

**Sankalchand Patel University**

**Faculty of Medicine**

**Degree of  
Bachelor of Medicine and Bachelor of Surgery (M.B.B.S.)**

Course of Studies Prescribed  
for the First, Second and Final M.B.B.S. Examinations

(In force for students admitted in year (2019) and thereafter)

**PHARMACOLOGY**

**CURRICULUM/ SYLLABUS**

**&**

**ASSESSMENT**

**Teaching & Evaluation Scheme for Faculty of Medicine**

**Semester/Year:** Second Year M.B.B.S.  
**Program Name:** Bachelor of Medicine and Bachelor of Surgery  
**Effective from Academic Year:** 2020-2021  
**Program Code:** MB01

Course Code	Subject Name	Hrs/Week			UA		IA		Total	
		L	P	Total	Max	Min	Max	Min	Max	Min
1PH101	Pharmacology-I	5	-	5	100	-	-	-	200	100
1PH102	Pharmacology-II		-		100	-	-	-		
1PH103	Pharmacology Practical	-	4	4	100	-	-	-	100	50
1PH104	Pharmacology IA Theory	-	-	-	-	-	50	-	50	20
1PH105	Pharmacology IA Practical	-	-	-	-	-	30	-	30	12

**Note:**

1. The student must secure at least 40% marks separately in theory and practical internal assessment to be eligible to appear for the final university exam.

2. Pass Criteria =

- i) Mandatory 50% marks separately in Theory and practical (Practical = Practical/Clinical + Viva)
- ii) Subjects with two papers, the student must secure at least 40% marks in each of the papers with minimum 50% of marks in aggregate (both paper together) to pass

UA = University Assessment, IA = Internal Assessment

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## **I. GOAL, OBJECTIVES OF MBBS PROGRAMME**

The undergraduate medical education programme is designed with a goal to create an “Indian Medical Graduate” (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of the Indian Medical Graduate training programme are hereby prescribed:-

### **National Goals**

At the end of undergraduate program, the Indian Medical Graduate should be able to:

- (a) Recognize “health for all” as a national goal and health right of all citizens and by undergoing training for medical profession to full fill his/her social obligations towards realization of this goal.
- (b) Learn every aspect of National policies on health and devote her/him to its practical implementation.
- (c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.
- (d) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.
- (e) Become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

### **Institutional Goals**

**(1)** In consonance with the national goals each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:

- (a) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.
- (b) be competent to practice preventive, promotive, curative, palliative and rehabilitative medicine in respect to the commonly encountered health problems.
- (c) appreciate rationale for different therapeutic modalities; be familiar with the administration of “essential medicines” and their common adverse effects.

d) be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

(e) possess the attitude for continued self learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.

(f) be familiar with the basic factors which are essential for the implementation of the National Health Programmes including practical aspects of the following:

(i) Family Welfare and Maternal and Child Health (MCH)

(ii) Sanitation and water supply

(iii) Prevention and control of communicable and non-communicable diseases

(iv) Immunization

(v) Health Education

(vi) Indian Public Health Standards (IPHS), at various levels of service delivery

(vii) Bio-medical waste disposal

(viii) Organizational and/or institutional arrangements.

(g) acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, hospital management, inventory skills and counselling.

(h) be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.

(i) be able to work as a leading partner in health care teams and acquire proficiency in communication skills.

(j) be competent to work in a variety of health care settings.

(k) have personal characteristics and attitudes required for professional life such as personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.

(2) All efforts must be made to equip the medical graduate to acquire the certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate.

### **Goals and Roles for the Learner**

In order to fulfil the goal of the IMG training programme, the medical graduate must be able to function in the following roles appropriately and effectively:-

- Clinician who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.

- Leader and member of the health care team and system with capabilities to collect, analyze, synthesize and communicate health data appropriately.
- Communicator with patients, families, colleagues and community.
- Lifelong learner committed to continuous improvement of skills and knowledge.
- Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

### **Competency Based Training Programme of the Indian Medical Graduate**

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles as listed in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

#### ***Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion***

- Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioural and social perspective.
- Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
- Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion

- Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.
- Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frame works.
- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:
  - (i) Disease prevention,
  - (ii) Health promotion and cure,
  - (iii) Pain and distress alleviation, and
  - (iv) Rehabilitation.
- Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.
- Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

***Leader and member of the health care team and system***

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.
- Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.

- Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancers, in collaboration with other members of the health care team.

***Communicator with patients, families, colleagues and community***

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.
- Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.
- Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.

***Lifelong learner committed to continuous improvement of skills and knowledge***

- Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.
- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.
- Demonstrate ability to search (including through electronic means), and critically evaluate the medical literature and apply the information in the care of the patient.
- Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

***Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession***

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and maintain professional boundaries between patients, colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.

- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate a commitment to the growth of the medical profession as a whole.

## II. GOAL, OBJECTIVES OF TEACHING PHARMACOLOGY

**Goal:** The broad goal of teaching of undergraduate students in Pharmacology is to inculcate a rational and scientific basis of therapeutics.

### Objectives

#### (a) Knowledge

At the end of the course the student shall be able to

- Describe the pharmaco-kinetics and pharmaco-dynamics essential and commonly used medicines.
- List the indications, contraindications, interactions and adverse reactions of commonly used drugs.
- Indicate the use of appropriate drug in a particular disease after consideration of the cost, efficacy and safety for individual needs
- Mass therapy under national health programmes.
- Describe the pharmaco-kinetic basis, clinical presentation, diagnosis and management of common poisoning
- List the drugs of addiction and recommend the management.
- Classify environmental and occupational pollutants and state the management issue.
- Indicate causation in prescription of drugs in special medical situation such as pregnancy, lactation, infancy and old age.
- Integrate the concept of rational drug therapy in clinical pharmacology
- State the principles underlying the concept of 'essential drugs'.
- Evaluate the ethics and modalities involved in the development and introduction of new drug.

#### (b) Skills

At the end of the course the student shall be able to

- Prescribe drugs for common ailments.
- Recognize adverse reactions and interactions of commonly used drugs.
- Observe experiments designed for study of effects of drugs, bioassay, and interpretation of the experimental data.
- Scan information on common pharmacological preparations and critically evaluate the drug formulations

#### (c) Integration

- Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical *departments and* pre clinical departments.

### III. SYLLABUS – THEORY AND PRACTICALS

#### General Principles of pharmacology and therapeutics:

- History of pharmacology (Important milestones)
- Sources and uses of drugs Administration of drugs.
- Pharmacokinetics - Processes, first order and zero order kinetics, plasma half-life and steady state concentration
- Pharmacodynamics - Basic mechanisms of drug action and selectivity of action.
- Factor influencing drug effects and drug dosages, drug interactions, drug combinations.
- Principal of drug usage in pediatrics, elderly, during pregnancy and lactation.
- Toxicology and adverse drug reactions, drug overdose, poisoning antidotes, principles of management of a poisoned patient and common poisoning, poison control
- Drug of addiction, principle of management of drug addiction.
- Development of new drugs, stages ,ethics of clinical *trials*.
- Concept of essential drugs and rational drug use.
- National drug policy
- Clinical *Pharmacokinetics*, therapeutic drug monitoring.
- Adverse drug reaction monitoring details & phases of clinical trials.
- Less common poisonings (which are more likely to be covered in Forensic medicine and toxicology)

#### Systemic pharmacology:

##### (a) Central and peripheral nervous system:

- Local anesthetics
- Sedative hypnotics and drug treatment of insomnia
- Analgesics - opioid analgesics. Analgesic antipyretics and non-steroid anti-inflammatory drugs Pharmacotherapy of pain and rheumatic disorders.
- Centrally acting muscle relaxants.
- Drug used in epilepsies. Drug treatment of convulsive disorders.
- Alcohols - ethanol and methanol including alcohol dependence and management of poisoning.
- Psychopharmacological agents, drug treatment of anxiety disorders and mood disorders.
- Drugs of abuse, prevention and management of drug dependence.
- General anesthetics

- Drug therapy of psychoses
- Drugs for parkinsonism
- Drugs for CNS degenerative disorders
- Drugs for Myasthenia gravis
- Neuromuscular blocking drugs
- Drugs for treatment of migraine

**(b) Autonomic nervous system:**

- General Principles of drug action on autonomic nervous system, neurotransmitters, receptors, agonists, antagonist and partial agonists
- Sympathomimetics including adrenaline, noradrenalin, dopamine and beta-2 adrenergic agonists and Alpha 1 agonists : phenylephrine.
- Alpha blockers and beta adrenoceptor blockers.
- Parasympathomimetics - acetylcholine and its clinically useful substitutes.
- Anti-Muscarinic drugs (atropine like), treatment of organophosphorous insecticides poisoning.
- Drug used for extrapyramidal reactions.
- Ganglionic Stimulants and blockers, adrenergic neurone blockers

**(c) Cardiovascular system and drugs acting on kidneys:**

- Drugs used in hypertension and drug therapy of essential hypertension
- Drugs used in angina pectoris and drug therapy of angina pectoris and myocardial infarction
- Drugs used in cardiac failure
- Drugs for treatment of hypovolemia and shock.
- Diuretics
- Antiplatelet agents and thrombolytics, anticoagulants.
- Drugs for cardiac arrhythmia
- Drugs for hyperlipidaemias

**(d) Respiratory drugs, autacoids and their antagonists:**

- Drug used to control cough
- Drug used in bronchial asthma and drug treatment of bronchial asthma.
- Antihistamines and drug treatment of allergic disorders.
- Autacoids - Histamine, 5HT and its antagonists. Prostaglandins etc.

**(e) Gastrointestinal drugs:**

- Antiemetics and gastric prokinetic drugs
- Drugs used to control gastric acidity, drug therapy of peptic ulcer, gastroesophageal reflux, dyspepsia
- Purgatives, Drug treatment of diarrhoeas.
- Cholertics, Pancreatic enzymes
- Anorexic drugs and appetite stimulants.

**(f) Blood and blood forming agents:**

- Drug treatment of iron deficiency and folate deficiency anaemias.
- Other vitamins and minerals
- Growth factors, blood transfusion.

**(g) Hormones and hormone antagonists. Drugs acting on uterus;**

- Thyroid hormones, Antithyroid drugs
- Drugs used in the control of diabetes mellitus pharmacotherapy of diabetes mellitus.
- Adrenal corticosteroids - glucocorticoids
- Estrogen and Progestins
- Hormonal contraceptives, chemical contraception
- Oxytocics and uterine relaxants
- Androgens
- Sex hormone antagonists
- Ovulation inducing drugs gonadotropins
- Anterior pituitary and hypothalamic releasing hormones.
- Mineralocorticoids, adrenocorticoid antagonists
- Parathyroid and related hormones

**(h) Chemotherapeutic drugs –drugs used for treatment of infections, anticancer drugs and immunomodulators:**

- General principles of chemotherapy
- Chemotherapy and drugs used in :
  - Bacterial infections:
    - Respiratory infections, urinary tract infections gastrointestinal bacterial diarrheas, food poisoning and dysentery, cholera, typhoid fever, common infections of eyes and ears.
  - **Tuberculosis**, Leprosy
- Sexually transmitted *diseases*. Protozoal infections:
  - Malaria, Amoebiasis, Giardiasis, Kala-azar, Trichomoniasis.

- Drugs for trypanosomiasis, pneumocystosis
- Drugs for toxoplasmosis infestations.
- Helminthic infestations:
  - Intestinal nematodes and tapeworms, Filariasis.
  - schistosoma and trematodes (fluke)
- Fungal infections:
  - Skin, Vagina, Candidiasis

Viral infections:

- Antiviral drug including drugs for AIDS

**(i) vaccines and sera:**

Commonly used vaccines, antisera, antivenoms, immunization schedule for children.

**(j) Drugs used treatment of neoplastic diseases: principles of use, and mechanisms, other uses.**

**(k) Miscellaneous areas:**

- Ocular pharmacology- glaucoma, common infections
- Dermatological pharmacology - Drug therapy of common skin disorders
- Environmental and occupational pollutants
- Antiseptics and Disinfectants
- Immunomodulators.

**Practicals**

The syllabus is designed to enable the student to ;

- Select and prescribe drugs rationally for common ailments.
- Critically evaluate the drug therapy in given situations.
- Understand and interpret the effects of drugs on living tissues and animals.
- Dispense simple dosage forms, comment upon different drug formulations and evaluation of drug literature.
- The training in practical and skills will be imparted during practical/demonstration classes in laboratories, and also in forms of tutorials and small group teaching/discussions. The practical teaching is divided as follows;
  - Prescription writing and comments/criticism/evaluation of drug therapy in given situation - to be taught by tutorials or group discussions in small groups
  - Practical classes in dispensing pharmacy, drug formulations, calculations/dilutions evaluation of drug literature to be taught as laboratory exercises, demonstration, group work.

- Practical classes in experimental/clinical pharmacology will be either performed by students or in form of demonstrations to a small group.
- The students are expected to observe and interpret data of these experiments.

## IV. INTERNAL EXAMINATION

### Rules, Academic Calendar\* and Pattern for Internal Examination

#### TERM STARTS: SEPTEMBER

Applicable for batch admitted in MBBS course from academic year 2019-20 & onwards

#### I<sup>st</sup> Internal Exam – Dec 2020 - January 2021

Theory	Internal Theory	Practical	Internal Practical
100 marks	20	100	20

#### II<sup>nd</sup> Internal Exam – April - May 2021

Theory	Internal Theory	Practical	Internal Practical
100 marks	20	100	20

#### Preliminary Exam – July 2021

Theory	Internal Theory	Practical	Internal Practical
Paper I= 100 marks	40	100	20
Paper II- 100 marks			

#### Remedial Exam – (After preliminary exams )

Theory	Internal Theory	Practical	Internal Practical
Paper I= 100 marks	40	100	20
Paper II- 100 marks			

1. There will be 2 internal assessment examinations and 1 preliminary examination in the academic year. The pattern of the preliminary theory as well as practical examinations should be similar to University examination.
2. First internal assessment examination will be held in December-January, second internal assessment examination will be held in March and Preliminary examination will be held in July.
3. It is mandatory for the students to appear for all the three examinations. Remedial examination should be taken after the results of preliminary examination are declared and before submission of internal assessment marks to the University.

4. Internal assessment marks for theory will be converted to out of 100 and marks for practical will be converted out of 100 i.e. 20% marks obtained in theory and practical should be considered as internal assessment marks.
5. Student must score 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations. Final internal assessment marks should be rounded off without any decimal.
6. Students who are not eligible for University can give remedial examination organized by the college after preliminary examination and before University Examination to become eligible.
7. If student is not eligible even after remedial measures, he/she have to appear for two internal assessment examination and preliminary examination along with next regular batch of students & marks obtained in this examination will be used to calculate internal assessment marks. Further rules for these students will remain similar to the students admitted in next regular batch.
8. Supplementary University examination shall be held within 45 – 90 days of declaration of results of first professional University examinations.
9. Results of internal marks to be displayed on notice board within 1-2 weeks of tests.
10. Final internal assessment marks should be rounded off without any decimal.
11. Internal marks should be shown under separate head of passing at university mark sheet /grade card and are **NOT** to be added to final university exams marks
12. Internal Examination Passing criteria-50% marks separately in Theory and Practical Examination

**\*Above calendar can be subjected to modification as per local situation**

**Day to day assessment: (Formative)**

- Assignment
- Presentation in Seminar
- Clinical case presentation and participation in discussion
- Participation in Clinical case solving exercises
- Research Project(s) undertaken
- Feedback and reflective writing
- Practical journal / record book
- Log book ( completed with certified competencies)

### Pharmacology Practical examination pattern\*

Exercises	Marks
Prescription writing	10
Criticize and rewrite prescription	10
Spots	20
Skill assessment – ADR / FDC / P drug / EDL/ Drug promotional literature Dose calculation / Sources of drug information/ Administration of drug on mannequins	30
Journal/Logbook	10
Viva	20
<b>Total</b>	<b>100</b>

\* Exercises and marks distribution may vary as per the syllabus of internal examination

### Second MBBS, Internal marks Scheme

Examination	Pharmacology	
	Theory	Practical
<b>First Internal Exam</b>	<b>20</b>	<b>20</b>
<b>Second internal exam</b>	<b>20</b>	<b>20</b>
<b>Preliminary Exams</b>	<b>40</b>	<b>40</b>
<b>Formative ( day to day assessment)</b>	<b>20</b>	<b>20</b>
<b>Total</b>	<b>100</b>	<b>100</b>

## V. UNIVERSITY EXAMINATION

### Rules and Pattern of University examination

#### Eligibility to appear for final professional examination

- Attendance - 75% in theory and 80% in practical /clinical
- Minimum 40% marks in theory internal assessment
- Minimum 40% marks in practical/clinical internal assessment
- Passing criteria - Minimum 50% marks in theory and 50% marks in practical separately
- Results of internal marks to be displayed on notice board within 1-2 weeks of tests.
- Final internal assessment marks should be rounded off without any decimal.
- Internal marks should be shown under separate head of passing at university mark sheet /grade card and are **NOT** to be added to final university exams marks

#### University Theory Examination Instructions:

- Two Papers ( I and II), 100 marks each, No section in papers
- Each theory paper should contain one applied question of 20 (twenty) marks
- Time duration: 3 (three) hours.

#### Division of Topics for Paper I and II

##### Paper - I

- **General principles of Pharmacology, essential drugs, rational therapy.**
- **Drugs acting on autonomic nervous system and neuromuscular junction.**
- **Drugs acting on central and peripheral nervous system, drug addiction.**
- **Autacoids, drug therapy of inflammation.**
- **Drugs acting on respiratory system.**
- **Drugs acting on renal and cardiovascular system.**
- **Ocular pharmacology.**
- **Toxicology.**

##### Paper - II

- **Drugs affecting gastrointestinal function.**
- **Drugs affecting uterine motility.**
- **Chemotherapy of microbial diseases and parasitic infections.**
- **Chemotherapy of cancer, immune-modulators**
- **Drugs acting on blood forming organs.**
- **Hormones and hormone antagonists.**
- **Vitamins and Pharmacology of skin.**

**Question Paper I and II pattern**

<b>No</b>	<b>Type of questions</b>	<b>Marks</b>
<b>Q1.</b>	<b>Long essay question ( any 2 out of 3)                    2x10</b> <i>Describe Pharmacotherapy of.....</i>	<b>20</b>
<b>Q2.</b>	<b>Structured Essay Question (any 3 out of 4)            3 x 10</b> <i>Enumerate ..... drugs. Describe mechanism of action, therapeutic regimen and adverse effects .....( 3+2+3+2)</i>	<b>30</b>
<b>Q3.</b>	<b>Short Notes (any 3 out of 4)                                    3 x 6</b> <i>Therapeutic uses and adverse reactions of.....</i>	<b>18</b>
<b>Q4.</b>	<b>Short Answer Questions (any 6 out of 7)                6 x 2</b> <i>Liquid paraffin is preferred in constipation during pregnancy. Give reasons.</i>	<b>12</b>
<b>Q5.</b>	<b>Multiple Choice Questions (20 out of 20)</b> <i>Avoid a simple recall of facts (emphasis is data interpretation and problem solving)</i>	<b>20</b>
	<b>Total</b>	<b>100</b>

### University Practical Exam Instructions:

- Total 6 examiners (3 pairs); Marks should be given by a pair of examiners and not by single examiner.
- Marks should be entered directly on the mark sheet.
- Sealed original and duplicate mark sheet should be submitted at the end of each session

### Practical examination Pattern

No.	Type of questions	Marks
1.	Write a rational, correct & legible prescription for given condition	20
2.	Critical appraisal (audit) of a given prescription and rewrite corrected prescription	10
3	Short Table Exercise (spots) ( <i>interprets the effect on drug using graph, dosage formulations, identify the Adverse drug reaction, clinical problem solving etc.</i> )	20
4	Skill assessment ( <i>Selection of most appropriate drug in given case, setting up the drip, dosage calculation, administration of drug in simulated environment using manikins, critical evaluation of the drug promotional literature, critical evaluation of the dosage formulations etc.</i> )	30
5.	Viva Voce	20
	<b>Total</b>	<b>100</b>

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