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.

CONTENTS

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 called ……..solution.
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-phycocyanin 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) contains …….and …….
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.	**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	25

	• 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.	**Minor experiment – I** Standardization of the given solution (Sodium hydroxide / Potassium permanganate). Evaluation is based on calculation and percentage error of the report. Split up of marks Calculation - 3 marks For the report, <1% error- 12 marks 1 - 2% error - 10 marks 2.1 - 5% error - 9 marks 5.1 - 7.5% error - 7 marks 7.6 - 10% error - 5 marks Above 10% error - 4 marks. **OR** Preparation of Benzoic acid from Benzamide /Picric acid from Phenol. Split up of marks Writing the procedure- 3 marks For evaluation, Colour & odour - 1 marks Dryness - 2 marks Texture- 2 marks Yield - 7 marks	15
4.	**Minor experiment – II** 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.	10
5.	**Viva voce**	10
6.	**Record**	10
	Note: **It is compulsory to include one experiment involving titration (either from minor experiment I or major experiment) in the practical examination.** ● 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.

Table III

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

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.	**Synopsis** Two questions, with subdivisions wherever required, from the experiments as per syllabus	10
2.	**Spotters- Any 10 from the following** • 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.	**Major Experiment-I** 15 Marks Simulated counselling experiments using charts/pictures for **any one** of the following a) Tobacco Cessation b) Importance of Balanced Diet c) Disadvantages of Junk food d) Awareness communicable diseases (any one) **Major Experiment-II** 15 Marks 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. OR 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. OR 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	30

4.	**Minor Experiment** Preparation of information leaflets on **any two** of the following • 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

	Potassium permanganate). Evaluation is based on calculation and percentage error of the report. Split up of marks Calculation - 5 marks 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. **OR** Preparation of Benzoic acid from Benzamide /Picric acid from Phenol. Split up of marks Writing the procedure- 3 marks For evaluation, Colour & odour - 1 marks Dryness - 2 marks Texture- 4 marks Yield - 10 marks	
4.	**Minor experiment – II** 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.	15
5.	**Viva voce**	10
	Note: **It is compulsory to include one experiment involving titration (either from minor experiment I or major experiment) in the practical examination.** ● 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.	**Spotters- Any 10 from the following** • 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.	**Major Experiment-I** 15 Marks Simulated counselling experiments using charts/pictures for **any one** of the following (15 Marks) e) Tobacco Cessation f) Importance of Balanced Diet g) Disadvantages of Junk food h) Awareness communicable diseases (any one) **Major Experiment-II** 15 Marks 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. OR 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. OR 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	30

4.	**Minor Experiment** Preparation of information leaflets on any two of the following • 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