

**BOARD OF D.PHARM. EXAMINATIONS
DIRECTORATE OF MEDICAL EDUCATION
GOVERNMENT OF KERALA.**



CIRCULAR

The Model Question papers & Scheme for Practical Examinations of **Diploma in Pharmacy (D. Pharm)**, Directorate of Medical Education, Government of Kerala are as per **Education Regulation 2020** of Pharmacy Council of India (PCI) from 2021-2022 admission onwards.

(Refer the attached document for the model question papers of Board Examinations (Theory) & Scheme for Practical Examinations, for the courses of D. Pharm Part I and Part II)

Trivandrum
16/ 08 /2022

Sd/
Chairperson
Board of D. Pharm Examinations

BOARD OF D.PHARM. EXAMINATIONS

**DIRECTORATE OF MEDICAL EDUCATION
GOVERNMENT OF KERALA.**



**MODEL QUESTIONS (Theory)
&
Scheme for Practical Examinations**

**Diploma In Pharmacy (D. Pharm)
DIRECTORATE OF MEDICAL EDUCATION
Government of Kerala.**

*Based on
PHARMACY COUNCIL OF INDIA (PCI)
EDUCATION REGULATIONS 2020.*

2021-2022 ADMISSION ONWARDS.

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D. PHARM PART I

A. MODEL QUESTION PAPERS FOR THEORY

QP CODE :.....

Reg No.....

A1- PHARMACEUTICS (ER20-11T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. Ball mill works on the principle of ----- and -----
2. The inert insoluble matter that remains after extraction is called-----
3. Latest edition of Indian Pharmacopoeia was published in the year-----
4. Hot continuous percolation is also known as-----
5. Suspended particles form loose aggregates in a ----- suspension.
6. Eye drops for multiple applications should not be used for more than ----- period after first opening of the container.
7. ----- % w/v sodium chloride solution is isotonic with blood plasma.
8. White soft paraffin is an example of ----- type of ointment base.
9. The weight of drug which displaces one part of suppository base is known as -----
10. ----- is incorporated in hard gelatin capsule shell as an opacifier.
11. Give an example for live attenuated bacterial vaccine.
12. Name an instrument that uses centrifugal force for size separation.
13. Give an example for artificial sweetener used in pharmaceutical formulation.
14. What is the time limit for disintegration of an ordinary uncoated tablet?
15. Ratio of oil: water: gum for the preparation of primary emulsion of a fixed oil.
16. Percentage strength of sucrose in Simple Syrup I.P.
17. A novel drug delivery system in which a lipid bilayer encloses an internal aqueous volume.
18. Preservative in Calamine Lotion I.P.
19. Name the in vitro test for pyrogens.
20. Uneven colour distribution in tablet is known as.

Answer any 10 of the following

(3 x 10 = 30)

21. What are different official grades of powders?
22. Explain different factors affecting rate of filtration.
23. Give a brief description on insufflations.
24. Explain the working and applications of triple roller mill.
25. Differentiate between hard gelatin and soft capsules.
26. Explain the preparation of diphtheria toxoid.
27. Write the merits and demerits of plastic as containers.
28. Give the reasons for formulating multi-layered tablets.
29. What are the various methods used for preparing ointments?
30. Write a note on ocuserts.
31. Write a note on vehicles used in injectables.

Answer any 6 of the following

(5 x 6 = 30)

32. Explain the various excipients used in tablet formulation.
33. Describe instability problems in emulsions.
34. Write a note on dry powders for reconstitution.
35. Define the term extraction. Describe simple percolation process for extraction.
36. Explain the process of freeze drying. Mention its advantages and disadvantages.
37. Describe the layout of pharmaceutical plant according to cGMP.
38. Define the terms mixing. Explain the working of any one type powder mixer.

QP CODE:.....

Reg No.....

B1- PHARMACEUTICAL CHEMISTRY (ER20-12T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts/equations wherever necessary.

Answer all the following

(1 x 20 = 20)

1. A solution of accurately known concentration is calledsolution.
2. The closeness of a measured value to the true value is called
3. The gas that stains mercuric chloride paper yellow in the limit test for Arsenic is
4. Argentometric titrations utilise as titrant
5. Imipramine hydrochloride is used as an
6. Largactil is the popular brand name of an antipsychotic called
7. Quinidine is the dextro isomer of
8. Solutions of sulphacetamide are used locally in infections of the
9. is the cis isomer of platinum (II) complex.
10. An antifungal agent which possesses an N-substituted imidazole ring is
11. 1,1 Dimethyl biguanide is the chemical name of
12. Write the chemical formula for nitrous oxide.
13. Name a gastro-intestinal adsorbent.
14. Name an antibiotic which has been the drug of choice for the treatment of typhoid fever for more than forty years.
15. Write the name of an antitubercular agent containing a pyridine heterocyclic ring system.
16. Name a diuretic which acts by inhibiting aldosterone.
17. Give the storage temperature of Insulin injections.
18. Name one alpha-adrenergic blocker having vasodilator effect.
19. Which sedative has the popular brand name of Calmpose / Valium?
20. Write one example of a clinically useful narcotic antagonist.

Answer any 10 of the following

(3 x 10 = 30)

21. Describe the principle with chemical reactions involved in the limit test for iron.
22. What are the various combinations of antacids preparations available in the market?
23. Write the storage conditions and uses of Oxygen.
24. Give the stability and storage conditions of Penicillin G.
25. Write a note on General Anaesthetics.
26. What are the general uses of anticholinergic drugs?
27. Which drugs are useful in the treatment of urinary tract infections? Give the structure of Aspirin.
28. What are the different types of formulations of Silver nitrate?
29. Write the chemical structure and uses of Carbamazepine.
30. Write a brief account of mouth washes.

31. Classify antimalarials.

Answer any 6 of the following

(5 x 6 = 30)

32. What are haematinics? Give the pharmaceutical formulations, storage conditions and uses of Ferric ammonium citrate.
33. Define the term sedatives and hypnotics. Give the chemical structure and uses of Alprazolam.
34. Write the principle and method involved in gravimetric analysis.
35. Classify antihypertensive agents. Give the chemical structure and chemical name of Propranolol.
36. Write a note on antimetabolites as anticancer agents.
37. Write the chemical name with structure, stability, storage conditions and formulations of Epinephrine.
38. Classify antiviral agents. Write the chemical structure of Acyclovir.

QP CODE:.....

Reg No.....

Paper C1 – PHARMACOGNOSY (ER20-13T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. Classification of crude drugs based on the phytoconstituents present are called -----
2. Ash value is used to determine ----- impurity
3. Glycosides are the condensation products of ----- and -----
4. Fox glove is the synonym of ----- plant.
5. Lavender oil is obtained from ----- plant belonging to the family labiate
6. The protein C-phycoyanin and allo-Phycocyanin is present in -----
7. Quinine alkaloid is present in ----- plant
8. Similia Similibus Curantur is the fundamental principle of the ----- system of medicine
9. Myrrh is obtained from ----- Family
10. A living microorganism which improves the intestinal microbial balance is called ----
11. Who coined the term Pharmacognosy
12. Name a crude drug with a Phenanthrene group of alkaloids acting on the Central Nervous System
13. Name an antihypertensive crude drug.
14. Name a specific drug used for the treatment of gout and rheumatism.
15. Name the amino acid present in wool.
16. Name the ayurvedic formulation in which the powdered drug is calcinated.
17. Name the fixed oil obtained by cold expression of seeds of Prunus dulcis
18. What is the chemical name of Dragendorff's reagent?
19. Name the crude drug used in the preparation of solid bacteriological culture media.
20. Name the biological name of Indian Senna

Answer any 10 of the following

(3 x 10 = 30)

21. Write the principle of the Ayurveda system of medicine.
22. Write a note on Dietary Fibers.
23. What are the hydrolytic products of Purpurea glycosides A and B
24. Write the Biological source of Castor oil, Ephedra and Nutmeg.
25. Write the Source, chemical constituents and uses of a pharmaceutical aid of mineral origin.
26. Write short notes on Phytosomes.
27. Write the biological source, chemical constituents and uses of Rosemary oil.
28. Explain morphological classification with examples
29. Define Pharmacognosy and write its scope.
30. Differentiate between pale catechu and black catechu.
31. Write any 3 methods of adulteration of the crude drug.

Answer any 6 of the following

(5 x 6 = 30)

32. Write the Biological source and chemical constituents of any one drug used as
a) Anti-dysenteric b) Oxytocic.
33. Write the Biological source, chemical constituents and uses of two organized crude drugs belonging to the Umbelliferae family.
34. Define the alkaloids and explain the general methods of extraction of alkaloids. Write any four general chemical tests of alkaloids.
35. Write the method of preparation of Aristas and Asavas.
36. Define and classify nutraceuticals with examples.
37. Write the different methods of isolation of volatile oils.
38. Write the biological source, chemical constituents and use of
a) Cinnamon. b) Aloe.

QP CODE:.....

Reg No.....

Paper D1 – HUMAN ANATOMY AND PHYSIOLOGY (ER20-14T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. The compact bone is made up of large number of parallel tube-shaped units known as
2. cells of the testis secrete testosterone
3. Inner most layer of blood vessel is known as.....
4. are thick cords that helps in keeping the position of atrio-ventricular valves in the heart
5. helps in the emulsification of fat and absorption from small intestine
6. In ECG, the ventricular relaxation is represented by
7. Cerebrospinal fluid is secreted into each ventricle of the brain by
8. The process of movement of urine out of urinary bladder is known as.....
9. The total volume of air which can be moved into and out of lungs with maximum effort is known as
10. is a disease caused by the deposition of uric acid crystals in the joints
11. Name the organelle which appear as an extensive series of interconnecting membranous canals
12. Name the epithelium present in urinary bladder.
13. Name the hormone which is secreted from the delta cells of islets of Langerhans
14. What is the normal blood thrombocyte count?
15. Name the neurotransmitter released in neuromuscular junction on stimulation of motor neurons
16. Name the cell which secretes hydrochloric acid in stomach
17. The decussation of pyramids occurs at which part of the brain
18. What is the superficial layer of skin?
19. What is the normal value of GFR?
20. Name the agranulocyte involved in antibody production

Answer any 10 of the following

(3 x 10 = 30)

21. Enumerate the bones of spinal cord
22. Write the functions of spleen
23. Write a note on the hormones that influence selective reabsorption process in kidney
24. Describe the gross anatomy of lungs
25. Write the functions of pancreatic juice
26. Explain sliding filament theory
27. Explain the anatomy of parasympathetic nervous system
28. Write the physiology of balance
29. Explain the conducting system of heart

30. Write the hormones of adrenal cortex and its functions
31. Explain the process of oogenesis

Answer any 6 of the following

(5 x 6 = 30)

32. Explain the process of blood pressure regulation in our body
33. Write the process of digestion and absorption of carbohydrates in human body
34. Explain the structure and functions of cerebellum
35. Explain the anatomy of eye
36. Explain different type of connective tissues with suitable examples
37. Write in detail the intrinsic and extrinsic pathways of blood clotting
38. Classify joints and explain with suitable examples

QP CODE:.....

Reg No.....

Paper E1 – SOCIAL PHARMACY (ER20-15T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. The causative organism of Tuberculosis is.....
- 2.....is an example of arthropod borne infection
- 3.....is a barrier type contraceptive
4. The combined pill (contraceptive) containsand
5. Vitamin ... and are two examples for fat-soluble vitamin
- 6 Vaccines provides type of immunity
7. Morbidity indicates while mortality indicates incidence of death.
8. Triple antigen contains antigens of Diphtheria, and
9. Crude birth rate indicates the occurring during the year per population estimated at mid-year.
10. BCG vaccine provides immunity against
11. Which is the only carbohydrate of animal origin?
12. Name the disease caused by the deficiency of Vitamin D
13. Which is the micronutrient required for proper functioning of Thyroid gland?
14. Name the causative organism of malaria
15. The occurrence of a disease in a large number of people in a region is called.....
16. The statistical study of Human populations is known as
17. Scurvy is caused by the deficiency of which Vitamin?
18. Give an example of Intra Uterine Contraceptive Device (IUD)
19. Give example of a non-hormonal Oral contraceptive.
20.is an epidemic affecting a large geographical area

Answer any 10 of the following

(3 x 10 = 30)

21. Write 2 examples for water-borne diseases
22. Write a method for large scale purification of water
23. Define: a) Malnutrition b) Nutraceuticals
24. Name the causative organism of: a) Chicken pox b) Cholera
25. Write two examples of occupational illnesses
26. Explain the term “quarantine”
27. Write on the preventive methods of AIDS
28. Write on the common adulterants of food
29. Classify microorganisms with examples
30. Write the importance of Pharmacoeconomics
31. Write on the prevention methods of Covid -19 infection.

Answer any 6 of the following

(5 x 6 = 30)

32. Write briefly on indicators of health.
33. Classify immunity and explain Universal Immunization Programme (UIP).
34. Write on balanced diet. Add a note on protein energy malnutrition (PEM)
35. What is artificial ripening? Explain genetically modified food.
36. Write on safe disposal methods of pharmaceuticals.
37. Write a note on determinants of Health.
38. Write briefly about the use of pesticides and their ill effects on human health

B.SCHEME FOR SESSIONAL PRACTICAL EXAMINATIONS

NOTE: The mode of calculating Internal assessment marks for practical

For all subject Internal assessment marks have to be taken out of 20.

- For those subjects **not having** assignments/ field visits, the marks secured by the candidate out of 80 for the sessional practical examination (including 10 marks for practical record) shall be reduced to 20
- For those subjects **having** assignments/ field visits / both, the marks secured by the candidate out of 80 for the sessional practical examination (including 10 marks for practical record) shall be reduced to 10 **and** the assessment of assignments/ field visits / both shall be given for the balance 10 marks, as per the table given at the end of scheme for practical sessional examination of each subject.

1. Paper A2 – PHARMACEUTICS. (ER20-11P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus.	10
2.	Major experiment Formulation as per monograph standards and dispensing with appropriate packaging & labelling, of any one item given in table 1	30
3.	Minor experiment Formulation as per monograph standards and dispensing with appropriate packaging & labelling, of any one item given in table 1	20
4.	Viva voce	10
5.	Record	10

Split up of marks

No.	Particulars	Major Experiment (30)	Minor Experiment (20)
1	Calculation of working formula	5	2
2	Product	20	15
3	Appropriate container and closure, proper labelling	5	3

Table 1. List of Major and Minor experiments

Sl No:	Major experiment	Minor experiment
1	Castor oil emulsion	Aqueous iodine solution
2	Cod liver oil emulsion	Calamine lotion
3	Cetrimide cream	Simple syrup
4	Effervescent granules	Sulphur ointment from simple ointment
5	Cold cream	Dusting powder
6	Shampoo	Turpentine liniment
7	Magnesium hydroxide mixture	Sodium alginate gel
8	White liniment	Piperazine citrate elixir
9	Normal saline	Tooth paste
10	Calcium gluconate injection	
11	Tetracycline capsule	
12	Simple ointment	
13	Paracetamol tablets	

Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 10	10

Assignment marks (Average of three)	5
Average of Field Visit Report marks	5
Total	20

2.Paper B2 – PHARMACEUTICAL CHEMISTRY. (ER20-12P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	<p>Synopsis</p> <p>A) The theory including chemical reactions involved in the limit test / assay / preparation. (5)</p> <p>B) Chemical tests for the identification of pharmaceuticals / Chemical tests involved in qualitative analysis. (2.5 × 2 = 5)</p>	10
2.	<p>Major experiment</p> <p>Assay of any one powder compound, from among the five as per syllabus. (Assay procedure should be given to the candidates & sample should be weighed by them).</p> <p>Evaluation is based on calculation and percentage error of the report.</p> <p>Split up of marks</p> <p>Calculation - 5 marks</p> <p>For the report,</p> <p><1% error- 20 marks</p> <p>1 - 2 % error - 18 marks</p> <p>2.1- 5% error - 15 marks</p> <p>5.1- 7.5% error - 12 marks</p> <p>7.6- 10% error - 10 marks</p> <p>Above 10% error - 7 marks.</p> <p style="text-align: center;">OR</p> <p>Systematic qualitative analysis of any one chemical substance from the following (Glucose, Sucrose, Benzoic acid, Oxalic acid, Urea, Salicylic acid)</p> <p>Split up of marks</p> <p>Writing the observation & inference-5 marks</p> <p>For the report, written as</p> <ul style="list-style-type: none"> • Aliphatic or aromatic - 2 marks • Saturated or unsaturated - 1 marks • Presence of special elements if any - 5 marks 	25

	<ul style="list-style-type: none"> • Functional group present - 12 marks (Write the observations and report the results of all the positive tests for the confirmation of the compound and at least one negative test each for the absence)	
3.	<p>Minor experiment – I</p> <p>Standardization of the given solution (Sodium hydroxide / Potassium permanganate). Evaluation is based on calculation and percentage error of the report.</p> <p>Split up of marks</p> <p>Calculation - 3 marks</p> <p>For the report,</p> <p><1% error- 12 marks</p> <p>1 - 2% error - 10 marks</p> <p>2.1 - 5% error - 9 marks</p> <p>5.1 - 7.5% error - 7 marks</p> <p>7.6 - 10% error - 5 marks</p> <p>Above 10% error - 4 marks.</p> <p style="text-align: center;">OR</p> <p>Preparation of Benzoic acid from Benzamide /Picric acid from Phenol.</p> <p>Split up of marks</p> <p>Writing the procedure- 3 marks</p> <p>For evaluation,</p> <p>Colour & odour - 1 marks</p> <p>Dryness - 2 marks</p> <p>Texture- 2 marks</p> <p>Yield - 7 marks</p>	15
4.	<p>Minor experiment – II</p> <p>Perform the limit test for chlorides / sulphates / iron in the given sample and report whether it complies or does not comply with IP specification. The evaluation shall be based on the observations, report and how the experiment is being performed.</p>	10
5.	Viva voce	10
6.	Record	10
	<p>Note: It is compulsory to include one experiment involving titration (either from minor experiment I or major experiment) in the practical examination.</p> <ul style="list-style-type: none"> • Electronic (digital) balance can be used for weighing samples. 	

Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 10	10
Assignment marks (Average of three)	10
Total	20

3.Paper C2 – PHARMACOGNOSY. (ER20-13P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Spotters Identification with the biological source of any 10 crude drugs (Table I, II &III) Split up of marks: Identification of drug - 0.5 Mark Biological Source - 0.5 Mark	10
3	Major experiment Preparation of a thin transverse section of any one crude drug (Table I) Split up of marks: Mounting of a neatly stained clear section-18 marks Labelled diagram with brief description of the gross anatomy – 7 marks	25
4.	Minor experiment-I– 8 Marks Description of the morphology of one crude drug (Table II) Split up of marks: Neat labelled diagram - 4 Marks Morphological description - 3 Marks Biological Source - 1 Marks. Minor experiment-II 7 Marks Tests for evaluation of one drug (Table III) Procedure - 3 Marks Observation and inference -4 Marks	15

	(Evaluation can be done by verifying the tests)	
5.	Viva voce	10
6.	Record	10

Table I

Ajwain, Datura, Cinnamon, Cinchona, Coriander, Ashwagandha, Liquorice, Clove, Curcuma, Nux vomica, Vasaka

Table II

Ispaghula, Senna, Coriander, Fennel, Cardamom, Ginger, Nutmeg, Black Pepper, Cinnamon, Clove, Ephedra, Rauwolfia, Gokhru, Punarnava, Cinchona, Agar.
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Table III

Asafoetida, Benzoin, Pale catechu, Black catechu, Castor oil, Acacia, Tragacanth, Agar, Guar gum, Gelatin.
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Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 10	10
Assignment marks (Average of three)	5
Average of Field Visit Report marks	5
Total	20

4.Paper D2 – HUMAN ANATOMY AND PHYSIOLOGY (ER20-14P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Spotters- Total ten items Specimen from various systems-4 numbers (as per syllabus) Histological slides-3 numbers (as per syllabus) Bones-3 numbers (as per syllabus)	10
3.	Major Experiment Carry out any one experiment from the following: - 1. Determination of WBC count of blood or 2. Determination of RBC count of blood or 3. Determination of Differential count of blood Split up of marks Conducting the Experiment - 20 Result and its interpretation-10 Marks	30
4.	Minor experiment Carry out any one experiment from the following: - Determination of blood group/ESR/ haemoglobin content of blood/ bleeding time or clotting time Measurement of height, weight, and BMI Recording of Blood Pressure in various postures, different arms, before and after exertion Recording of force of air expelled using Peak Flow Meter/body temperature/ pulse rate (before and after exertion)/ respiratory rate (before and after exertion)/ pulse oxygen (before and after exertion) Split up of marks Conducting the Experiment – 7.5 Marks Result and its interpretation-2.5 Marks	10
5.	Viva voce	10
6.	Record	10

Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 20	20
Total	20

5.Paper E2 – SOCIAL PHARMACY (ER20-15P)

Time: 3 Hours

Total Marks: 80

No	QUESTIONS	Marks
1	<p>Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus</p>	10
2	<p>Spotters- Any 10 from the following</p> <ul style="list-style-type: none"> • Slides of microorganisms like M. Tuberculosis, M. leprae, or any bacteria/fungus of medical importance. • Contraceptive devices - Condoms for male/females / IUDs like copper T or Lippe's loop / Contraceptive pills/ Contraceptive implants/Contraceptive rings/ diaphragms etc. • Menstrual hygiene devices like sanitary napkins, vaginal wash solutions, tampons, menstrual cups etc. • Different types of face masks and PPE kits • Marketed preparations of antiseptics/disinfectants/fumigating agents/mosquito repellants/antilarval agents. • Oral health products. 	10
3	<p>Major Experiment-I 15 Marks</p> <p>Simulated counselling experiments using charts/pictures for any one of the following</p> <ol style="list-style-type: none"> a) Tobacco Cessation b) Importance of Balanced Diet c) Disadvantages of Junk food d) Awareness communicable diseases (any one) <p>Major Experiment-II 15 Marks</p> <p>Description of the different aspects of BLS to be given by the first responder in any one of the following conditions such as SCA, ventricular fibrillation, airway obstruction by foreign body etc.</p> <p style="text-align: center;">OR</p> <p>Description of an action plan for the effective role of Pharmacist in the management of any one of the following disasters such as floods, earthquake, mass train/bus/fire accidents and acute food poisoning in a community.</p> <p style="text-align: center;">OR</p> <p>Calculation of the amount of Potassium permanganate/ Bleaching powder required to treat a definite volume of water in a tank or well and description of the purification technique</p>	30

4	<p>Minor Experiment Preparation of information leaflets on any two of the following</p> <ul style="list-style-type: none"> • Child health (For the specified age group) • Oral health and hygiene • Menstrual hygiene • Reproductive health • Calory needs of various age groups/ various life styles/ pregnant ladies/lactating mothers (any one) • Glycemic index of common food items (any four) • Nutrient content of common food items (any four) • Donning and doffing of PPE • Cough and sneeze etiquettes • Immunization Schedule for children • Vaccines for adults 	10
5	Viva voce	10
6	Record	10

Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 10	10
Assignment marks (Average of three)	5
Average of Field Visit Report marks	5
Total	20

C.SCHEME FOR BOARD EXAMINATIONS

1.Paper A2 – PHARMACEUTICS. (ER20-11P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus.	10
2.	Major experiment Formulation as per monograph standards and dispensing with appropriate packaging & labelling, of any one item given in table 1.	35
3.	Minor experiment Formulation as per monograph standards and dispensing with appropriate packaging & labelling, of any one item given in table 1	25
4.	Viva voce	10

Split up of marks

No.	Particulars	Major Experiment (35)	Minor Experiment (25)
1	Calculation of working formula	5	2
2	Product	25	20
3	Appropriate container and closure, proper labelling	5	3

Table 1. List of Major and Minor experiments

Sl No:	Major experiment	Minor experiment
1	Castor oil emulsion	Aqueous iodine solution
2	Cod liver oil emulsion	Calamine lotion
3	Cetrimide cream	Simple syrup
4	Effervescent granules	Sulphur ointment from simple ointment
5	Cold cream	Dusting powder
6	Shampoo	Turpentine liniment
7	Magnesium hydroxide mixture	Sodium alginate gel
8	White liniment	Piperazine citrate elixir
9	Normal saline	Tooth paste
10	Calcium gluconate injection	
11	Tetracycline capsule	
12	Simple ointment	
13	Paracetamol tablets	

2.Paper B2 – PHARMACEUTICAL CHEMISTRY. (ER20-12P)**Time: 3 Hours****Total Marks: 80**

No.	QUESTIONS	Marks
1.	Synopsis A) The theory including chemical reactions involved in the limit test / assay / preparation. (5) B) Chemical tests for the identification of pharmaceuticals / Chemical tests involved in qualitative analysis. (2.5 ×2 = 5)	10
2.	Major experiment Assay of any one powder compound, from among the five as per syllabus. (Assay procedure should be given to the candidates & sample should be weighed by them). Evaluation is based on calculation and percentage error of the report. Split up of marks Calculation - 5 marks For the report, <1% error- 20 marks 1 - 2 % error - 18 marks 2.1- 5% error - 15 marks 5.1- 7.5% error - 12 marks 7.6- 10% error - 10 marks Above 10% error - 7 marks. OR Systematic qualitative analysis of any one chemical substance from the following (Glucose, Sucrose, Benzoic acid, Oxalic acid, Urea, Salicylic acid) Split up of marks Writing the observation & inference-5 marks For the report, written as • Aliphatic or aromatic - 2 marks • Saturated or unsaturated - 1 marks • Presence of special elements if any - 5 marks • Functional group present - 12 marks (Write the observations and report the results of all the positive tests for the confirmation of the compound and at least one negative test each for the absence)	25
3.	Minor experiment – I Standardization of the given solution (Sodium hydroxide /	20

	<p>Potassium permanganate). Evaluation is based on calculation and percentage error of the report.</p> <p>Split up of marks</p> <p>Calculation - 5 marks</p> <p>For the report, <1% error- 15 marks 1 - 2% error - 13 marks 2.1 - 5% error - 12 marks 5.1 - 7.5% error - 10 marks 7.6 - 10% error - 8 marks Above 10% error - 5 marks.</p> <p style="text-align: center;">OR</p> <p>Preparation of Benzoic acid from Benzamide /Picric acid from Phenol.</p> <p>Split up of marks</p> <p>Writing the procedure- 3 marks</p> <p>For evaluation, Colour & odour - 1 marks Dryness - 2 marks Texture- 4 marks Yield - 10 marks</p>	
4.	<p>Minor experiment – II</p> <p>Perform the limit test for chlorides / sulphates / iron in the given sample and report whether it complies or does not comply with IP specification. The evaluation shall be based on the observations, report and how the experiment is being performed.</p>	15
5.	Viva voce	10
	<p>Note: It is compulsory to include one experiment involving titration (either from minor experiment I or major experiment) in the practical examination.</p> <ul style="list-style-type: none"> • Electronic (digital) balance can be used for weighing samples. 	

3.Paper C2 – PHARMACOGNOSY. (ER20-13P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Spotters Identification with the biological source of any 10 crude drugs (Table I, II & III) Split up of marks: Identification or drug - 0.5 Mark Biological Source - 1 Mark	15
3	Major experiment Preparation of a thin transverse section of any one crude drug (Table I) Split up of marks: Mounting of a neatly stained clear section-20 marks Labelled diagram with brief description of the gross anatomy – 10 marks	30
4	Minor experiment-I– 8 Marks Description of the morphology of one crude drug (Table II) Split up of marks: Neat labelled diagram - 4 Marks Morphological description - 3 Marks Biological Source - 1 Marks. Minor experiment-II 7 Marks Tests for evaluation of one drug (Table III) Procedure - 3 Marks Observation and inference -4 Marks (Evaluation can be done by verifying the tests)	15
5.	Viva voce	10

Table I

Ajwain, Datura, Cinnamon, Cinchona, Coriander, Ashwagandha, Liquorice, Clove, Curcuma, Nux vomica, Vasaka

Table II

Ispaghula, Senna, Coriander, Fennel, Cardamom, Ginger, Nutmeg, Black Pepper, Cinnamon, Clove, Ephedra, Rauwolfia, Gokhru, Punarnava, Cinchona, Agar.

Table III

Asafoetida, Benzoin, Pale catechu, Black catechu, Castor oil, Acacia, Tragacanth, Agar, Guar gum, Gelatin.

4.Paper D2 – HUMAN ANATOMY AND PHYSIOLOGY (ER20-14P)**Time: 3 Hours****Total Marks: 80**

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Spotters-Total ten items Specimen from various systems-4 numbers (as per syllabus) Histological slides-3 numbers (as per syllabus) Bones-3 numbers (as per syllabus)	10
3.	Major Experiment Carry out any one experiment from the following: - 1. Determination of WBC count of blood or 2. Determination of RBC count of blood or 3. Determination of Differential count of blood Split up of marks Conducting the Experiment - 20 Result and its interpretation-10 Marks	35
4.	Minor experiment Carry out any one experiment from the following: - Determination of blood group/ESR/ haemoglobin content of blood/ bleeding time or clotting time Measurement of height, weight, and BMI Recording of Blood Pressure in various postures, different arms, before and after exertion Recording of force of air expelled using Peak Flow Meter/body temperature/ pulse rate (before and after exertion)/ respiratory rate (before and after exertion)/ pulse oxygen (before and after exertion) Split up of marks Conducting the Experiment – 7.5 Marks Result and its interpretation-2.5 Marks	15
5.	Viva voce	10

5. PAPER E2- SOCIAL PHARMACY (ER20-15P)**Time: 3 Hours****Total Marks: 80**

No	QUESTIONS	Marks
1	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10

2	<p>Spotters- Any 10 from the following</p> <ul style="list-style-type: none"> • Slides of microorganisms like M. Tuberculosis, M. leprae, or any bacteria/fungus of medical importance. • Contraceptive devices - Condoms for male/females / IUDs like copper T or Lippe's loop / Contraceptive pills/ Contraceptive implants/Contraceptive rings/ diaphragms etc. • Menstrual hygiene devices like sanitary napkins, vaginal wash solutions, tampons, menstrual cups etc. • Different types of face masks and PPE kits • Marketed preparations of antiseptics/disinfectants/fumigating agents/mosquito repellants/antilarval agents. • Oral health products. 	10
3	<p>Major Experiment-I 15 Marks</p> <p>Simulated counselling experiments using charts/pictures for any one of the following (15 Marks)</p> <ul style="list-style-type: none"> e) Tobacco Cessation f) Importance of Balanced Diet g) Disadvantages of Junk food h) Awareness communicable diseases (any one) <p>Major Experiment-II 15 Marks</p> <p>Description of the different aspects of BLS to be given by the first responder in any one of the following conditions such as SCA, ventricular fibrillation, airway obstruction by foreign body etc.</p> <p style="text-align: center;">OR</p> <p>Description of an action Plan for the effective role of Pharmacist in the management of any one of the following disasters such as floods, earthquake, mass train/bus/fire accidents and acute food poisoning in a community.</p> <p style="text-align: center;">OR</p> <p>Calculation of the amount of Potassium permanganate/ Bleaching powder required to treat a definite volume of water in a tank or well and description of the purification technique</p>	30

4 .	<p>Minor Experiment</p> <p>Preparation of information leaflets on any two of the following</p> <ul style="list-style-type: none"> • Child health (For the specified age group) • Oral health and hygiene • Menstrual hygiene • Reproductive health • Calory needs of various age groups/ various life styles/ pregnant ladies/lactating mothers (any one) • Glycemic index of common food items (any four) • Nutrient content of common food items (any four) • Donning and doffing of PPE • Cough and sneeze etiquettes • Immunization Schedule for children • Vaccines for adults 	20
5 .	Viva voce	10

D. PHARM PART II

A. MODEL QUESTION PAPERS FOR THEORY

QP CODE:.....

Reg No.....

Paper A1 – PHARMACOLOGY (ER20-21T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. Name the branch of Pharmacology dealing with the poisonous effects of drugs.
2. Ankle oedema is a common adverse effect ofclass of antihypertensives.
3. 100% bioavailability is possible with..... route of administration
4. Bupivacaine belongs to the therapeutic category of.....
5. Peripheral neuritis is the most common adverse effect of the anti TB drug....
6. The metabolism of a drug after oral administration but before reaching the systemic circulation is known as
7. Name an Imidazole type of antifungal drug
8. Oxymetazoline is used as
9. Give an example for atypical antipsychotic
10. Metronidazole is used as....
11. Give an example for a selective Cox-2 inhibitor.
12. Mention the therapeutic category of atorvastatin.
13. Write down an example for potassium sparing diuretic.
14. Name a non-benzodiazepine hypnotic.
15. Mention an example for Leukotriene receptor antagonist.
16. Name an alpha -2 agonist used in hypertension.
17. Give an example for an intermediate acting nondepolarizing neuromuscular blocking agent
18. Name a dissociative anaesthetic.
19. Drug of choice for Myasthenia gravis.
20. What is the antidote for Paracetamol poisoning.

Answer any 10 of the following

(3 x 10 = 30)

21. Explain the symptoms and management of Organophosphorus poisoning.
22. Classify antithyroid drugs with examples
23. Discuss the mechanism of action, therapeutic uses and any one contraindication of Digoxin
24. Mention the mechanism of action, route of administration and adverse effects of Benzyl Penicillin
25. Discuss any three factors affecting bioavailability of drugs.
26. Write down the adverse effects and therapeutic uses of Frusemide.
27. Classify antiplatelet drugs with suitable examples

28. Mention the therapeutic uses of Ondansetron, Pantoprazole and Chloroquine
29. List out NSAIDs.
30. Classify antidepressants with suitable examples.
31. Write a note on therapeutic uses of Trastuzumab, Rituximab and Imatinib.

Answer any 6 of the following

(5 x 6 = 30)

32. Define biotransformation. Discuss phase II type of biotransformation reactions.
33. Discuss the pharmacological actions and therapeutic uses of Adrenaline
34. Classify antiepileptic drugs with examples.
35. Explain the pharmacological actions and uses of morphine.
36. Classify antiviral drugs. Mention the therapeutic uses of Acyclovir.
37. Classify different insulin preparations. Write a note on the adverse effects of insulin therapy
38. Write down the mechanism of action, adverse effects and therapeutic uses of tetracycline

QP CODE:.....

Reg No.....

Paper B1 – COMMUNITY PHARMACY AND MANAGEMENT (ER20-22T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. Process of providing information regarding medication use to a patient or caregiver is known as.....
2. The part of prescription with direction to the pharmacist is known as.....
3. Face to face oral conversation is a form of communication
4. Written or printed information given to patient by the pharmacist regarding medicine or life style modification is known as-----
5. Lack of time for patient counselling is considered as a.....in patient counselling
6. Compliance of patient towards the instruction of pharmacist or physician is known as.....
7. Inventory control method which considers the unit cost and annual consumption is.....
8. Guideline prepared for effective management of a pharmacy is known as.....
9. Common OTC medication used for pain management is.....
10. Taking medication without prescription or professional advice is known as.....
11. Which schedule of D&C Act specifies drugs those are dispensed according to a valid prescription?
12. Name the type of Cash book with column for discount, cash and bank transaction.
13. Mention in one word about interconnected health system with smart devices, computational analysis and communication media.
14. Name the independent examination of financial information of an organization.
15. Identify the major current assets of an organization.
16. What is the minimum desirable area required to open a drug store?
17. Name any one method for improving patient compliance.
18. Which capital is invested in permanent assets?
19. Identify the middlemen between wholesaler and actual consumer in a distribution system.
20. What is the upper limit of stock in inventory management beyond which the quantity of an item is not normally allowed to rise?

Answer any 10 of the following

(3 x 10 = 30)

21. Indian scenario in community pharmacy
22. Labelling of dispensed medications
23. Strategies to minimize dispensing errors
24. Patient interviewing techniques
25. Objectives of customer relation management
26. Patient counselling points for bronchial asthma
27. Uses of patient information leaflets

28. Pain management advises
29. Different audits in community pharmacy
30. Standard operating procedure
31. Economic order quantity and its applications

III. Answer any 6 of the following

(5 x 6 = 30)

32. Define patient counselling. Explain stages of patient counselling
33. Explain legal requirements for setting up of a community pharmacy
34. What is a cashbook? Explain different types of cashbooks
35. Briefly explain the role of pharmacist in ensuring safe practice during self-medication
36. Explain the importance of body language in communication
37. What is medication adherence? Add a note on factors influencing non-adherence
38. Explain the scope and importance of health screening services in community pharmacy

QP CODE:.....

Reg No.....

Paper C1 – BIOCHEMISTRY & CLINICAL PATHOLOGY (ER20-23T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. is an example of Trisaccharide
2. The coenzyme form of Vitamin B1 is.....
3. The bonds forming the backbone of protein structure are.....
4. Neumann's test is the confirmatory test for.....
5. integrates urea cycle and TCA cycle.
6. The chemical test to distinguish monosaccharide and disaccharides.....
7. The normal plasma concentration of sodium is.....
8. The synthesis of ketone bodies is regulated by.....enzyme.
9. Consumption of raw egg white results in the deficiency of.....
10. Toxic accumulation of copper in liver causes.....
11. Name the pyrimidine base present in RNA but absent in DNA
12. Number of isoenzyme forms of Lactate dehydrogenase
13. Net gain of ATP in anaerobic Glycolysis
14. Chemical test to identify ketone bodies in urine
15. The co-enzyme required for Transamination reactions
16. The synthesis of ATP from ADP and Pi coupled with Electron transport chain
17. Phenylketonuria is caused due to the deficiency of hepatic enzyme
18. The normal total plasma cholesterol range
19. Name the Sulphur containing essential amino acid
20. Name a non-reducing disaccharide.

Answer any 10 of the following

(3 x 10 = 30)

21. IUB classification of enzymes
22. Dietary sources and functions of Vitamin A
23. Discuss the mechanism of enzyme action
24. Explain Transamination with suitable examples
25. Name the essential fatty acids and discuss their biochemical role
26. Differentiate between Glycogenesis and Glycogenolysis
27. Discuss the Structure and Functions of DNA
28. Write a short note on Diabetes mellitus
29. Classify lipids with suitable examples
30. Explain the biochemical functions of Sodium and Potassium ions
31. Describe the Electron Transport Chain

III. Answer any 6 of the following

(5 x 6 = 30)

32. Define and classify carbohydrates with suitable examples
33. Enumerate the various factors affecting enzyme action
34. List the abnormal constituents of urine and their pathological significance
35. Write a brief note on the structure of proteins
36. Describe the urea cycle. What are the metabolic disorders associated with it?
37. Give the daily requirements, biochemical role and deficiency disease of Calcium.
38. Explain β -oxidation of fatty acids with reference to Palmitic acid.

QP CODE:.....

Reg No.....

Paper D1 – PHARMACOTHERAPEUTICS (ER20-24T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. The common causative microorganism for urinary tract infections is
2. On-off phenomenon is associated with long term use of
3. The most common complication associated with insulin therapy is...
4. The first line treatment for blood pressure lowering in patients with type I diabetes mellitus is
5. Regular use of corticosteroid inhaler may cause....
6. Proton pump inhibitors are most effective if taken
7. Therapeutic and toxic effects of digoxin are potentiated by hypercalcemia and
8. Aspirin when used in children may cause
9. Intravenous morphine is given with to relieve pain in patients with myocardial infarction
10. Concomitant administration of reduces the adverse effects of methotrexate and improve medication adherence.
11. Name the oral hypoglycemic agent used in the treatment of polycystic ovarian disease
12. Mention the use of statins in dyslipidemia
13. Which is the Drug of choice for the treatment of generalized tonic-clonic seizure?
14. Normal serum bilirubin level in adults
15. What is the dose of aspirin used in the prophylaxis of coronary artery disease?
16. Name the Category of antihypertensive drugs that may cause dry cough
17. Mention the first line anti-tubercular drug that may cause ocular toxicity
18. Give an example for expectorant
19. What are ORS?
20. Which special sense organ is affected by the “Phototoxic” reactions of drugs?

Answer any 10 of the following

(3 x 10 = 30)

21. Discuss the aetiology of peptic ulcer disease
22. Write the clinical symptoms of schizophrenia
23. Pharmacotherapy of megaloblastic anaemia
24. Define and classify hypertension
25. Write any three complications of alcoholic liver diseases
26. Write briefly on topical therapy of psoriasis
27. Discuss the non -pharmacological treatment of hypertension
28. What are essential medicines?
29. Write the long-term complications of diabetes mellitus
30. Write a note on DOTS programme
31. Discuss the pharmacotherapy of hypothyroidism?

III. Answer any 6 of the following

(5 x 6 = 30)

32. Discuss the rational use of drugs
33. Explain the pathogenesis of Rheumatoid arthritis
34. Discuss the pharmacotherapy of myocardial infarction
35. Discuss the pharmacological management of acute attack of bronchial asthma
36. Write the prophylactic measures for viral hepatitis
37. Discuss the pharmacotherapy of osteoarthritis
38. Discuss the pharmacotherapy of inflammatory bowel diseases

QP CODE:.....

Reg No.....

Paper E1 – HOSPITAL AND CLINICAL PHARMACY (ER20-25T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. Creatinine clearance is used for the determination of.....
2. An antidote for heparin overdosage is.....
3. Polycythemia is the increase in number of
4. Westergren method is used for the determination of.....
5. Antidote for arsenic and mercury poisoning.....
6. Avoid using cheese, chocolates, alcoholic drinks etc along with class of drug
7. Sterilization of thermolabile drugs is done by
8. A condition of beriberi is due to deficiency of
9. Deletion of a drug in hospital formulary can be decided by.....
10. Naranjo scale is used for the assessment of
11. A strict adherence by the patient to the prescriber is known as....
12. Amyl nitrate is usually administered by which route?
13. Which is the main ingredient of universal antidote?
14. Who is the secretary of Pharmacy and Therapeutic Committee (PTC)?
15. What is expansion of the inventory control method 'EOQ'?
16. Which animal is used for pyrogen testing?
17. Category of drugs which neutralize gastric acid in Peptic Ulcer disease
18. Text books belong to which type of Drug information resources?
19. Name the Antidote for Morphine
20. Which university started the drug information Centre for the first time?

Answer any 10 of the following

(3 x 10 = 30)

21. How is ADR monitoring carried out?
22. Explain the Procedure for the development of hospital formulary?
23. Write a short note on NABH Accreditation?
24. Enumerate the role of pharmacist in preventing antimicrobial resistance?
25. What you meant by FEFO, FIFO methods of inventory control?
26. Explain the Storage and dispensing of radiopharmaceuticals?
27. What are the strategies to minimize medication errors?
28. Explain the procedure for dispensing narcotic & psychotropic drugs?
29. What is Pharmacovigilance? Give its aim and scope?
30. Explain the principles of pharmaceutical care?
31. Explain IV Admixture services and incompatibilities?

III. Answer any 6 of the following

(5 x 6 = 30)

32. What is pharmacy and therapeutic committee? Describe its composition and enumerate its function.
33. Define Hospital Pharmacy? Describe its organizational pattern and enumerate its major functions.
34. Enumerate various inpatient drug distribution systems followed in hospitals.
35. What is drug information services? Describe the different sources for gathering drug information.
36. Define Clinical Pharmacy. Discuss in detail the daily activities of clinical pharmacy in a hospital.
37. Explain the role of liver function tests and renal function tests in the evaluation of disease and drug therapy.
38. What is inventory control? Explain the EOQ method of inventory control technique

QP CODE:.....

Reg No.....

Paper F – PHARMACY LAW AND ETHICS (ER20-26T)

Time: 3 Hours

Total Marks: 80

NOTE: Answers to Questions 1-20 should be provided in the first pages as a single unit.
Give labelled diagrams/flowcharts wherever necessary.

Answer all the following

(1 x 20 = 20)

1. The Pharmacy Education Regulations are laid down by ...
2. The Secretary of the Pharmacy council also acts as the ...
3. The Central drug laboratory is situated at ...
4. Schedule P is related to ...
5. is an airport through which drugs can be imported to India.
6. Government Analyst is a member of the State Pharmacy Council.
7. Ganja and Charas are derivatives of ...
8. Diacetyl Morphine is also known as ...
9. Schedule M is related to ...
10. Form 25 of the D & C act relates to ...
11. What is the colour of Tartrazine dye?
12. Under which category of advertisements does “cure for blindness” come?
13. Where is the Government Opium factory is situated?
14. Name the schedule under which Phenobarbitone comes in the D & C Act.
15. Name the grade of air system required for aseptic preparation and filling of pharmaceuticals.
16. What is another name of Phase IV clinical trial?
17. What is the expanded form of CDSCO?
18. As a medical device, what is the category in which pacemakers are placed?
19. In which year was the National Disaster management act enacted?
20. Where is the Headquarters of the National Pharmaceutical Pricing Authority situated?

Answer any 10 of the following

(3 x 10 = 30)

21. Define “Drug” and “Cosmetic” as per the Drugs and Cosmetics Act 1940.
22. Distinguish between “Misbranded” and “Adulterated” drugs.
23. What are the basic concepts of the Biopharmaceutical Classification System?
24. Explain the constitution of the Institutional Animal Ethics Committee.
25. Draw specimen labels of Acyclovir tablets and Pentobarbitone Sodium Injection.
26. Define “Narcotic Drug” and “Psychotropic Substance” as per the Narcotic Drugs and Psychotropic Substances Act 1985.
27. Explain how documentation is important in a Hospital Pharmacy.
28. What are the objectives of the National Pharmaceutical Pricing Authority?
29. Explain the procedure for approval of a place for Medical Termination of Pregnancy.
30. What is the First Register? What are the requirements for entry into the First register?
31. Explain the important steps in a New Drug Development.

Answer any 6 of the following

(5 x 6 = 30)

32. Explain the constitution and functioning of the State Pharmacy Councils.
33. Explain how a drug or cosmetic can be prohibited from being imported into India.
34. Explain the conditions for the grant of wholesale license for the sale of Schedule X drugs.
35. Explain the qualifications and functions of a Drugs Inspector.
36. What are the objectives with respect to Opium as per the Narcotic Drugs and Psychotropic Substances Act 1985?
37. What are exempted advertisements as per the Drugs and Magic Remedies act 1954?
38. What do you mean by Pharmaceutical Ethics? Explain the role of a pharmacist in relation to his profession.

B.SCHEME FOR SESSIONAL PRACTICAL EXAMINATIONS

NOTE: The mode of calculating Internal assessment marks for practical

For all subject Internal assessment marks have to be taken out of 20.

- For those subjects **not having** assignments/ field visits, the marks secured by the candidate out of 80 for the sessional practical examination (including 10 marks for practical record) shall be reduced to 20
- For those subjects **having** assignments/ field visits / both, the marks secured by the candidate out of 80 for the sessional practical examination (including 10 marks for practical record) shall be reduced to 10 **and** the assessment of assignments/ field visits / both shall be given for the balance 10 marks, as per the table given at the end of scheme for practical sessional examination of each subject.

1.Paper A2 – PHARMACOLOGY (ER20-21P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	<p>Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus</p>	10
2.	<p>Spotters- Any ten items Commonly used Instruments and accessories in experimental pharmacology (Eg- Sherrington recording drum & accessories, Student's organ bath & accessories, levers, cannulae, various equipment for pharmacological screening), Different animals (photos/ pictures) used in experimental pharmacology Devices for drug administration and blood withdrawal in experimental pharmacology Cages for common laboratory animals.</p>	15
3.	<p>Major experiment Pharmacological screening of the test compound for any one of the following: -</p> <ul style="list-style-type: none"> • Analgesic activity by writhing test • Analgesic activity using analgesiometer • Anti-convulsants using electroconvulsimeter • Skeletal muscle relaxants using rota-rod apparatus • CNS stimulants/depressants using actophotometer • Anxiolytics using elevated plus maze • Presence of pyrogens using rabbits <p>(Candidate has to write the principle, procedure and answers of the additional questions, including interpretation of the given data related to the experiment.)</p>	20
4.	<p>Minor experiment-I 10 marks</p> <p>Draw the normal recording of the contractions of isolated frog's heart and show the effect of the administration of any two drugs into the perfusate. Write the mechanism behind the change in contraction (Adrenaline, propranolol, isoprenaline, acetyl choline, atropine, digoxin, small and high dose of calcium, small and high dose of potassium)</p> <p>Minor experiment-II 5 Marks</p>	15

	Describe the principle & procedure involved in determining the mydriatic/miotic/local anaesthetic effect of the test drug on rabbit's eye. (Any one) OR Describe the principle & procedure involved in determining the effect of drugs on ciliary motility on frog's buccal cavity	
5.	Viva voce	10
6.	Record	10

Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 10	10
Assignment marks (Average of three)	10
Total	20

2.Paper B2 – COMMUNITY PHARMACY AND MANAGEMENT (ER20-22P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Major experiment Handling of the given prescription (Candidates should be provided with prescription containing 3 or 4 drugs) Split up of marks <ul style="list-style-type: none"> • Filing of the prescribed drugs with dummy packages, with neat dispensing labels including instructions - 20 marks • Writing the counselling points with patient specific instructions-15 marks <p style="text-align: center;">OR</p> <p style="text-align: center;">Patient counselling.</p> <p>The candidate has to write the counselling points to be given on</p> <ul style="list-style-type: none"> ➤ Relevant aspects of the disease. ➤ Proper usage of medications, including that of specific devices wherever applicable. <p style="text-align: center;">for any one of the following conditions</p> <p>(Type 2 Diabetes Mellitus, Primary Hypertension, Asthma, Hyperlipidaemia, Rheumatoid Arthritis, Headache, GI disturbances -Nausea, Vomiting, Dyspepsia, diarrhoea,</p>	35

	constipation, Worm infestations, Pyrexia, Upper Respiratory Tract infections, Skin infections, Oral and dental disorders.) Split up of marks Writing the steps in patient counselling- 5 marks Disease specific/ patient specific information - 15 marks Preparation of patient information leaflets- 15 marks	
3.	Minor experiment Demonstration/Description of the correct administration technique for any one of the following dummy dosage forms (Oral liquids with measuring cup/cap/dropper, Eye Drops, Inhalers, Nasal drops, Insulin pen, nebulizers, and different types of tablets, patches, enemas, and suppositories) OR Describe the usage and working of any one given digital health tool (Eg- Pulse oximeter, glucometer, Peak flow meter, digital BP monitor etc)	15
4.	Viva voce	10
5.	Record	10

Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 10	10
Assignment marks (Average of three)	5
Average of Field Visit Report marks	5
Total	20

3.Paper C2 – BIOCHEMISTRY & CLINICAL PATHOLOGY (ER20-23P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Major experiment Estimation of any one of the following biochemical constituents present in the given simulated sample of Blood/ serum/ urine using Photo colorimeter OR by titrimetric analysis. Blood/Serum-Creatinine, glucose, cholesterol, calcium, urea, SGOT, SGPT	30

	<p>Urine- Creatinine, glucose, Chloride. Evaluation is based on calculation and percentage error of the report. Split up of marks Observation column and calculation - 5 marks For the report, Error + or – 1% - 25 marks + or – 2% - 22 marks + or – 3% - 20 marks + or – 5% - 15 marks + or – 10% - 12 marks Above 10% - 8 marks</p>	
3.	<p>Minor experiment Identification of organic constituent of biochemical significance such as proteins, amino acids, carbohydrates or lipids etc (any one) present in the given test sample (Proteins – albumin, casein, gelatine, peptone) (Carbohydrates – glucose, fructose, sucrose, lactose) (Lipids- triglycerides, cholesterol) Split up of marks Writing the procedure and observation-8marks Identification of the constituent-12 marks OR Detection of abnormal constituents (any two) in the given sample of urine (simulated) such as glucose, ketone bodies, albumin, bile salts, bile pigments Split up of marks Writing the procedure and observation-4 marks each Identification of the constituents-6 marks each</p>	20
4.	Viva voce	10
5.	Record	10

Practical Internal assessment	MARKS
Actual performance in the sessional examination, reduced to 10	10
Assignment marks (Average of three)	10
Total	20

4.Paper D2 – PHARMACOTHERAPEUTICS (ER20-24P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Major experiment Describe the Pharmaceutical Care Plan to be adopted in the SOAP format for any two of the following conditions: - (Hypertension, Angina Pectoris, Myocardial Infarction, Hyperlipidaemia, Rheumatoid arthritis, Asthma, COPD, Diabetes, Epilepsy, Stroke Depression, Tuberculosis, Anaemia (any one type) Viral infection (any one type), Dermatological conditions (any one condition))	30
3.	Minor experiment-I 10 marks Write the aspects to be covered while giving counselling to the patients on any one of the following conditions <ul style="list-style-type: none"> • Proper usage & storage of different medications and dosage forms (Eg- antibiotics, insulin, inhalations, suppositories& pessaries, NSAIDs)-any one • Proper self-monitoring of parameters like blood sugar, body temperature, pulse rate, oxygen level (Pulse oximeter)-any one • Life style modifications to be adopted in those with chronic conditions such as diabetes, hypertension, epilepsy, angina-any one Minor experiment-II 10 marks Carry out the dose calculation of drugs for paediatric, and geriatrics under various pathological conditions - any one 1	20
4.	Viva voce	10
5.	Record	10

Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 20	20
Total	20

5.Paper E2 – HOSPITAL AND CLINICAL PHARMACY (ER20-25P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	<p>Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus</p>	10
2.	<p>Spotters-Any five items</p> <ul style="list-style-type: none"> • Orthopaedic and Surgical Aids such as knee cap, LS belts, abdominal belt, walker, walking sticks, etc. • Different types of bandages such as sterile gauze, cotton, crepe bandages, etc. • Needles, syringes, catheters, IV set, urine bag, RYLE's tube, urine pots, colostomy bags, oxygen masks, etc. • Digital health tools 	10
3.	<p>Major experiment Prepare the answer for the given drug information query (2 Nos)with the help of a suitable source of information OR Fill the ADR reporting form with the given details(1No) and carry out the causality assessment.</p>	20
4.	<p>Minor experiment-I 15 Marks Identification of drug interactions in the given prescriptions (2 Nos) and suggesting the remedial measures.</p> <p>Minor experiment-II 5 marks Interpret the given laboratory report (1No) on any of the following parameters and suggest the modification needed in the given prescription (Haematological, liver function, renal function, thyroid function or pulmonary function tests, tests associated with cardiac disorders, fluid and electrolyte balance etc)</p>	20
5.	Viva voce	10
6.	Record	10

Practical Internal assessment	MARKS
Actual performance in the sessional examination reduced to 10	10
Assignment marks (Average of three)	5
Average of Field Visit Report marks	5
Total	20

C.SCHEME FOR BOARD EXAMINATIONS

1.Paper A2 – PHARMACOLOGY (ER20-21P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	<p>Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus</p>	10
2.	<p>Spotters- Any ten items Commonly used Instruments and accessories in experimental pharmacology (Eg- Sherrington recording drum & accessories, Student's organ bath & accessories, levers, cannulae, various equipment for pharmacological screening), Different animals (photos/ pictures) used in experimental pharmacology Devices for drug administration and blood withdrawal in experimental pharmacology Cages for common laboratory animals.</p>	15
3.	<p>Major experiment Pharmacological screening of the test compound for any one of the following: -</p> <ul style="list-style-type: none"> • Analgesic activity by writhing test • Analgesic activity using analgesiometer • Anti-convulsants using electroconvulsimeter • Skeletal muscle relaxants using rota-rod apparatus • CNS stimulants/depressants using actophotometer • Anxiolytics using elevated plus maze • Presence of pyrogens using rabbits <p>(Candidate has to write the principle, procedure and answers of the additional questions, including interpretation of the given data related to the experiment.)</p>	25
4.	<p>Minor experiment-I 15 marks</p> <p>Draw the normal recording of the contractions of isolated frog's heart and show the effect of the administration of any two drugs into the perfusate. Explain the mechanism behind the change in contraction (Adrenaline, propranolol, isoprenaline, acetyl choline, atropine, digoxin, small and high dose of calcium, small and high dose of potassium)</p> <p>Minor experiment-II 5 marks</p>	20

	Describe the principle & procedure involved in determining the mydriatic/miotic/local anaesthetic effect of the test drug on rabbit's eye. (Any one) OR Describe the principle & procedure involved in determining the effect of drugs on ciliary motility on frog's buccal cavity	
5.	Viva voce	10

2.Paper B2 – COMMUNITY PHARMACY AND MANAGEMENT (ER20-22P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	<p>Major experiment Handling of the given prescription (Candidates should be provided with prescription containing 3 or 4 drugs) Split up of marks</p> <ul style="list-style-type: none"> • Filing of the prescribed drugs with dummy packages, with neat dispensing labels including instructions - 25 marks • Writing the counselling points with patient specific instructions-15 marks <p style="text-align: center;">OR Patient counselling.</p> <p>The candidate has to write the counselling points to be given on</p> <ul style="list-style-type: none"> ➤ Relevant aspects of the disease. ➤ Proper usage of medications, including that of specific devices wherever applicable. <p style="text-align: center;">for any one of the following conditions</p> <p>(Type 2 Diabetes Mellitus, Primary Hypertension, Asthma, Hyperlipidaemia, Rheumatoid Arthritis, Headache, GI disturbances -Nausea, Vomiting, Dyspepsia, diarrhoea, constipation, Worm infestations, Pyrexia, Upper Respiratory Tract infections, Skin infections, Oral and dental disorders.)</p> <p>Split up of marks Writing the steps in patient counselling- 5 marks Disease specific/ patient specific information - 15 marks Preparation of patient information leaflets- 20 marks</p>	40

3.	<p>Minor experiment Demonstration/Description of the correct administration technique for any one of the following dummy dosage forms</p> <p>(Oral liquids with measuring cup/cap/dropper, Eye Drops, Inhalers, Nasal drops, Insulin pen, nebulizers, and different types of tablets, patches, enemas, and suppositories.)</p> <p>OR</p> <p>Describe the usage and working of any one given digital health tool (Eg- Pulse oximeter, glucometer, Peak flow meter, digital BP monitor etc)</p>	20
4.	Viva voce	10

3.Paper C2 – BIOCHEMISTRY & CLINICAL PATHOLOGY (ER20-23P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	<p>Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus</p>	10
2.	<p>Major experiment Estimation of any one of the following biochemical constituents present in the given simulated sample of Blood/ serum/ urine using Photo colorimeter OR by titrimetric analysis.</p> <p>Blood/Serum-Creatinine, glucose, cholesterol, calcium, urea, SGOT, SGPT Urine- Creatinine, glucose, Chloride. Evaluation is based on calculation and percentage error of the report.</p> <p>Split up of marks Observation column and calculation - 5 marks</p> <p>For the report, Error + or – 1% - 35 marks + or – 2% - 32 marks + or – 3% - 30 marks + or – 5% - 25 marks + or – 10% - 20 marks Above 10% - 12 marks</p>	40
3.	<p>Minor experiment Identification of organic constituent of biochemical significance such as proteins, amino acids, carbohydrates or lipids etc (any one) present in the given test sample (Proteins – albumin, casein, gelatine, peptone) (Carbohydrates – glucose, fructose, sucrose, lactose) (Lipids- triglycerides, cholesterol) Split up of marks</p>	20

	Writing the procedure and observation-8marks Identification of the constituent-12 marks OR Detection of abnormal constituents (any two) in the given sample of urine (simulated) such as glucose, ketone bodies, albumin, bile salts, bile pigments Split up of marks Writing the procedure and observation-4 marks each Identification of the constituents-6 marks each	
4.	Viva voce	10

4.Paper D2 – PHARMACOTHERAPEUTICS (ER20-24P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Major experiment Describe the Pharmaceutical Care Plan to be adopted in the SOAP format for any two of the following conditions: - (Hypertension, Angina Pectoris, Myocardial Infarction, Hyperlipidaemia, Rheumatoid arthritis, Asthma, COPD, Diabetes, Epilepsy, Stroke Depression, Tuberculosis, Anaemia (any one type) Viral infection (any one type), Dermatological conditions (any one condition))	40
3.	Minor experiment-I 10 marks Write the aspects to be covered while giving counselling to the patients on any one of the following conditions <ul style="list-style-type: none"> • Proper usage & storage of different medications and dosage forms (Eg- antibiotics, insulin, inhalations, suppositories& pessaries, NSAIDs)-any one • Proper self-monitoring of parameters like blood sugar, body temperature, pulse rate, oxygen level (Pulse oximeter)-any one • Life style modifications to be adopted in those with chronic conditions such as diabetes, hypertension, epilepsy, angina-any one Minor experiment-II 10 Marks Carry out the dose calculation of drugs for paediatric, and geriatrics under various pathological conditions - any one	20
4.	Viva voce	10

5.Paper E2 – HOSPITAL AND CLINICAL PHARMACY (ER20-25P)

Time: 3 Hours

Total Marks: 80

No.	QUESTIONS	Marks
1.	Synopsis Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	Spotters- Any five items <ul style="list-style-type: none">• Orthopaedic and Surgical Aids such as knee cap, LS belts, abdominal belt, walker, walking sticks, etc.• Different types of bandages such as sterile gauze, cotton, crepe bandages, etc.• Needles, syringes, catheters, IV set, urine bag, RYLE's tube, urine pots, colostomy bags, oxygen masks, etc.• Digital health tools	10
3.	Major experiment Prepare the answer for the given drug information query (2 Nos)with the help of a suitable source of information OR Fill the ADR reporting form with the given details (1No) and carry out the causality assessment.	30
4.	Minor experiment-I 15 Marks Identification of drug interactions in the given prescriptions (2 Nos) and suggesting the remedial measures. Minor experiment-II 5 marks Interpret the given laboratory report (1No) on any of the following parameters and suggest the modification needed in the given prescription (Haematological, liver function, renal function, thyroid function or pulmonary function tests, tests associated with cardiac disorders, fluid and electrolyte balance etc)	20
5.	Viva voce	10