosed and self treated with over the counter drugs. Every day, pharmacist deal with people who are seeking treatment for minor ailments. In these experiments students will learn about various aspects essential for counseling of the patients with minor ailments like headache, diarrhea and skin infection and also learn to counsel the patients through role-play.

3. Practical Outcomes(PrOs):

After completion of this practical students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Explain minor ailments with it's causes, symptoms, and the risk factors.	CO2,CO3, CO 4	BTL 1,BTL 2, BTL 3, BTL 4.
PrO 2	Discuss the management of minor ailments through lifestyle modifications, exercises and medications.	CO2,CO3, CO 4	BTL 1,BTL 2, BTL 3, BTL 4

4. Relevant Theoretical background:

Minor Ailments

Minor ailments are generally defined as medical conditions that will resolve on their own and can be reasonably self-diagnosed and self-managed with over-the-counter medications. Examples of minor ailments include headache, back pain, insect bites, heartburn, nasal congestion, nausea, vomiting, dyspepsia, diarrhea, constipation ,worm infestation, respiratory tract infections oral and dental disorder etc

Some common e. g. of minor ailments are given below:

1. Dyspepsia
2. Gastro-esophageal reflux disease (acid reflux)
3. Constipation
4. Nausea and vomiting
5. Non Infectious diarrhea
6. Hemorrhoids
7. Allergic Rhinitis
8. Cough
9. Nasal congestion
10. Sore throat
11. Headache and migraine
12. Minor muscle pain
13. Minor joint pain
14. Minor sleep disorders
15. Dysmenorrhea (menstrual cramp)
16. Oral ulcer
17. Oral fungal Infection
18. Threadworm and pinworm

19. Herpes simplex

A. Headache:

Headache is defined as severe to mild pain in any part of the head that may be accompanied by other symptoms.

Types of Headache:

There are two categories of headache –Primary and Secondary.

A primary headache is a one that is caused by another illness or condition. Primary headache is triggered by stress, lack of sleep, alcohol, skipping meal, exhaustion and specific processed foods.

Secondary headache is caused by other conditions such as injury, infection or illness. They can be extremely severe or completely harmless.

For common types of headaches that the patient often complaint about include-

1. Sinus Headache.
2. Tension Headache.
3. Migraine Headache.
4. Cluster Headache.

Types	Symptoms	Duration	Class
Sinus Headache	Pain in the face, sinuses, eyes, ears, forehead congestion, itching ,runny nose, fever, swelling in face.	Severe days to weeks if treated	Secondary
Tension Headache	Dull pain on either side of the head and pressure across the forehead	30 min to several hours	Primary
Migraine Headache	Pain in the face or neck, throbbing in one area, sensitivity to light and sound, nausea, distorted vision.	4 to 72 hours if untreated	Primary
Cluster Headache.	Severe pain on one side of the head usually around the eye, accompanied with a dropping eyelid, small pupil, runny nose or redness on the same side of the head.	Weeks to severe months or several months th seversl years.	Primary

Causes of Headache:

1. Alcohol
2. Changes in eating or sleeping pattern
3. Depression
4. Emotional stress related to family and friend work, or school
5. Excessive medication use
6. Eye, neck, or back strain caused by poor posture
7. Lighting
8. Noise
9. Weather changes

Component for the Management of Headache:

I. Lifestyle Modification: Don't smoke, No Alcoholism, Decrease or avoid caffeine ,sleep properly, Exercise, Acupuncture, Behavioral therapy, Biofeedback Therapy.

II. Medication for Headache:

Drug	Maximum daily limit (mg)	Side Effects	Contraindication
Paracetamol	4000	Nausea, stomach pain and dark colored urine	Hypersensitivity, liver failure, renal failure.
Ibuprofen	1200	Stomach pain ,heartburn, nausea, vomiting ,gas ,constipation ,diarrhea	Hypersensitivity ,asthma, urticaria, allergy to NSAID's, Peptic ulcer.
Naproxen Sodium	440	Upset stomach, nausea, heart burn, headache, drowsiness or dizziness	Recent MI /History of heart disease ,hypertension, congestive cardiac failure ,Fluid Retention, dehydration, peptic ulcer ,Bleeding or coagulopathy conditions ,Hepatic disease, Renal Disease, Asthma, Sodium restrictions and chronic alcohol use.
Aspirin	4000	Rash, gastrointestinal ulceration, Abdominal pain ,upset stomach heartburn, drowsiness, headache ,cramping ,nausea, gastritis and bleeding.	Allergy to NSAID"s and in patients with asthma ,rhinitis and nasal spray.

B. Common Cold:

The common cold is a mild viral infection that affects the nose, throat, sinuses,and upper respiratory tract. It is most common in rainy and winter season. Approximately two out of three individuals heal over a time without seeking medical attention .There are about 200 distinct viruses types that can cause the common cold eg.Rhinoviruses, Corona viruses,Influenza viruses etc.

Risk Factors for Common Cold:

1. Infants and children,who are more susceptible to the common cold due to maturing immune system
2. Chronic medical conditions
3. Staying indoors and in close contact with infected individuals
4. Low Humidity, leading to dry nasal passages which are more susceptible to cold viruses
5. Inadequate or poor quality sleep
6. Psychological stress
7. Smoking

Symptoms of Common Cold:

Sore throat, Runny nose, Coughing , Sneezing, Stuffy nose, post nasal drip, Mild Headaches and body aches, mild to moderate fever ,watery eyes, General malaise.

Medication for common cold in adults:

Symptoms	Drugs	Dose And Frequency	Adverse Effect And Contraindications
Fever, headache, sore throat, general myalgia (muscle ache and pain)	Ibuprofen	200mg every 4-6 hours	AE- NSAID's may cause severe stomach bleeding CI- Ulcers, Bleeding
	Naproxen	220mg every 8-12 hours	
	Aspirin	500-1000 mg every 4-6	

		hours	Disorders ,Coagulations
	Paracetamol	650-1000 every 4-6 hours	
Rhinitis,itchy,watery eyes,sneezing	Chlorpheniramine	4mg every 4-6 hours	AI- Marked Drowsiness may occur. CI- Glaucoma, alcoholic drinks,
	Cetrizine	5-10 mg per day	
	Fexofenadine	60 mg BD	
	Diphenhydramine	25 -50 mg every 8 hours	
Nasal Congestion,Nasal drainage	Pseudoephedrine	60 mg every 4-6 hours	AE –Nervousness, dizziness, sleeplessness, CI- MAO inhibitors
	Phenylephrine	10-20 mg every 4-6 hours	
	Xylometazoline 0.1%	every 8- 10 hours	AE –Temporary burning, stinging, Sneezing, increasednasal discharge CI- Heart Disease, high blood pressure ,thyroid disease
	Oxymetazoline 0.05%	every 10 -12 hours	
Excess mucus	Guiphenesin	200-400mg every 4 hours	---

Self Care Advice for Common Cold:

1. Take a plenty of fluids (Warm drinks may soothe a sore throat and loosen congestion).
2. Avoid drinks that can cause dehydration (caffeine or alcohol).
3. Use vaporizers to worm and moisten the air.
4. Inhale steam during a hot shower to receive a blocked or runny nose.
5. Suck a lozenge and drink honey and lemon to relieve sore throat and cough.
6. Eat regular, healthy meals and limiting sugar salt, and fat intake.
7. Limit alcohol intake.
8. Take a plenty of sleep and rest.
9. Avoid smoke, air pollutant and dust.
10. Use isotonic or hypertonic saline solutions to rinse the nasal cavities.

Patients Interaction Steps for Minor Ailments:

If a patient with minor ailments approaches a pharmacist for medication, following steps should be taken by pharmacist:

1. Obtain general information about the patient.
2. Ask the patient weather he or she have seen a prescriber before coming to pharmacy.
3. Assess the presenting symptoms of the patients
4. Decide a tentative course of action.
5. Inquire about the patients health status including past and current medication use ,relevant family or social history,vaccination record,allergy or intolerance history for the proposed drug etc.
6. State recommendation
7. Provide information on proper medicine use.(use of nasal spray/drop etc.)

5. Requirements-

Medications used in the treatment of Headache, Common cold and Decongestion etc.

6. Requirements used:

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7. Activities:

Activity – I

Assign following counseling task to the students After enacting the counseling task, the students note down the key points which must be considered while counseling.

A patient of 45 years has visited your pharmacy and asks for a medicine on Headache. Considering the patient interaction steps, dispense a suitable medicament and counsel a patient for lifestyle changes, Frequency of administration of medicaments ,side effects, and contraindications.

Complete the following form after role play-

1. General information about the patients

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2. Weather The patient has seen a prescriber before coming to pharmacy

---

---

3. Presenting Symptoms of patients

---

4. Tentative course of Action

5.Patients Health and Medical Status

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6. Recommendation

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7. Information provided on proper medication use

Activity – II

Create an e-leaflet containing pictorial and textual information about self in Headache and Common cold using MS power/ suitable software.

8. Result:

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9. References/ Further Reading Material:

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5754123/
2. https://www.ocpinfo.com/practice-education/expanded-scope-of-practice/minor-ailment/
3. https://my.clevelandclinic.org/health/diseases/12342-common-cold
4. https://www.1mg.com/diseases/common-cold-589?wpsrc=Google+Organic+Search

10. Related Questions:

1. What do you mean by Minor Ailments? Give any four examples.
2. Define Headache and state its types.
3. What is common cold? Give the causes of common cold.
4. Give the patient interaction steps to be followed by a pharmacist in case of minor ailments.
5. What is the preventive treatment for headache?

(Space for answers)

10. Assessment Scheme:

Particular	Understanding the basic concept (Intellectual skill)	Performance of the experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 24
Handling and Administration Techniques for Various Dosage Forms

1. Aim:

To demonstrate the handling and administration techniques for various dosage forms.

2. Practical Significance:

For the treatment of any disease or disorder, the accuracy of doses is very important and hence precaution should be taken while measuring the dose of medication. Also, hygienic conditions should be maintained during handling and administration of dosage forms like eye drops and nasal drops to prevent bacterial contamination. The droppers and measuring cups are the most often used home measuring devices for oral liquids. Tablets are the most commonly used and preferable dosage form due to its ease of administration, cheaper cost and elegance. The handling and administration techniques differ for different types of tablets. Transdermal patches offer various benefits over oral dosage forms such as avoiding the first pass effect, preventing gastro-intestinal tract irritation. But during the use of patches hygienic conditions should be maintained to prevent the bacterial contamination and substances which may cause skin irritation should be avoided. Appropriate knowledge or skill is required for giving enema that involves insertion of liquid medicament into the rectum for bowel evacuation of the patient or administration of medication to the patient. Suppository is an alternative to oral route when high systemic concentration of drug is required. Since they melt at body temperature proper care should be taken during its handling and administration.

In this experiment, the students will learn the appropriate handling and administration of these various dosage forms, so that they can demonstrate the same to the patients while dispensing relevant medications.

3. Practical Outcomes (PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Explain and demonstrate the techniques for appropriate handling and administration of oral liquids, eye drops and nasal drops to the patients.	CO2, CO3, CO4	BTL2, BTL3
PrO 2	Check the correctness of administration of the oral liquids, eye drops, nasal drops, tablets, transdermal patches, enemas and suppositories.	CO2, CO3, CO4	BTL5
PrO 3	Describe the correct methods of administration of tablets, transdermal patches, enemas and suppositories.	CO2, CO3, CO4	BTL2
PrO 4	Utilize the appropriate techniques for handling tablets, transdermal patches, enemas and suppositories.	CO2, CO3, CO4	BTL3

4. Relevant Theoretical background:

4.1 Oral Liquids:

Oral liquid pharmaceutical dosage forms are widely accepted and used, especially in pediatric and geriatric care. Their safety and effectiveness depend on the right dosing measurement. Dose measurement is a common step prone to error with drug administration, especially with liquid formulations such as syrups, suspensions, elixirs, linctus, and solutions unless the packaging is supplemented with the correct administration containers. These dosage forms include common

therapeutic categories, for instance, antipyretics, analgesics, anti-cough, and flu remedies, antibiotics, laxatives, and multivitamins. Most people tend to use household spoons for oral dosing. Most commonly available household spoons include 5 ml teaspoons, 10 mL dessert-spoon, 15 mL soup spoons, and 15 mL tablespoons, which vary greatly in their design and volumes that they can accommodate .

Figure 24.1: Liquid Dosage Forms

The variation in shapes, sizes, forms, and make of these household spoons leads to dosing errors. Dosing and administering medication for the pediatric population is even more difficult as compared to the adult population as they need to be adjusted according to age and body weight. As a result, children are more vulnerable to dosing errors.

Calibrated devices such as dosing cups, oral droppers, and oral syringes have been recommended to measure and administer liquid medication by the caregivers of patients.

4.1.1 Measuring Cups:

Measuring cups are frequently used as measuring tools and are frequently found on over-the-counter (OTC) goods.

Figure 24.2: Measuring Cup

Measuring cups are simple and easy to use but its accuracy is doubtful in case of small doses. Viscous liquids are difficult to administer with a measuring cup.Cups sizes may differ according to the manufacturers hence dose taken from different cups may not be equivalent.

4.1.2 Dropper:

It contains a glass/ plastic tube which has marking scale drawing the accurate dose of liquid medications. It has a hollow rubber bulb at one end and small hole at the other to eject the drops it contains.

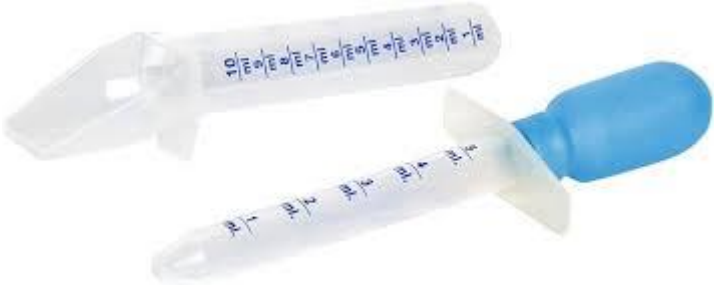

Figure 24.3: Dropper

Droppers are simple and easy to use. Administration of the complete dose of viscous liquids is difficult using droppers.

4.1.3 Administration Techniques for Oral liquids:

1. Counsel the patient or caregiver regarding the use of dosing device , such as dropper, measuring cup that is included with the medication for administration of oral liquids. Suggest suitable device if the product does not include dosing device.
2. Advise the patient or caregiver not to use household measurement devices like spoon or closure of container.
3. Always be aware of a child's current weight when giving OTC liquids. It is recommended to calculate dose of a child based on weight rather than age to achieve the accuracy in doses.
4. Counsel the patient or caregiver to keep the liquid medication at eye level while measuring it. Dosage cups should be placed at flat surfaces for measuring instead of holding them in one hand.
5. Tell the patient or caregiver to always wash the dosage device after using it to administer the medication inorder to avoid bacterial contamination.

4.2 Eye Drops:

Eye drops are liquid medication to be applied in very small amounts to the eyeball. The most common active ingredients include polyethylene glycol, polyvinyl alcohol, propylene glycol, carboxymethylcellulose, povidone, glycerine, and mineral oil.

Figure 24.4: Eye Drops

Eye drops are used to treat a variety of eye disorders, such as glaucoma (high eye pressure), conjunctivitis (inflammation of the eye), and dry eye disease.

They may also be recommended following eye surgery, when it may be necessary to lessen swelling or avoid infection.

There are primarily three categories of eye drops: Artificial tears. Allergy drops. Anti-redness drops.

4.2.1 Administration technique of Eye drops:

I. Read your doctor's instructions.

1. Use your drops exactly when and how your doctor tells you to.
2. If you need to take more than one type of eye drop at the same time, wait 3 to 5 minutes between the different kinds of medication.

II. Get prepared.

1. Always wash your hands before handling your eye drops or touching your eyes.
2. If you're wearing contact lenses, take them out — unless your ophthalmologist has told you to leave them in.
3. Shake the drops vigorously before using them.
4. Remove the cap of the eye drop medication but do not touch the dropper tip.
5. Clipping from a magazine to the ceiling, so that your eyes can focus on it.
6. Use one hand to pull your lower eyelid down, away from

III. Place the drops into your eye.

1. Tilt your head back slightly and look up.
2. Some people find it helpful to focus on a specific point on the ceiling. It might help to tape a photo or look away from the eye. This forms a pocket to catch the drop.
3. Hold the dropper tip directly over the eyelid pocket.
4. Don't touch the bottle to your eye or eyelid.

Figure 24.5: Administration of Eye Drops.

IV. Close your eyes and don't blink.

1. Apply gentle pressure to your tear ducts, where the eyelid meets the nose.
2. Hold the tear ducts closed for a minute or two—or as long as your ophthalmologist recommends—before opening your eyes.

Figure 24.6: Administration of Eye Drops

II. Wash your hands.

1. It's important to wash your hands with soap and water after handling medication and touching your face.

4.3 Nasal Drops:

Nasal drops are medicated liquid instilled into the nostrils with a medicine dropper.

These medications include phenylephrine hydrochloride (Neo-Synephrine) and oxymetazoline hydrochloride (Afrin, Dristan, Sinex). You can purchase them from a store.

Figure 24.7: Nasal Drops

This drug is used to temporarily relieve nasal congestion brought on by a variety of illnesses, such as the common cold, sinusitis, hay fever, and allergies. It reduces edoema and congestion by constricting the blood vessels around the nose.

4.3.1 Administration technique of Nasal drops:

1. Gently blow your nose.
2. Thoroughly wash your hands with soap and water.
3. Verify that the dropper tip is not damaged or chipped.
4. Avoid contacting your clean nose with the dropper tip.
5. Tilt your head as far back as you can, or lay on a flat surface (like a bed) with your back straight and dangle your head over the side.
6. Add the appropriate amount of drops to your nose.
7. Hold the position for a short period of time.
8. Make use of warm water to wash the dropper tip.
9. Cap the bottle as soon as possible.
10. Wash your hands to get any medication off.

Figure 24.8: Administration of Nasal Drops

4.4 Tablet:

Tablet is defined as a compressed solid dosage form containing medicaments with or without excipients. According to the Indian Pharmacopoeia Pharmaceutical tablets are solid, flat or

biconvex dishes, unit dosage form, prepared by compressing a drugs or a mixture of drugs, with or without diluents. They vary in shape and differ greatly in size and weight, depending on amount of medicinal substances and the intended mode of administration.

4.4.1 Different types of Tablets:

(A) Tablets ingested orally:

1. Compressed tablet, e.g. Paracetamol tablet
2. Multiple compressed tablet
3. Repeat action tablet
4. Delayed release tablet, e.g. Enteric coated Bisacodyl tablet
5. Sugar coated tablet, e.g. Multivitamin tablet
6. Film coated tablet, e.g. Metronidazole tablet
7. Chewable tablet, e.g. Antacid tablet

(B) Tablets used in oral cavity:

1. Buccal tablet, e.g. Vitamin-c tablet
2. Sublingual tablet, e.g. Vicks Menthol tablet
3. Troches or lozenges
4. Dental cone

(c) Tablets administered by other route:

1. Implantation tablet
2. Vaginal tablet, e.g. Clotrimazole tablet

(D) Tablets used to prepare solution:

1. Effervescent tablet, e.g. Dispirin tablet (Aspirin)
2. Dispensing tablet, e.g. Enzyme tablet (Digiplex)
3. Hypodermic tablet
4. Tablet triturates e.g. Enzyme tablet (Digiplex)
5. Tablet Triturate

4.4.2 Instructions for Appropriate Handling and Administration of Conventional, Sustained / Controlled Release, Multilayer and Targeted Tablets:

1. Wash the hands with soap and dry them.
2. Take the tablet bottle/strip and a glass filled with drinking water.
3. Open the bottle or strip of the tablet. In case of the bottle do not forget to close the mouth of bottle with cap after taking the tablet.
4. Place the tablet on the tongue and swallow it with water.
5. In case of difficulty in swallowing, take water in soda bottle first. Place the tablet on the tongue and close the mouth around the opening of the bottle. Tilt the head back keeping the mouth sealed around the water bottle and suck water followed by swallowing the tablet with water.

4.4.3 Instructions for Appropriate Handling and Administration of Following Tablet:

1. Orally disintegrating medication: Remove the tablet from the packaging carefully. Place the tablet o n the top of the tongue and avoiding the chewing of the tablet. Water is not Required.

2. Sublingual Tablet: Place the tablet under the tongue and allow to dissolve completely.Do not swallow the dissolved medication.

3. Buccal Tablet: Place the tablet in mouth against inner cheek and gums. Allow the tablet to dissolve completely .Do not swallow the dissolved medication.

4. Effervescent Tablet: dissolve the Prescribed number of tablet in suitable amount of cold water (120 ml per tablet).Once the tablets are completely dissolved, drink the liquid slowly.

4.5 Transdermal Patches:

Transdermal patches are a vehicle for delivering medication through an adhesive patch placed on the skin. The patch has a small reservoir containing the drug or medication, which is blocked by a membrane that controls the release of the drug to the skin. The entire process is activated by the individual's body heat.

4.5.1 Instructions for Appropriate Handling and Administration of Transdermal Patches – Preparing:

1. Read all instructions that come with your patch. The instructions will tell you where to place the patch, how long to wear it, and when to remove and replace it.

2. Wash your hands with soap and water. If water isn't available, you can use hand sanitizer instead.

Applying the Patch:

1. Prepare and clean the skin to remove any dirt, lotions, oils, or powders. Clean the skin using warm water alone or with a clear soap. Avoid scented soaps or soaps that contain lotion. Dry the skin with a clean towel or paper towel.

2. Open the package carefully by tearing it open or using scissors. Avoid tearing or cutting the patch itself. If you do tear or cut the patch, don't use it. Throw away the damaged patch as directed in step 3 above.

3. Take the patch out of the packaging. Remove the protective liner on the patch as directed by the patch instructions. Be careful not to touch the sticky side of the patch. **Note:** If the patch's protective liner contains two parts, first peel off one part of the liner. Apply the exposed sticky part of the patch to the skin and press down. Next, peel back the second part of the liner and press the entire patch down.

4. Place the patch, sticky side down, onto the clean area of skin. Using the palm of your hand, press down on the patch to make sure the patch is firmly attached to your skin.

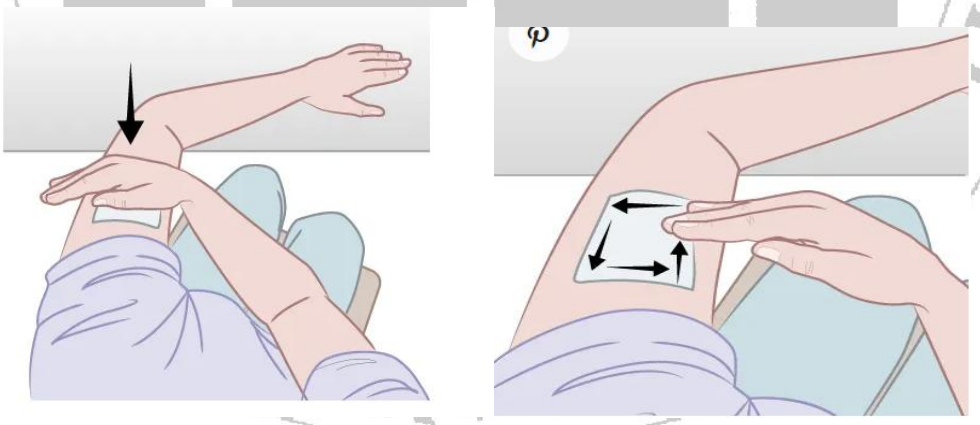

Figure 24.9: Transdermal Patches

4.6 Enema:

Enemas injections of fluids used to cleanse or stimulate the emptying of bowel. Constipation is a severe condition that slows down the movement of your stool and makes it hard and difficult to excrete. So, for such chronic problem treatment required ie. Enema. They are also used to clean the bowel before any test or surgery.

4.6.1 Types of Enemas:

1. Cleansing Enema: Are of two types –i) Large volume enema ii) Small volume enema
2. Oil retention Enema

3. Return Flow Enema
4. Cooling Enema
5. Rectal instillation of Medication

Figure 24.10:Enema Kit Figure 24.11:Enema Bottle

4.6.2 Instructions for every enema kit are different, but most follow these general steps:

1. Choose a quiet place with space to lie down, ideally a bathroom, and have towels, a timer, and the enema kit ready.
2. Remove all clothing from the lower half of the body.
3. Wash the hands with soap and hot water and dry them thoroughly.
4. Lay a towel on the floor and lie on the left side of the body if right-handed or on the right side of the body if left-handed.
5. Bend the knee of the topmost leg, and place a rolled towel underneath the knee to support it.
6. Remove the cap from the nozzle of the enema.
7. Gently insert the tip of the nozzle into the anus, and continue inserting it 10 centimeters (3–4 inches) into the rectum.
8. Slowly squeeze the liquid from the container until it is empty, then gently remove the nozzle from the rectum.
9. Wait for the enema to take effect. This can take anywhere from 2 minutes to 1 hour, and the kit's instructions should give a more specific estimate.
10. Go to the toilet as usual to empty the bowels.

4.7 Suppositories:

A form of medicine contained in a small piece of solid material, such as cocoa butter or glycerin, that melts at body temperature. A suppository is inserted into the rectum, vagina, or urethra and the medicine is absorbed into the bloodstream.

4.7.1 Types of suppositories:

1. Rectal Suppositories: These suppositories go in your bottom.They are about an inch long and have rounded/bullet shaped tip. Anyone might take them to treat allergy, anxiety, constipation,fever,hemorrhoids,motion sickness, nausea, pain and itching, seizures, mental health problem such as schizophrenia.

2. Vaginal Suppositories: These suppositories are oval shaped. We can use them for bacterial and Fungal infection, vaginal dryness, birth control.

4.7.2 Instructions for Appropriate Handling and Administration of Rectal Suppositories:

1. Before inserting suppositories wash the hands with soap and warm water or hand sanitizer to prevent the infection and to get drug residue off the hands.
2. Wear the hand gloves.
3. Remove foil wrapper.
4. Moisten the suppository with water or water based lubricant (If required).
5. Lie on the left side and bend the right knee up to the chest.
6. Gently push suppository into the rectum with a pointed end directed towards the anal opening.
7. Suppository should be pushed deep enough(children 0.5 inch,Adult1 inch).
8. Do not put the suppository into the Faeces.
9. Hold the buttocks together for few seconds and stay lying on the same side for 5 min.
10. Wipe the anal area with the finger. Wash the hand with the soap.

Figure 24.12:Rectal Suppositories

4.7.3 Instructions for Appropriate Handling and Administration of Vaginal Suppositories:

1. Before inserting suppositories wash the hands with soap and warm water or hand sanitizer to prevent the infection and to get drug residue off the hands.
2. Wear the hand gloves.
3. Remove foil wrapper, Remove the suppository from it's packaging and liberly lubricate the suppository and dominant hand's index finger. Supplied medication must be at room temperature.
4. Knees should be bent toward the chest as lay down.
5. Place the suppository in the provided applicator after removing the packaging.
6. Insert grease suppository in the provided applicator after removing packaging .
7. Remove finger, then wipe off extra lubrication.

Figure 24.13:Vaginal Suppositories

5. Requirements:

Measuring cups, dropper, marketed oral liquid, eye drop, nasal drop, Tablets (conventional ,sublingual,buccal,effervescent tablet), transdermal patches, Enema Accessories, Rectal and Vaginal Suppositories etc.

6. Requirements used:

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7. Activities:

Activity – I

Create an e-leaflet containing pictorial and textual information about appropriate handling and administration techniques for oral liquids/ eye drops/ nasal drops using MS PowerPoint/ MS Publisher or suitable software's (e.g. Canva).

Activity – II

Create an e-leaflet containing pictorial and textual information about appropriate handling and administration techniques for Tablet (any)/transdermal Patch/suppository (rectal or Vaginal) using MS PowerPoint/ MS Publisher or suitable software's (e.g. Canva).

8. Result:

---

9. References/ Further Reading Material:

1.https://www.ngpl.in/dosage-measurements-measuring-cups-dropper-assembly-dropper-bottles.html.

2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9986283/

3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10664896/

4. https://webstor.srmist.edu.in/web_assets/srm_mainsite/files/files/TABLETS.pdf

5.https://www.aaps.ca/blog/a-look-at-transdermal-patches-for-students-of-pharmaceutical-quality-control

6.https://www.safemedication.com/how-to-use-medication/transdermal-patches

7. https://www.webmd.com/digestive-disorders/what-to-know-enemas

8.https://www.cancer.gov/publications/dictionaries/cancer-terms/def/suppository

10. Related Questions:

1. Enlist the various measurements used for administration of oral liquid dosage forms.
2. Give the advantages and disadvantages of measuring cup and dropper.
3. Why we should not share eye drops and nasal drops with others?
4. Enlist the tablets meant to deliver drug in oral cavity.
5. What is transdermal patch?
6. What is enema? Give it's types.
7. What are suppositories? Give it's types.
8. Why should patient remain on their side for 5-10 min after insertion of rectal suppository?

(Space for answers)

11.Assessment Scheme:

Particular	Understanding the Basic Concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

EXPERIMENT NO. 25

Introduction of Community Pharmacy Software and Digital Health Tools

1. Aim:

To introduce with Community Pharmacy Software and Digital Health Tools.

2. Practical Significance:

The Pharmacy Management system also referred to as the pharmacy information systems store data, systematically and controls the use of the medication process within the community pharmacy. These software's help the pharmacist in controlling their stock and choosing the right medicine by using the computer program. The pharmacist makes use of the pharmacy management system to control the pharmacy effectively. Pharmacy software's helps manage medicine information, expiry dates, inventory, billing, and invoices. Pharmacy Management Software (PMS)is used by pharma distributors and retailers, medical stores, hospitals, and independent pharmacies to fulfill medical prescriptions, and manage etc drugs.

Digital health or the use of digital technologies for health, has emerged as a prominent field involving application of information and communication technology to solve health issues. In this experiment the students will learn about application of community pharmacy software in streamlining the daily tasks and workflow in a community pharmacy as well as application of various health tools for improvising the public healthcare system.

3. Practical Outcomes(PrOs):

After completion of this practical, the students will be able to:

PrO	Practical Outcomes	Mapped CO	BTL
PrO 1	Describe various elements of community pharmacy software.	CO1, CO4	BTL2
PrO 2	Explain the use of community pharmacy software for the management of daily operations in pharmacy.	CO1, CO4	BTL2
PrO 3	Handle the community pharmacy software effectively.	CO1, CO4	BTL3
PrO 4	Describe various digital health tools for improvising the public healthcare system	CO1, CO4, CO5	BTL2
PrO 5	Demonstrate the use of various digital health tools.	CO1, CO4, CO5	BTL3
PrO 6	Prepare informative leaflets about digital health tools.	CO1, CO4, CO5	BTL6

4. Relevant Theoretical background:

4.1 Pharmacy Management Software:

Pharmacy management software is any system used in a pharmacy that helps automate the pharmacy workflow. This includes such tasks as reviewing physician orders and preparing medications, controlling the inventory and making drug orders, handling billing and insurance, providing counseling, identifying incompatibilities, and more -- all while following legal protocols and compliances.

Pharmacy Management Software (PMS) is used by pharma distributors and retailers, medical stores, hospitals, and independent pharmacies to fulfill medical prescriptions, and manage otc drugs.

Examples of few commonly used PMS are as follows-

1. Liberty Software: Liberty Software supports independent pharmacies caring for patients in assisted living, retail pharmacies, specialty pharmacy, compounding, and small chains. Liberty Software is the leading pharmacy software solution. Being user friendly, Liberty Software helps pharmacists improve patient safety, increase profitability, and enhance patient care. Features of Liberty Software that helps build pharmacy success include text and email patient alerts, five-star dashboard, auto fills and refill management, advanced bin management, insurance audit reporting, customizable prescription labels etc.

2. Red Book Pharmacy Software: Red book Pharmacy Software is a one-stop chemist software solution to cater to all requirements for running a community pharmacy efficiently. This software has smart offline compatibility options, sothe community pharmacist can now forget about the data backup hassles. The inventory will automatically be updated as soon as he comes online. With the smart demand book feature, the community pharmacist can set up the minimum quantities for medicine stock, saving his time to check stock updates and automatically order the required items.

3. MEDEIL: MEDEIL software is used across 120 Countries and is one of the top rated software in the world. It manages sales and inventory efficiently. This software easily generates invoices and purchase orders as well as sales. It also effectively manages complete financial accounting including book of accounts up to balance sheet. It also allows for User-configurable Email/SMS integration facility for Customers/Suppliers.

4. WinPharm: Winpharm is widely used by independent retail pharmacies, long term care management companies, doctors dispensaries, out-patient care pharmacies, and hospitals. Winpharm is a premier pharmacy management software solution purposely built for doctors dispensaries, independent pharmacies, long-term care pharmacies, and hospitals. It features a full built-in verification module. Winpharm allows users to synchronize their customers with a point of sale (POS) solution, find and add new drugs, and store and scan hard copies of documents. Other key features of this software includes automatic refill processing, coupon management, medication therapy management, and communication via email, text, app, and interactive voice response (IVR).

5. HBS Pharmacy Software: This software supports the retail pharmacies (chain, independent, and hospital outpatient), nursing/institutional home pharmacies, and mail order pharmacy environments. The HBS Pharmacy Software is a highly flexible and fully comprehensive pharmacy management platform that is specifically designed for all channels and types of pharmacies, from conventional retail and mail order to institutional/nursing homes. It runs on Windows and Linux operating systems and offers a host of features that include a POS module, e-prescribing, inventory management, image scanning, and prescription processing capabilities within a single suite.

Advantages of a Community Pharmacy Software includes extensive database, standardized process, paperless work, stock out preventing, customer satisfaction and management of several stores and locations on a single screen.

4.2 Digital Health Tools:

Digital health uses digital tools and platforms to improve health care outcomes, whether it be by providing personalized patient care in person, expanding access to health care through mobile apps, or using neural networks to diagnose diseases. Digital health is the use of digital technologies for health care purposes. The field encompasses a wide variety of digital health technologies and subfields, including health information technology (IT), health informatics, wearable medical devices, software as a medical device (SaMD), personalized medicine, mobile health (mHealth), and telemedicine and telehealth.

Benefits of digital health:

Digital health uses the power of digital technologies, such as advanced analytics, to achieve health care goals. As a result, the field has the opportunity to positively impact everyone from patients to health care providers and professionals.

Some of the most common benefits include:

1. Expanded access to health care to historically marginalized communities.
2. Decreased health care costs for both patients and providers.
3. Improved patient health outcomes through personalized treatment plans.
4. Increased operation efficiency at health facilities, such as Hospitals.
5. Improved diagnoses through machine learning algorithms.

While digital technology has improved health care delivery and outcomes, it's also greatly altered the health care industry as a whole. In this new landscape, entrepreneurs and developers have encountered new regulations imposed by the FDA and health care professionals have had to adapt to new technologies.

5. Requirements:

E-Pharmacy Manager Software or any community pharmacy software installed on PC/ Laptop, internet connection, android mobile, smart watch etc.

6. Requirements used:

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7. Activities:

Activity – I

The subject teacher must show and explain the operation of the installed community pharmacy software to the students.

The subject teacher must form groups of students and give a dummy prescription of medicament available in the stock to each group and instruct them to attend the prescription using software.

Tell the students to download the cash memo, take a print, cut the necessary part of the bill and paste it in the space given below.

Name of the Software:

Activity Performed:

Activity – II

The Subject teacher should demonstrate digital health tools available on National Health Portal of India.

Create an e-leaflet containing pictorial and textual information about any one digital health tool using MS PowerPoint/ MS Publisher or suitable software's (e.g. Canva).

Activity – III

Determine the blood pressure and SpO_2 using a smart watch.

Sr. No	Blood Pressure (mmHg)	SpO_2
1		
2		
3		
Average		

8. Result:

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9. References/ Further reading material:

1.https://www.coursera.org/articles/digital-health

2. https://www.altexsoft.com/blog/pharmacy-management-system/

10. Practical Related Questions:

1. What is community pharmacy software? Give any two names of software used by community pharmacist in your vicinity.
2. What are digital health tools?
3. State any four advantages of Pharmacy management software.
4. Enlist various digital health tools.
5. Give any four key features of Pharmacy software.

(Space for answers)

11. Assessment Scheme:

Particular	Understanding the Basic concept (Intellectual skill)	Performance of the Experiment (Intellectual and motor skill)	Cleanliness & Handling (Affective domain)	Viva-voce / Answers Written	Total	Signature of Teacher
Marks Obtained						
Max Marks	**02**	**05**	**01**	**02**	**10**	

Guidelines for Conduction of Sessional Practical Examination

Subject Name/Abbr: Community Pharmacy And Mgmt.(CMP) **Course Code:**PH-2-J
Subject Code: 20057 **Year:** Second Year
Max Time: 3 Hrs **Max. Marks:** 80

Q.1.Synopsis. **(10)**

Five questions of 02 marks each based on theoretical parts.

Q.2.Experiments. **(50)**

A. Major Experiment. (30)

Review the following prescription and comment whether it complies all legal requirements. Handle and fill the prescription after taking all precautions.

OR

Counsel the diabetic / asthmatic / hypertensive patient (any one to be given) carrying the provided prescription and explain him/ her the use of insulin pen / nebulizer / sphygmomanometer.

OR

Counsel the patient suffering from common cold / diarrhea / rheumatoid arthritis (any one to be given) and advice suitable OTC product to be used.

B. Minor Experiment I. (10)

Prepare the dispensing and auxiliary labels for the given prescription.

OR

Identify any drug interaction present in the above prescription and comment on its resolution.

C. Minor Experiment II. (10)

Determine the blood pressure of the patient by using mercury sphygmomanometer and give your conclusion.

OR

Determiner the capillary blood glucose level using glucometer.

OR

Determine the capillary oxygen level of the patient using pulse oximeter.

OR

Determine the body mass index (BMI) and interpret the body weight status.

Q.3. Viva-voce **(10)**

Viva should be conducted on theory and practical based questions.

Q.4. Progressive Assessment Marks **(10)**

Guidelines for Conduction of Annual Practical Examination

Subject Name/Abbr: Community Pharmacy And Mgmt.(CMP) **Course Code:**PH-2-J
Subject Code: 20057 **Year:** Second Year
Max Time: 3 Hrs **Max. Marks:** 80

Q.1. Synopsis. **(10)**

Five questions of 02 marks each based on theoretical parts.

Q.2. Experiments. **(60)**

A. Major Experiment. (30)

Review the following prescription and comment whether it complies all legal requirements. Handle and fill the prescription after taking all precautions.

OR

Counsel the diabetic / asthmatic / hypertensive patient (any one to be given) carrying the provided prescription and explain him/ her the use of insulin pen / nebulizer / sphygmomanometer.

OR

Counsel the patient suffering from common cold / diarrhea / rheumatoid arthritis (any one to be given) and advise suitable OTC product to be used.

B. Minor Experiment I. (20)

Prepare the dispensing and auxiliary labels for the given prescription.

OR

Identify any drug interaction present in the above prescription and comment on its resolution.

C. Minor Experiment II. (10)

Determine the blood pressure of the patient by using mercury sphygmomanometer and give your conclusion.

OR

Determiner the capillary blood glucose level using glucometer.

OR

Determine the capillary oxygen level of the patient using pulse oximeter.

OR

Determine the body mass index (BMI) and interpret the body weight status.

Q.3. Viva-voce **(10)**

Viva should be conducted on theory and practical based questions.

PHARMACIST'S OATH

- I swear by the code of Ethics of Pharmacy Council of India in relation to the community and shall act as an integral part of health care team.
- I shall uphold the laws and standards governing my profession.
- I shall strive to perfect and enlarge my knowledge to contribute to the advancement of pharmacy and the public health.
- I shall follow the system which I consider best for pharmaceutical care and counseling of patients.
- I shall Endeavour to discover and manufacture drugs of quality to alleviate sufferings of humanity.
- I shall hold in confidence the knowledge gained about the patients in connection with my professional practice and never divulge unless compelled to do so by the law.
- I shall associate with organizations having their objectives for betterment of the Profession of Pharmacy and make contribution to carry out the work of those organizations.
- While I continue to keep this oath unviolated, may it be granted to me to enjoy life and the practice of pharmacy respected by all, at all times!
- Should I trespass and violate this oath may the reverse be my lot!