

Code No. D-8247/PCI

## FACULTY OF PHARMACY

B. Pharmacy V Semester (PCI) (Backlog) Examination, August 2022

Subject: Industrial Pharmacy - I

Time: 3 Hours

Max. Marks: 75

### PART - A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

- 1 What is Racemization? Give example.
- 2 Write the methods to study of solid forms of a substance.
- 3 Explain friability test for tablets.
- 4 What are the tests used for detecting type of emulsion?
- 5 Write the differences between type A and type B gelatin.
- 6 Write the advantages of pellets.
- 7 Explain the concept of aseptic processing.
- 8 Plastic bottles are preferred over glass bottles for saline. Justify.
- 9 Write the type of glass with their uses for pharmaceutical products.
- 10 Define cosmetics and give classification of cosmetics with examples.

### PART - B

Note: Answer any two questions.

(2 x 10 = 20 Marks)

- 11 (a) Discuss about crystallinity of solid substances.  
(b) Describe the chemical reactions involved in degradation of API.
- 12 Explain in detail about manufacturing of hard gelatin capsules and soft gelatin capsules.
- 13 (a) Describe the components of aerosol system with the help of a neat diagram.  
(b) Discuss the types of aerosol system.

### PART - C

Note: Answer any seven questions.

(7 x 5 = 35 Marks)

- 14 Explain the techniques for solubilization of API.
- 15 Discuss the steps involved in sugar coating of tablets.
- 16 Describe the evaluation of liquid orals as per pharmacopoeia.
- 17 Explain in detail about extrusion-spheronization technique.
- 18 Elaborate the parenteral additives with their examples.
- 19 What are pyrogens? Discuss the pyrogen test for injectables.
- 20 Write the differences between flocculated and deflocculated suspensions.
- 21 Elaborate water attack test USP and powder glass test USP for packaging glass.
- 22 Discuss the manufacturing, and uses of cold cream and vanishing cream.

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Code No: D-8246/PCI

**FACULTY OF PHARMACY**

**B. Pharmacy V Semester (PCI) (Backlog) Examination, August 2022**

**Subject: Medicinal Chemistry - II**

**Time: 3 Hours**

**Max. Marks: 75**

**PART - A**

**Note: Answer all the questions.**

**(10 x 2 = 20 Marks)**

- 1 Write the structure and uses of omeprazole.
- 2 Write the mechanism of action of antimetabolites.
- 3 Outline the synthesis of isosorbide dinitrate.
- 4 Discuss the mechanism of action of ACE inhibitors.
- 5 Outline the synthesis of warfarin.
- 6 Define antiarrhythmics.
- 7 What are oral contraceptives? Give examples.
- 8 Write the structures of testosterone and oestradiol.
- 9 Discuss the mechanism of action of glucosidase inhibitors.
- 10 Write about structure of insulin.

**PART - B**

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 (a) What are H<sub>2</sub>-antagonists? Outline the synthesis of cimetidine.  
(b) Classify anti-neoplastic agents with two structures from each class.
- 12 (a) Explain the mechanism of action of anti-arrhythmic drugs with examples.  
(b) Outline the synthesis of chlorothiazide and furosemide.
- 13 (a) Classify oral hypoglycemic drugs with one structure from each class.  
(b) Discuss SAR of local anesthetics.

**PART - C**

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 Outline the synthesis of Diphenhydramine hydrochloride and promethazine hydrochloride.
- 15 Classify calcium channel blockers with one structure from each class.
- 16 Classify anti-hypertensives with one structure from each class.
- 17 Give an account on agents used in treating congestive heart failure.
- 18 Write in detail about oral contraceptives with structures.
- 19 Write a note on thyroid and anti-thyroid drugs.
- 20 Discuss mechanism of action of any two categories of diuretics with examples.
- 21 Classify local anesthetics with structures.
- 22 Outline the synthesis of tolbutamide and benzocaine.

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Code No.D-8249/PCI

## FACULTY OF PHARMACY

B. Pharmacy V Semester (PCI) (Backlog) Examination, September 2022

Subject: Pharmacognosy & Phytochemistry - II

Time: 3 Hours

Max. Marks: 75

### PART - A

**Note: Answer all the questions.**

**(10 x 2 = 20 Marks)**

- 1 Give various application of radioisotopes.
- 2 How will you introduce radiolabelled compounds in plant?
- 3 Define glycoside and give its classification with examples.
- 4 Give the special test for identification of aloe.
- 5 Give the structure and uses of rutin.
- 6 How will you isolate menthol?
- 7 Write about important applications of diosgenin.
- 8 How will you estimate caffeine?
- 9 Give biological source and uses of digitalis.
- 10 Write about biological source and uses of cinnamon.

### PART - B

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 Explain in detail the biosynthesis of any one secondary metabolite through acetate mevalonate pathway.
- 12 Explain in detail method of isolation, identification and analysis of reserpine.
- 13 Write a note on various chromatographic techniques used in identification and purification of phytoconstituents.

### PART - C

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 Explain Shikimic acid pathway.
- 15 What are alkaloids? Give general method of isolation for alkaloids.
- 16 Write a note on method of isolation and identification of podophylotoxin.
- 17 Give the method of estimation for sennoside.
- 18 Write about biological source, chemical constituents and uses of fennel and catechu.
- 19 Write a note on method of isolation and identification of atropine.
- 20 Explain the Isolation, identification and analysis of artemisin.
- 21 What do you mean by tannins? Give its classification and general tests for identification of tannins.
- 22 Write a brief note on modern method for extraction of phytoconstituents.



Code No: D-8250/PCI

## FACULTY OF PHARMACY

**B. Pharmacy V Semester (PCI) (Backlog) Examination, September 2022**

**Subject: Pharmaceutical Jurisprudence**

**Time: 3 Hours**

**Max. Marks: 75**

### PART - A

**Note: Answer all the questions.**

**(10 x 2 = 20 Marks)**

- 1 Write any three classes of drugs and cosmetics which are prohibited from import.
- 2 Define drug according to D & C Act.
- 3 What are the labeling instructions for Schedule X drugs?
- 4 Write the functions of government drug analyst.
- 5 Explain the terms In bond and Outside bond according to Medicinal and Toilet preparation Act 1955.
- 6 What is the eligibility criterion for registration as a pharmacist?
- 7 Write the formula for calculating retail price of formulations.
- 8 Write the constitution of Institutional Animal Ethics Committee.
- 9 Define ethics.
- 10 Define Intellectual Property Rights.

### PART - B

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 Enlist the objectives of Pharmacy Act 1948. Write about the constitution and functions of state pharmacy council.
- 12 Explain the legal procedure for cultivation, production, manufacturing and sale of opium.
- 13 Explain requirements for manufacture of drugs for test, examination and analysis. Add a note on loan license and repacking license.

### PART - C

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 What are the objectives of Drugs and Cosmetics Act 1940?
- 15 Write a note on central drugs laboratory.
- 16 Write a note on Schedule Y.
- 17 Discuss the layout and construction of bonded and non bonded laboratory.
- 18 Write a note on pharmaceutical ethics to be followed by a pharmacist.
- 19 Define trademarks, copyrights and patents.
- 20 Write a short note on Drug Enquiry Committee.
- 21 What are the salient feature of Drugs and Magic Remedies Act?
- 22 Write a note on Drug Price Control Order.

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Code No.D-8248/PCI

## FACULTY OF PHARMACY

B. Pharmacy V Semester (PCI) (Backlog) Examination, September 2022

Subject: Pharmacology - II

Time: 3 Hours

Max. Marks: 75

### PART - A

**Note: Answer all the questions.**

**(10 x 2 = 20 Marks)**

- 1 Explain the mechanism of anti-arrhythmic action of lidocaine.
- 2 What is arrhythmia? Mention two drugs used in its treatment.
- 3 What are fibrinolytics? Mention two examples.
- 4 Mention the uses of vasopressin analogues.
- 5 Classify autacoids with examples.
- 6 What is rheumatism? Mention the drugs used in rheumatism.
- 7 What are anabolic steroids? Write their uses.
- 8 Explain about hormonal regulation of plasma calcium levels.
- 9 Write the mechanism of action of glucocorticoids.
- 10 Define bioassay. Mention its applications.

### PART - B

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 Explain the various methods of bioassay of insulin and digitalis.
- 12 (a) Classify the non-steroidal anti-inflammatory agents with examples.  
(b) Explain the mechanism of action, uses and adverse effects of salicylates.
- 13 (a) What is congestive heart failure? Classify the drugs used for its treatment.  
(b) Explain the mechanism of action, adverse drug reactions and uses of digoxin.

### PART - C

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 Write short notes on pharmacology vitamin B<sub>12</sub>.
- 15 Classify anticoagulants. Mention the pharmacological actions of heparin.
- 16 What is angina pectoris? Classify antianginal drugs.
- 17 Write the mechanism of action, adverse drug reactions and therapeutic uses of ACE inhibitors.
- 18 Explain about histamine receptors and drugs acting on them.
- 19 Write the pharmacology of allopurinol.
- 20 Write the mechanism of action, adverse drug reactions and uses of metformin.
- 21 Write the pharmacological actions and therapeutic uses of thyroxine.
- 22 Write a brief note on oral contraceptives.

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**FACULTY OF PHARMACY**  
**B. Pharmacy V Semester (PCI) (MAIN & BACKLOG) Examination,**  
**February / March 2022**

**Subject: Pharmaceutical Jurisprudence**

**Time: 3 Hours**

**Max. Marks: 75**

**PART - A**

**Note: Answer all questions.**

**(10 x 2 = 20 Marks)**

- 1 Define misbranded and spurious drugs according to drugs and cosmetics act 1940.
- 2 What do you understand by loan license and repacking license?
- 3 What is Schedule H?
- 4 What is the role of drug inspectors?
- 5 Write the constitution of state pharmacy council.
- 6 Define narcotic drugs and psychotropic substances.
- 7 What are the objectives of drug price control order?
- 8 List the classes of exempted advertisements.
- 9 Define Patents.
- 10 What for schedule M, N, X and Y?

**PART - B**

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 Describe schedule M with regard to requirements for manufacturing of a drug.
- 12 Describe the salient features, prohibited advertisements, exempted advertisements of drugs as per magic remedies act.
- 13 Explain in detail about pharmaceutical ethics.

**PART - C**

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 What are the requirements for manufacture of schedule X drugs?
- 15 Describe the classes of drugs and cosmetic prohibited from import according to D & C Act.
- 16 Describe wholesale, retail and restricted licenses for sale of drugs.
- 17 Write the constitution and responsibility of drug technical advisory board.
- 18 What are the objectives and functions of Pharmacy Act 1948?
- 19 Describe the procedure for manufacture and export of alcoholic preparations.
- 20 How do you calculate retail and ceiling price of scheduled formulations?
- 21 Explain CPCSEA guidelines for animal experiments.
- 22 Write a note on right to information act.



**FACULTY OF PHARMACY**  
**B. Pharmacy V Semester (PCI) (MAIN & BACKLOG) Examination,**  
**February / March 2022**

**Subject: Medicinal Chemistry - II**

**Time: 3 Hours**

**Max. Marks: 75**

**PART - A**

**Note: Answer all questions.**

**(10 x 2 = 20 Marks)**

- 1 Write about histamine receptors and their distribution in the body.
- 2 Outline the synthesis of mercaptopurine.
- 3 Classify antianginals with examples.
- 4 Outline the synthesis of chlorthiazide.
- 5 What are coagulants? Give examples.
- 6 Describe HMGCoA reductase inhibitors.
- 7 Write the structures of oestrone and oestriol.
- 8 What are thyroid drugs? Give examples.
- 9 Discuss the mechanism of action of biguanides with examples.
- 10 Write the structures of procaine and benzocaine.

**PART - B**

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 (a) Classify H<sub>1</sub>-antagonists with two structures from each class.  
(b) Classify alkylating agents. Explain the mechanism of action and synthesis of meclorethamine.
- 12 Discuss in detail about the mechanism of action of the following classes of diuretics:
  - (a) Carbonic anhydrase inhibitors.
  - (b) Potassium sparing diuretics
  - (c) Loop diuretics.
- 13 (a) Classify local anesthetics with structures.  
(b) Write the mechanism of action and synthesis of disopyramide phosphate.

**PART - C**

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 Discuss the mechanism of action of proton pump inhibitors.
- 15 Write the mechanism of action of vasodilators and outline the synthesis of nitroglycerin.
- 16 Classify anti-hyperlipidemic agents with one structure from each class.
- 17 Give an account on anticoagulants. Give the synthesis of warfarin.
- 18 Write a note on drugs used in congestive heart failure.
- 19 Classify sex hormones with examples.
- 20 Explain in detail about corticosteroids.
- 21 Write a note on insulin preparations.
- 22 Discuss SAR of local anesthetics.

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**FACULTY OF PHARMACY**  
**B. Pharmacy V Semester (PCI) (Main & Backlog) Examination,**  
**February 2022**

**Subject: Industrial Pharmacy - I**

**Time: 3 Hours**

**Max. Marks: 75**

**PART - A**

**Note: Answer all questions.**

**(10 x 2 = 20 Marks)**

- 1 What is the need of preformulation studies in pharmaceutical product development?
- 2 Write the differences between crystalline and amorphous forms of solid.
- 3 Explain the importance of enteric coating of tablet.
- 4 Describe the granulation methods for tablet manufacturing.
- 5 Outline the steps of manufacturing of hard gelatin capsule SHELL.
- 6 Enlist the pelletization techniques.
- 7 What is isotonicity? Explain its importance for parenteral products.
- 8 Write the principle involved in LAL test for injectables.
- 9 Illustrate the components of aerosol system with the help of neat diagram.
- 10 How sunscreen products help to protect skin against UV radiation?

**PART - B**

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 (a) Describe the compression cycle for tablet manufacturing.  
(b) Explain in process quality control tests for tablet compression.
- 12 (a) Describe sterility test procedures as per official books.  
(b) Discuss formulation considerations for ophthalmic products.
- 13 (a) Elucidate the manufacturing of lipstick.  
(b) What are the possible interactions between content and packaging material?

**PART - C**

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 What is BCS classification? Discuss its importance.
- 15 Discuss the tablet additives with examples of each class.
- 16 Describe the importance of fine particle characterization in preformulation studies.
- 17 Discuss the method for preparation of emulsion.
- 18 Describe the manufacturing defects of hard gelatin capsules.
- 19 Explain powder and liquid layering methods for pelletization, with a note on equipment used for the same.
- 20 Discuss quality control of parenteral products.
- 21 Describe ingredients for toothpaste manufacturing.
- 22 Explain the criteria for selection of packaging material.



**FACULTY OF PHARMACY**  
**B. Pharmacy V Semester (PCI) (MAIN & BACKLOG) Examination,**  
**February 2022**

**Subject: Pharmacology - II**

**Time: 3 Hours**

**Max. Marks: 75**

**PART - A**

**Note: Answer all questions.**

**(10 x 2 = 20 Marks)**

- 1 What is hyperlipidemia? Mention two drugs used in hyperlipidemia.
- 2 Elucidate the mechanism of antianginal effect of Glyceryl trinitrate.
- 3 What are antiplatelet drugs and write their therapeutic uses?
- 4 What are the applications of plasma volume expanders?
- 5 Describe the triple response of histamine.
- 6 What is gout? Mention the drugs used in gout.
- 7 What are the therapeutic uses of T<sub>3</sub> and T<sub>4</sub>?
- 8 Enlist the actions of insulin.
- 9 Define bioassay. List out the types of bioassays.
- 10 Mention the uses of tocolytics.

**PART - B**

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 (a) Classify Diuretic agents.  
(b) Explain the pharmacology of Loop diuretics.
- 12 Define antihypertensives. Classify with examples. Write the mechanism of action, adverse drug reactions and therapeutic uses of ACE inhibitors.
- 13 (a) Define and classify Oral Hypoglycemic agents.  
(b) Write the pharmacology of Biguanides.

**PART - C**

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 Explain about oxytocics.
- 15 What are the methods of bioassay of d-tubocurarine? Discuss any one method in detail.
- 16 Write short notes on oral contraceptives.
- 17 Discuss the pharmacology of corticosteroids.
- 18 Classify NSAIDs with examples. Explain the mechanism of action of aspirin.
- 19 Write the pharmacological actions and uses of prostaglandins.
- 20 Write short notes on oral anticoagulants.
- 21 Discuss briefly about anti-platelet drugs.
- 22 What is arrhythmia? Classify antiarrhythmic drugs.

**FACULTY OF PHARMACY**  
**B. Pharmacy V Semester (PCI) (MAIN & BACKLOG) Examination,**  
**February / March 2022**

**Subject: Pharmacognosy & Phytochemistry - II**

**Time: 3 Hours**

**Max. Marks: 75**

**PART - A**

**Note: Answer all questions.**

**(10 x 2 = 20 Marks)**

- 1 What do you mean by radioisotope? Give some examples of radioisotopes used in tracer techniques.
- 2 Define primary and secondary metabolites and give examples.
- 3 What is cardiac glycosides?
- 4 Define alkaloids and give its classification with examples.
- 5 Give structure and uses of Caffeine.
- 6 How will you isolate curcumin from turmeric?
- 7 Write about important applications of Sennoside.
- 8 Give the structure and uses of Artemisinin.
- 9 Give the biological source and uses ginger.
- 10 Give chemical tests for identification of tannins.

**PART - B**

**Note: Answer any two questions.**

**(2 x 10 = 20 Marks)**

- 11 Explain in detail the biosynthesis of any one secondary metabolite through Shikimic acid pathway.
- 12 Explain in detail method of isolation, identification and analysis of Glycyrrhetinic acid.
- 13 Write a descriptive note on various techniques used for extraction of phytoconstituents.

**PART - C**

**Note: Answer any seven questions.**

**(7 x 5 = 35 Marks)**

- 14 Write a note on tracer techniques.
- 15 Write about biological source, chemical constituents and uses of opium and aloe.
- 16 Write a note on method of isolation and identification of quinine.
- 17 Give the method of estimation for vincristine and vinblastine.
- 18 Write about biological source, chemical constituents and uses of coriander and benzoin.
- 19 Write a note on method of isolation and identification of podophylotoxin.
- 20 Explain the Isolation, identification and analysis of citral.
- 21 What do you mean by volatile oil? Give its classification and method of isolation.
- 22 Write a brief note on Electrophoresis.



Code No. 12327/PCI

**FACULTY OF PHARMACY**

**B. Pharmacy V-Semester (PCI) (Backlog) Examination, September 2021**

**Subject: Medicinal Chemistry – II**

**Time: 2 Hours**

**Max. Marks: 75**

**Note: Answer any seven questions Part – A, any one question from Part – B and any five questions from Part – C.**

**PART – A (7 x 3 = 21 Marks)**

- 1 Write about histamine receptors and their distribution in the body.
- 2 Outline the synthesis of mechlorethamine.
- 3 Classify vasodilators with examples.
- 4 Outline the synthesis of furosemide.
- 5 What are coagulants? Give examples.
- 6 Discuss the mechanism of action of HMGCoA reductase inhibitors.
- 7 Write the structures of oestrone and diethylstilbestrol.
- 8 What are anti-thyroid drugs? Give examples.
- 9 Discuss the mechanism of action of glucosidase inhibitors with examples.
- 10 Write the structures of lidocaine and dibucaine.

**PART – B (1 x 14 = 14 Marks)**

- 11 (a) Classify  $H_1$ -antagonists with two structures from each class.  
(b) Classify antimetabolites. Explain the mechanism of action and synthesis of methotrexate.
- 12 Discuss in detail about the mechanism of action of the following classes of diuretics:  
(a) Carbonic anhydrase inhibitors  
(b) Thiazides  
(c) Loop diuretics
- 13 (a) Classify anti-arrhythmic drugs with structures.  
(b) Write the mechanism of action and synthesis of tolbutamide.

**PART – C (5 x 8 = 40 Marks)**

- 14 Discuss the mechanism of action of omeprazole.
- 15 Write the mechanism of action of vasodilators and outline the synthesis of Isosorbide dinitrite.
- 16 Classify anti-hypertensive agents with one structure from each class.
- 17 Give an account on anticoagulants. Give the synthesis of warfarin.
- 18 Write in detail about stereochemistry of steroids.
- 19 Explain oral contraceptives with structures of drugs.
- 20 Write a note on insulin preparations.
- 21 Discuss SAR of local anesthetics.
- 22 Outline the synthesis of benzocaine and procaine.

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Code No. 12328/PCI

## FACULTY OF PHARMACY

**B. Pharmacy V-Semester (PCI) (Backlog) Examination, September 2021**

**Subject: Industrial Pharmacy – I**

**Time: 2 Hours**

**Max. Marks: 75**

**Note: Answer any seven questions Part – A, any one question from Part – B and any five question from Part – C.**

### **PART – A (7 x 3 = 21 Marks)**

- 1 Define Polymorphism.
- 2 Classify tablets and give ideal characteristics of tablets.
- 3 Give formulation of suspension.
- 4 Write a note on sizes of hard gelatin capsules.
- 5 What are pellets? Give advantages of pellets.
- 6 Mention different evaluation tests for parenterals.
- 7 What are Tonicity modifiers?
- 8 What is the use of Abrasives in the formulation of tooth pastes?
- 9 What is Orange peel effect in tablet coating?
- 10 What are the unofficial tests for evaluation of tablets?

### **PART – B (1 x 14 = 14 Marks)**

- 11 Explain the study of physical characteristics during preformulation.
- 12 (a) Explain perforated coating pans.  
(b) Write a brief note on filing of capsules.
- 13 (a) Explain pyrogen test for parenterals.  
(b) Discuss about the formulation of pharmaceutical aerosols.

### **PART – C (5 x 8 = 40 Marks)**

- 14 How flow properties of powders are measured?
- 15 Explain about hardness and friability testing of tablets.
- 16 Write a brief note on manufacturing defects in tablet coating.
- 17 Explain formulation considerations of liquid dosage forms.
- 18 Explain weight variation test and content uniformity test for capsules.
- 19 Enlist techniques of pelletization. Explain advantages of pellets over conventional dosage forms.
- 20 Write a brief note on sterile powders.
- 21 Explain Draize eye test for ophthalmics.
- 22 Explain the factors affecting selection of pharmaceutical packaging materials.

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Code No. 12330/PCI

## FACULTY OF PHARMACY

B.Pharmacy V Semester (PCI) (Backlog) Examination, September 2021

Subject: Pharmacognosy and Phytochemistry - II

Time: 2 Hours

Max. Marks: 75

### PART - A

Note: Answer any seven questions.

(7 x 3 = 21 Marks)

- 1 Write the biological sources, chemical constituent names of senna.
- 2 What is the difference between TLC and PC?
- 3 Write the biological source and uses of sennosides and Atropine.
- 4 Write one chemical test for detection of flavonoids and alkaloids.
- 5 Write applications of UV spectroscopy in analysis of crude drugs.
- 6 Write the source, active constituents and uses of Liquorice.
- 7 Explain concept of microwave assisted extraction.
- 8 What are resins? Give five examples.
- 9 Give structure and uses of Digoxin.
- 10 Write the active constituents in clove and cinnamon.

### PART - B

Note: Answer any one questions.

(1 x 14 = 14 Marks)

- 11 Write a detailed note on super critical fluid extraction.
- 12 Write a procedure for isolative and estimation cur cumin.
- 13 Write about precursor-product and sequential analysis methods in tracer technique.

### PART - C

Note: Answer any five questions.

(5 x 8 = 40 Marks)

- 14 Write the biological source and therapeutic uses of  
(a) Liquorice (b) Ginger (c) Artemesia.
- 15 Write a note on electrophoresis.
- 16 Draw structure and write procedures for isolation of menthol.
- 17 Discuss chemistry and identification tests for Opium alkaloids.
- 18 Write commercial applications of eugenol, gentian and vinca alkaloids.
- 19 Write source, active constituents and uses of guggul and digitalis.
- 20 Write procedures for industrial production of sennosides.
- 21 Enlist modern extraction techniques. Write in detail about any one technique.
- 22 Write biological sources, chemistry and uses of lignans.

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Code No. 12329/PCI

## FACULTY OF PHARMACY

**B. Pharmacy V-Semester (PCI) (Backlog) Examination, September 2021**

**Subject: Pharmacology – II**

**Time: 2 Hours**

**Max. Marks: 75**

**Note: Answer any seven questions Part – A, any one question from Part – B and any five questions from Part – C.**

### **PART – A (7 x 3 = 21 Marks)**

- 1 Define and classify Autocoids.
- 2 Write the differences between COX-I and COX-II.
- 3 Write the mechanism of action of Streptokinase.
- 4 What are the adverse effects of Corticosteroids?
- 5 Define Bioassay. Write the applications of Bioassay.
- 6 What are different waves and segments of ECG? Write their significance.
- 7 Classify antidiuretics?
- 8 Explain the mechanism of action of Quinidine.
- 9 Mention various Anterior Pituitary Hormones.
- 10 Write the functions of Insulin and Glucagon.

### **PART – B (1 x 14 = 14 Marks)**

- 11 (a) Define and classify diuretics.  
(b) Write in detail about Loop Diuretics.
- 12 (a) Classify Anticoagulants.  
(b) Explain the pharmacology of Heparin and Warfarin.
- 13 Write the Pharmacology and uses of Eicosanoids

### **PART – C (5 x 8 = 40 Marks)**

- 14 Explain about oxytocic agents.
- 15 Write the bioassays of Insulin.
- 16 Write the pharmacology of ACE Inhibitors.
- 17 Explain the pharmacological actions of histamine and mention H<sub>2</sub> antagonists and their uses.
- 18 Write a note on HMG-CoA reductase inhibitors.
- 19 Explain the pharmacology of Sodium nitroprusside.
- 20 Write a note on biguanides.
- 21 Classify antithyroid agents. Write about thyroid hormone inhibitors.
- 22 Explain the mechanism of action and adverse effects of Digoxin.

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Code No. 12331/PCI

## FACULTY OF PHARMACY

### B. Pharmacy V-Semester (PCI) (Backlog) Examination, September 2021

Subject: Pharmaceutical Jurisprudence

Time: 2 Hours

Max. Marks: 75

**Note: Answer any seven questions Part – A, any one question from Part – B and any five questions from Part – C.**

#### PART – A (7 x 3 = 21 Marks)

- 1 Define registered pharmacist under pharmacy act 1948.
- 2 Define drugs and cosmetics as per D and C act.
- 3 Define opium and coca leaves.
- 4 Write the difference between adulterated and spurious drug.
- 5 Write the formula to calculate retail price of formulation.
- 6 Write the objectives of the medical termination of pregnancy.
- 7 What are schedule X and H drugs?
- 8 Differentiate between laws and ethics.
- 9 What is loan license?
- 10 Write the functions of the government analyst.

#### PART – B (1 x 14 = 14 Marks)

- 11 What is “manufacture of drugs”? Explain in detail about procedure to obtain license for manufacture of drugs belonging to schedule C, C<sub>1</sub> and X.
- 12 What do you mean by patent? Discuss the various intellectual property rights.
- 13 Differentiate between bonded and non-bonded manufactory. Write the objectives of Medicinal and Toilet preparation Act 1955. Explain in detail about construction of bonded laboratory.

#### PART – C (5 x 8 = 40 Marks)

- 14 Define the term advertisement and magic remedies. Explain prohibited advertisement as per act.
- 15 Write the objectives of pharmacy act. Explain the constitution of PCI.
- 16 How is DTAB constituted? Write its functions.
- 17 Explain the general labeling requirement for drug and cosmetics. Write the labelling requirements for an ophthalmic preparation.
- 18 Write the qualification, duties and power of drug inspector.
- 19 Explain CPCSEA guidelines for breeding and stocking of animals.
- 20 Explain in detail about the code of pharmaceutical ethics of pharmacist in relation to his job.
- 21 Define Narcotic drugs and psychotropic substances as per Act. Explain the offence and penalties as per act.
- 22 Discuss the various aspects of Indian Pharmaceutical Legislation.

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Code No. 12073 / PCI

## FACULTY OF PHARMACY

B. Pharmacy V-Semester (PCI) (Main & Backlog) Examination, March 2021

Subject : Medicinal Chemistry – II

Time : 2 Hours

Max. Marks: 75

**Note: Answer any seven questions Part – A, any one questions from Part – B and any five question from Part – C.**

### PART – A (7x3=21 Marks)

- 1 Give the structures of omeprazole and lansoprazole.
- 2 Write the mechanism of action of anticancer plant products.
- 3 Outline the synthesis of nitroglycerin.
- 4 Discuss the mechanism of action of ACE inhibitors.
- 5 Outline the synthesis of warfarin.
- 6 Outline the synthesis of disopyramide phosphate.
- 7 What are oral contraceptives? Give examples.
- 8 Write the structures of testosterone and oestradiol.
- 9 Discuss the mechanism of action of biguanides.
- 10 Write about structure of insulin.

### PART – B (1x14=14 Marks)

- 11 (a) What are H<sub>2</sub>-antagonists? Outline the synthesis of cimetidine.  
(b) Classify anti-neoplastic agents with two structures from each class.
- 12 (a) Explain the mechanism of action of anti-arrhythmic drugs with examples.  
(b) Outline the synthesis of chlorothiazide and furosemide.
- 13 (a) Classify oral hypoglycemic drugs with one structure from each class.  
(b) Discuss SAR of local anesthetics.

### PART – C (5x8=40 Marks)

- 14 Outline the synthesis of triprolidine hydrochloride and promethazine hydrochloride.
- 15 Classify calcium channel blockers with one structure from each class.
- 16 Classify anti-hyperlipidemics with one structure from each class.
- 17 Give an account on agents used in treating congestive heart failures.
- 18 Write in detail about corticosteroids with structures.
- 19 Write a note on thyroid and anti-thyroid drugs.
- 20 Discuss mechanism of action of sulfonylureas and thiazolidinediones with examples.
- 21 Classify local anesthetics with structures.
- 22 Outline the synthesis of tolbutamide and procaine.

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**FACULTY OF PHARMACY**

**B. Pharmacy V-Semester (CBCS) (Backlog) Examination, March 2021**

**Subject: Medicinal Chemistry - I**

**Time: 2 Hours**

**Max. Marks: 70**

**Note: Answer any four questions.**

**(4 x 17 ½ = 70 Marks)**

1. Explain about the following terms with examples.  
(i) Solubility                      (ii) Ionization  
(iii) Hydrogen Bonding        (iv) Redox potential
2. (a) What is bioisosterism. Explain its applications in drug design.  
(b) Write a note on drug metabolism.
3. (a) Classify adrenergic blocking agents with examples.  
(b) Give the synthesis and uses of i) Isoproterenol ii) Salbutamol
4. (a) Write a note on ganglionic blocking agents and outline the synthesis of mecalamine HCl.  
(b) Write a note on skeletal muscle relaxants and outline the synthesis of meprobamate.
5. (a) What are anti-hyperlipidemic agents? Classify them with examples, Write the mode of action of each class of drugs.  
(b) Write the synthesis and uses of captopril and clonidine.
6. (a) Classify antiarrhythmic. Explain their mechanism of action.  
(b) Write a note on vasodilators.
7. (a) Classify hypoglycemic agents with examples. Explain the mode of action and synthesis of glyclazide.  
(b) Write a note on positive inotropic agents.
8. (a) Write mechanism of actions of any three classes of diuretics.  
(b) Write a note on thyroid drugs.
9. (a) Classify H<sub>1</sub>-receptor antagonists with examples.  
(b) Outline the synthesis and uses of Chlorpheniramine and Cetirizine.
10. Write a note on: (a) Anticoagulants  
(b) Proton-pump inhibitors.



Code No. 12209/Non-CBCS

**FACULTY OF PHARMACY**  
**B.Pharmacy 3/4 I Semester (Non-CBCS) (Backlog) Examination, March 2021**

**Subject: Medicinal Chemistry-I**

**Time: 2 Hours**

**Max. Marks: 70**

**Note: Answer any four questions.**

**(4 x 17 ½ = 70 Marks)**

- 1 a) What do you mean by soft drug approach in drug design? How is it achieved?  
b) Explain with examples the factors affecting the drug metabolism.
- 2 a) Write about bioisosterism and steric factors of drugs.  
b) Discuss with suitable examples the influence of protein binding on biological activity.
- 3 a) Classify ganglionic blocking agents with examples. Write the MoA and S.A.R.  
b) Explain the S.A.R of  $\beta$ -Adrenergic blocking agents.
- 4 a) Explain the S.A.R of cholinergic drugs.  
b) Write the synthesis of 1) Atenolol 2) Dicyclomine Hcl
- 5 a) Write a note on vasodilators with suitable examples.  
b) Give the structure and synthesis of following.  
1) Captopril 2) Clofibrate 3) Verapamil.
- 6 Give an account of.  
1) Cardiotonic drugs 2) Anti-platelet drugs.
- 7 a) Define diuretics, classification with examples.  
b) Write the MoA and uses of carbonic anhydrase inhibitors, give the synthesis of acetazolamide.
- 8 a) Discuss in detail S.A.R of tolbutamide.  
b) Give the structure, synthesis and MoA of following.  
1) Amiloride 2) Propyl thiouracil 3) Azathioprine
- 9 Classify H<sub>2</sub>-receptors antagonists with examples. Write the mode of action and S.A.R. outline the synthesis uses of Ranitidine.
- 10 Outline the synthesis and uses of following.  
1) Omeprazole 2) Cetrizine 3) Diphenhydramine. Write a note on anticoagulants.

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Code No. 12074 / PCI

## FACULTY OF PHARMACY

B. Pharmacy V-Semester (PCI) (Main & Backlog) Examination, March 2021

Subject : Industrial Pharmacy – I

Time : 2 Hours

Max. Marks: 75

**Note: Answer any seven questions Part – A, any one questions from Part – B and any five question from Part – C.**

### PART – A (7x3=21 Marks)

- 1 Define pharmagel A and Pharmagel B.
- 2 What are the special instructions to be printed on the eye drop container according to drugs and cosmetics act?
- 3 Define Enteric coating and give its advantages.
- 4 Mention different sealing methods for hard gelatin capsules.
- 5 Define preformulation studies.
- 6 Write the BCS classification of drugs.
- 7 Write the significance of isotonicity in parenterals.
- 8 Define Base adsorption.
- 9 What are the different materials used for packaging?
- 10 Define Propellant.

### PART – B (1x14=14 Marks)

- 11 Write a note on production facilities required for parenteral preparations.
- 12 (a) Write in brief about the manufacture of Aerosols.  
(b) Explain about the defects in capsules.
- 13 (a) Explain about disintegration and dissolution test for tablets.  
(b) Write in detail about evaluation of containers.

### PART – C (5x8=40 Marks)

- 14 Explain polymorphism.
- 15 Explain sugar coating of tablets.
- 16 Write a brief note on filling and packaging of oral liquids.
- 17 Explain method of preparation of hard gelatin capsule shell.
- 18 Write in detail about solution layering.
- 19 Explain the process of freeze drying.
- 20 Explain sterility test for ophthalmic products.
- 21 Define and classify cosmetics and give their uses.
- 22 Write a brief note on propellants in Aerosols.

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## FACULTY OF PHARMACY

### B. Pharmacy V-Semester (CBCS) (Backlog) Examination, March 2021

#### Subject: Pharmaceutical Technology – I (Pharmaceutics – II)

Time: 2 Hours

Max. Marks: 70

**Note: Answer any four questions.**

**(4 x 17 ½ = 70 Marks)**

1. (a) Explain rotary die process for manufacture of gelatin capsules.  
(b) Classify antioxidants with suitable examples. Write their mechanism of action.
2. (a) Write in detail evaluation of hard gelatin capsules.  
(b) Classify surfactants with examples. Enlist their applications.
3. (a) Write in detail evaluation of suspensions.  
(b) Write a note on multiple emulsions.
4. (a) Explain reasons for emulsion instability.  
(b) Compare flocculated and deflocculated suspension.
5. (a) List the excipients used in tablet manufacture. Explain their role.  
(b) Explain defects in film coating.
6. (a) Explain defects in tablet manufacture and methods to overcome them.  
(b) Enlist reasons for tablet coating. Write about different types of tablet coating.
7. (a) Write in detail about air control in sterile area.  
(b) Mention five important criteria in the formulation of eye drops. Add a note on formulation of eye ointment.
8. (a) Write in detail evaluation tests for parental products.  
(b) Explain the formulation of eye drops.
9. (a) Define aerosols. What is the role of propellants in aerosols. Classify propellants.  
(b) Explain the role of plastic containers in packaging of dosage forms.
10. (a) Write in detail evaluation of aerosols.  
(b) Classify glass containers. Write about the reaction of glass containers with liquid dosage forms.





**FACULTY OF PHARMACY**

**B. Pharmacy 3/4 I-Semester (Non-CBCS)(Backlog) Examination, March 2021**

**Subject : Pharmaceutical Technology (Pharmaceutics-II)**

**Time : 2 Hours**

**Max. Marks: 70**

**Note: Answer any four questions.**

**(4 x 17 ½ = 70 Marks)**

- 1 (a) Explain the properties and selection of diluents for pharmaceutical formulations?  
(b) Classify surfactants? Write a note on toxicity of surfactants?
- 2 (a) Describe any two filling methods of hard gelatin capsules?  
(b) Describe evaluation tests for soft gelatin capsule?
- 3 (a) What are suspensions? Mention the excipients used for the preparation of flocculated and deflocculated suspensions? Explain influence of particle size upon formulation of suspensions?  
(b) Discuss in brief the methods to manufacture suspensions?
- 4 (a) Define emulsion? Explain stability of emulsions?  
(b) What are the different methods of manufacturing for the preparation of emulsions? Add a note on colloidal mill?
- 5 (a) What are the different types of granulation methods? How starch is used as granulating agent? Explain mechanism of granule formation?  
(b) Describe various disintegrates used in the formulation of tablets and its properties?
- 6 (a) What are the advantages of coating? Explain fluidized bed coating process?  
(b) Describe any two advanced coating techniques used in industry?
- 7 (a) What do you mean by large volume and small volume parenterals? What are the advantages and disadvantages of parenteral preparations?  
(b) Explain sterile production facilities required for the manufacture of small volume parenterals?
- 8 (a) Explain evaluation methods of eye ointments? What are the labelling instructions required for ophthalmic preparations under D&C act?  
(b) Write a note on Total parenteral nutrition (TPN)?
- 9 (a) What are different types of aerosols? Mention the advantages and disadvantages?  
(b) Describe hydrocarbon propellants used in aerosols? Add a note on pharmaceutical applications of aerosols?
- 10 (a) Explain glass as a pharmaceutical packaging system? What are the quality control tests performed for plastic containers?  
(b) What are the incompatibilities observed between preservatives and glass containers?



Code No. 12075 / PCI

## FACULTY OF PHARMACY

B. Pharmacy V-Semester (PCI) (Main & Backlog) Examination, March 2021

Subject : Pharmacology – II

Time : 2 Hours

Max. Marks: 75

**Note: Answer any seven questions Part – A, any one questions from Part – B and any five question from Part – C.**

### PART – A (7x3=21 Marks)

- 1 Define haematinics and give examples.
- 2 Explain the uses of antihistaminics and give examples
- 3 Write a note on Allopurinol.
- 4 What are the uses of Plasma volume expanders?
- 5 Write a note on Spironolactone.
- 6 What are different uses of 5-HT antagonists?
- 7 What are the adverse effects of Corticosteroids?
- 8 Explain the mechanism of action of Statins.
- 9 Write about the steps of thyroid hormone synthesis.
- 10 What are anabolic steroids? What are their uses?

### PART- B (1x14=14 Marks)

- 11 (a) Define and classify Oral Hypoglycemic agents.  
(b) Write in detail about Sulphonylureas.
- 12 (a) Classify Diuretic agents.  
(b) Explain the pharmacology of Thiazide diuretics.
- 13 Explain various methods of bioassays of Insulin and Oxytocin.

### PART-C (5x8=40 Marks)

- 14 Explain about tocolytic agents.
- 15 Define Bioassay. What are different types of Bioassays.
- 16 Write the pharmacology of COX-II Inhibitors.
- 17 Classify antiarrhythmics. Add a note on class II antiarrhythmics.
- 18 Write a note on hormonal contraceptives.
- 19 Write the pharmacological actions and uses of prostaglandins.
- 20 Explain the pharmacology of Oxytocin.
- 21 Define Coagulants. Add a note on fibrinolytics.
- 22 Write a note on Calcium regulation in body.

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**FACULTY OF PHARMACY**

**B. Pharmacy V-Semester (CBCS) (Backlog) Examination, March 2021**

**Subject: Physical Pharmacy - I**

**Time: 2 Hours**

**Max. Marks: 70**

**Note: Answer any four questions.**

**(4 x 17 ½ = 70 Marks)**

1. (a) Describe Ideal Gas law in detail.  
(b) Explain Rules relating to Triangular Diagrams.
2. (a) Write a note on Polymorphism and Amorphous solids.  
(b) Define Phase rule. Explain the construction of phase diagram of phenol water system.
3. (a) Explain Hess's Law of Heat of summation and its application.  
(b) Describe the second law of thermodynamics.
4. (a) What is Law of Conservation of Energy? Explain the first law of thermodynamics.  
(b) Define Internal Energy, Enthalpy and Heat Capacity.
5. (a) What are Colligative properties? Explain boiling point elevation in detail and derive an expression for Mol. Wt. determination of solute.  
(b) Explain Sorensen's pH scale in detail.
6. (a) Enumerate Arrhenius theory of electrolytic dissociation.  
(b) Describe Ideal and real solutions.
7. (a) Explain buffer equation/Henderson Hasselbalch equation for weak acid and its salt.  
(b) Describe different methods of adjusting tonicity,
8. (a) Write about Buffers in Pharmaceutical and biological systems (in vivo biologic buffer Systems).  
(b) Explain buffer capacity and describe influence of concentration on buffer capacity.
9. (a) Explain Types of Electrode in detail with diagrams.  
(b) Define Catalysis. Explain types of catalyst.
10. (a) Describe the Electrochemical cell with diagram.  
(b) What are catalytic poisons? Explain factors effecting Catalysis.

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Code No. 12211 / Non-CBCS

## FACULTY OF PHARMACY

B. Pharmacy 3/4 I-Semester (Non-CBCS)(Backlog) Examination, March 2021

Subject : Physical Pharmacy – I

Time : 2 Hours

Max. Marks: 70

Note: Answer any four questions.

(4 x 17 ½ =70 Marks)

- 1 (a) Write and explain the postulates of the kinetic molecular theory.  
(b) Explain the various methods of achieving liquefaction of gases.
- 2 (a) Write a note on phase rule. Explain the phenol-water two component system.  
(b) Write a note on: (i) DSC and DTA (ii) X-Ray diffraction
- 3 (a) Explain laws of conservation of energy.  
(b) State and explain first law of thermodynamics.  
(c) Write a note on free energy function and work function and their applications.
- 4 (a) Derive an expression to determine efficiency of steam engine.  
(b) Define: (i) Heat of formation and combustion (ii) Enthalpy and Entropy
- 5 (a) Explain derivations of Raoult's law.  
(b) Explain colligative properties for determination of molecular weight of non-electrolyte.
- 6 (a) Derive an equation for finding the hydrogen ion concentration in ionization of weak acids.  
(b) Write a note on Sorenson's pH scale.  
(c) What are ampholytes? Explain their ionization.
- 7 (a) Explain different methods for adjusting isotonicity and pH of solutions.  
(b) Write a note on pharmaceuticals buffers and physiological buffers.
- 8 (a) Explain the relation between pH, pKa and solubility of weak electrolytes.  
(b) Write Van Slyke's equation for buffer capacity and maximum buffer capacity and its applications.
- 9 (a) Write a note on different types of electrodes. Explain pH measurement using hydrogen electrode.  
(b) How do you determine PKa using potentiometry?  
(c) Write Nernst equation and explain the terms therein.
- 10 (a) Write applications of Oxidation-Reduction Potentials (Redox potentials) in pharmacy.  
(b) Write a note on: (i) Catalyst (ii) Oxidation reduction electrodes.

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Code No. 12076 / PCI

## FACULTY OF PHARMACY

B. Pharmacy V-Semester (PCI) (Main & Backlog) Examination, March 2021

Subject : Pharmacognosy & Phytochemistry – II

Time : 2 Hours

Max. Marks: 75

**Note: Answer any seven questions Part – A, any one questions from Part – B and any five question from Part – C.**

### PART – A (7x3=21 Marks)

- 1 Define Radioactive isotopes and give its applications.
- 2 Write the difference between Primary and Secondary metabolites.
- 3 Write the Biological source, Chemical constituents and uses of Cinnamon.
- 4 Write about Borntragers and modified Borntragers test.
- 5 Define Glycosides and write about cardenolides.
- 6 Write the Biological source, chemical constituents and uses of  
a) Opium b) Pterocarpus
- 7 Write any two identification test for alkaloids.
- 8 Explain Keller - kilani test.
- 9 Write the Chemical constituents and the therapeutic uses of  
a) Tea b) Asafoetida.
- 10 Give the Biological source and use of Artemisia and Rauwolfia.

### PART – B (1x14=14 Marks)

- 11 Explain the biosynthesis of secondary metabolite through Shikimic acid pathway.
- 12 Describe the applications of chromatographic techniques with special emphasis on isolation and purification of Phytoconstituents in crude drugs.
- 13 Describe in detail the Biological source, macroscopy, microscopy, chemical constituents, chemical tests and therapeutic uses of  
a) Fennel b) Coriander

### PART – C (5x8=40 Marks)

- 14 Explain Autoradiography.
- 15 Write about Acetate malonate pathway.
- 16 Give the Biological source, chemical constituents, macroscopy, chemical test and therapeutic uses of Liquorice.
- 17 Explain the microscopy of Digitalis leaf with a neat labeled diagram.
- 18 Describe the isolation and analysis of menthol.
- 19 Write about the estimation and utilization of Diosgenin.
- 20 Explain the isolation, purification and identification of Phytoconstituents by Electrophoresis.
- 21 Explain the Biological source, Chemical Tests, Chemical constituents, microscopy and therapeutic uses of Benzoin.
- 22 Explain the Isolation, identification and analysis of Atropine.

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## FACULTY OF PHARMACY

### B. Pharmacy V-Semester (CBCS) (Backlog) Examination, March 2021

Subject: Pharmacognosy - I

Time: 2 Hours

Max. Marks: 70

**Note: Answer any four questions.**

**(4 x 17 ½ = 70 Marks)**

1. (a) Write a descriptive note on hybridization and polyploidy.  
(b) Write a note on pharmacological classification of crude drug.
2. (a) Explain various factors to be considered for storage of crude drugs.  
(b) Write a note on systematic description of crude drugs.
3. (a) Write a descriptive note on various tracer technique used in biosynthesis of secondary metabolites.  
(b) Write a note on shikimic acid pathway.
4. (a) Explain biosynthetic pathway for carbohydrate synthesis.  
(b) Give brief note on sequential analysis in tracer techniques.
5. (a) Define drug evaluation. Explain morphological and microscopical methods of drug evaluation.  
(b) Write a note on effect of moisture content and its method of determination.
6. (a) Write a descriptive note on Lycopodium spore method used for powder drug analysis.  
(b) Explain physical method of crude drug evaluation.
7. (a) Explain pharmacognosy of Tragacanth.  
(b) Write biological source, chemical constituents and uses of chaulmoogra oil and isabgol.
8. (a) Write a descriptive note on Alginate and Amla.  
(b) Define and classify tannins. Give biological source and pharmaceutical importance of pale and black catechu.
9. (a) Define fibers. Classify with examples.  
(b) Write a descriptive note on cotton and shark liver oil.
10. (a) Give the source and uses of Cantharides, Musk, Cochineal and Honey.  
(b) What are proteins. Classify with examples. Give the pharmaceutical importance of papain.

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Code No: 12213 /Non-CBCS

## FACULTY OF PHARMACY

B. Pharmacy 3/4 I-Semester (Non-CBCS)(Backlog) Examination, March 2021

Subject: Pharmacology – I

Time: 2 Hours

Max. Marks: 70

**Note: Answer any four questions.**

**(4x17½=70 Marks)**

- 1 What are different routes of drug administration? Compare the merits and demerits of oral and parenteral routes of administration.
- 2 Define and classify the receptors. Explain in detail about G-protein coupled Receptors.
- 3 Explain the pharmacological effects and therapeutic uses of:
  - (i) Physostigmine
  - (ii) Acetylcholine
- 4 Classify the adrenergic agents with examples. Write their pharmacological actions and therapeutic uses.
- 5 Write about the classification of Sedative and hypnotics. Write in detail about the mechanism of action, therapeutic uses and adverse reactions of any two drugs.
- 6 Classify anti-psychotic agents and explain the mechanism of action and therapeutic uses of chlorpromazine and haloperidol.
- 7 Define hyperlipidemia. Classify the anti-hyperlipidemic agents with examples. Write about the mechanism of action and adverse reactions of HMG CoA reductase inhibitors.
- 8 What is bronchial asthma? Classify anti-asthmatic drugs. Explain the pharmacology of any two drugs.
- 9 Define Diuresis. Classify Diuretics and explain mechanism of action and therapeutic uses of potassium sparing diuretics and carbonic anhydrase inhibitors.
- 10 (a) Write about the mechanism of action and adverse reactions of ranitidine.  
(b) Write short note on:
  - (i) Anti-diarrhoeals
  - (ii) pH modifying agents

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Code No. 12077 / PCI

## FACULTY OF PHARMACY

B. Pharmacy V-Semester (PCI) (Main & Backlog) Examination, March 2021

Subject : Pharmaceutical Jurisprudence

Time : 2 Hours

Max. Marks: 75

**Note: Answer any seven questions Part – A, any one questions from Part – B and any five question from Part – C.**

### PART – A (7x3=21 Marks)

- 1 Write the functions of DTAB.
- 2 Define Narcotic drugs and Psychotropic substances as per Act.
- 3 Write the functions of government analyst.
- 4 Define registered pharmacist under pharmacy act 1948.
- 5 Explain Education regulation.
- 6 Define cosmetic as per D & C act.
- 7 What is the instruction to be followed for schedule X and G drugs?
- 8 Differentiate between laws and ethics.
- 9 What is restricted license?
- 10 Define drugs and cosmetics as per D & C act.

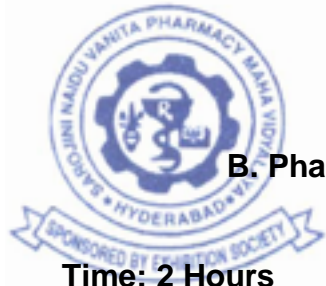
### PART- B (1x14=14 Marks)

- 11 Explain the legal procedure for cultivation, production, manufacturing and sale of opium.
- 12 Write the objectives of pharmacy act. Explain the constitution and functions of pharmacy council.
- 13 How will you differentiate between bonded and non-bonded manufactory? Write the objectives of Medicinal and Toilet preparation Act, 1955. Explain in detail about construction of bonded laboratory.

### PART- C (5x8=40 Marks)

- 14 Explain in detail the classes of drugs whose import is prohibited as per D & C Act.
- 15 Explain the terms trademarks, patent and copy right as per act.
- 16 Write a short note on Central drug Laboratory.
- 17 Define the terms Advertisement and Magic remedies. Explain prohibited advertisement as per act.
- 18 Write the conditions for termination of pregnancy and admission register.
- 19 Write the qualification, duties and power of drug inspector.
- 20 Explain CPCSEA guidelines for Laboratory animals.
- 21 Explain in detail about the code of pharmaceutical ethics of pharmacist in relation to his job.
- 22 Describe the method of calculating the retail price of formulation.

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**FACULTY OF PHARMACY**

**B. Pharmacy VII-Semester (CBCS) (Backlog) Examination, March 2021**

**Subject: Pharmaceutical Business Management**

**Time: 2 Hours**

**Max. Marks: 70**

**Note: Answer any four questions.**

**(4 x 17 ½ = 70 Marks)**

1. (a) What are the different levels of management.  
(b) Discuss various aspects involved in production forecasting and assessment of Economic batch quantity.
2. (a) Explain modern management practices and principles of Total quality management.  
(b) Write a brief note on management information systems.
3. (a) Define plant layout. Explain the various types of layouts with their relative advantages.  
(b) Describe the concept of compartmentalization & Explain the consideration of rooms in the industry.
4. (a) Explain the pharmaceutical process flow patterns and describe the process flow diagram for production of tablets.  
(b) Explain the storage space requirements of stores.
5. (a) Define selective Inventory control. Describe the statistical reorder point system with explanation.  
(b) What is meant by stock out position. Explain the reasons & controls.
6. (a) Discuss Economic order quantity in detail (EOQ) & Write about ABC analysis.  
(b) Explain the material purchase procedure adopted by a drug store.
7. (a) Explain different steps in the process of selection of personnel in to organization.  
(b) Critically explain 'X' & 'Y' theory of individual behavior.
8. (a) Explain different methods of training.  
(b) Explain Hertzberg's two-factor theory of motivation.
9. (a) Distinguish the terms 'marketing' & 'selling'; 'publicity' & 'advertising'.  
(b) Explain the concept of product mix and promotion mix.
10. (a) Describe the distribution channels of pharmaceuticals.  
(b) Explain the importance of salesmanship in pharmaceutical marketing and explain ideal qualities of salesman. What is detailing the physician in sales promotion?



Code No.12219/NON-CBCS

## FACULTY OF PHARMACY

B. Pharmacy 4/4 I-Semester (NON-CBCS) (Backlog) Examination, March 2021

Subject: Biopharmaceutics & Pharmacokinetics

Time: 2 Hours

Max. Marks: 70

**Note: Answer any four questions.**

**(4 x 17 ½ = 70 Marks)**

1. (a) Explain the theories of dissolution with eat labeled diagrams.  
(b) Explain in detail about Carrier Mediated Transport.
2. (a) Explain the formulation factors affecting the absorption.  
(b) Explain the biological factors affecting the absorption.
3. (a) How do you determine binding constants and binding sites by graphical methods.  
(b) Explain the significance of Proteom binding of drugs.
4. (a) Describe the process of drug distribution in the body and enumerate the factors affecting it.  
(b) Describe about the physiological barriers to the distribution of drugs.
5. What are the Conjugation reactions? Give examples of each type of Conjugation reaction.
6. (a) Explain the factors affecting the renal excretion of drugs.  
(b) Explain briefly about enterohepatic circulation.
7. (a) Write the different methods used for determining of AUC of blood level time curve of a drug.  
(b) Explain the methods of dose adjustment in patients with hepatic failure.
8. (a) Explain about apparent volume of distri.  
(b) Explain about hepatic clearance.
9. Derive the equations for one compartment open model intravenous infusion. Explain in detail how can the study state drug concentration be achieved more quickly.
10. A single IV dose of an antibiotic was given to a 50kg woman at a dose level of 20mg/kg. Blood samples were removed periodically and assayed for parent drug. The following data were obtained. Assume that it follows one compartment open model. Calculate all possible pharmacokinetic Parameters.

Time (hrs)	0.25	0.5	1.0	2.0	4.0	6.0
Plasma Concentration (mg/lit.)	4.2	3.5	2.5	1.25	0.31	0.08

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Code No. 6287/PCI

## FACULTY OF PHARMACY

**B. Pharmacy V-Semester (PCI) (Suppl.) Examination, December 2020**

**Subject: Medicinal Chemistry-II**

**Time: 2 Hours**

**Max. Marks: 75**

### **PART – A**

**Note: Answer any Seven questions.**

**(7 x3=21 Marks)**

1. Write the role of insulin hormone
2. What is the drug with Imidazole nucleus showing anti-hypertensive action and give its structure
3. Give the mechanism of action and uses of Mercaptopurine.
4. Write the mechanism of action of coagulation process
5. Give the structures of any two drugs used for treating angina pectoris.
6. What drugs are used as ACE inhibitors and give their mechanism?
7. Mention the problem associated with loop diuretics
8. Define anti-coagulants
9. What are carbonic anhydrase inhibitors? Give the examples with one structure.
10. Write the functions of thyroid hormones.

### **PART – B**

**Note: Answer One question.**

**(1 x14=14 Marks)**

11. a) Classify H<sub>1</sub> anti-histaminics with examples.  
b) Write a note on gastric proton pump inhibitors
12. a) Classify anti-hypertensive agents with examples. Write the mechanism of Renin- Angiotensin-Aldosterone system.  
b) Write a note on anti-metabolites used in the treatment of neoplasm.
13. Give the synthesis, mechanism of action and uses of
  - a) Diphenhydramine HCl
  - b) Furosemide
  - c) Procaine



Code No. 6287/PCI

-2-

**PART - C**

**Note: Answer any Five questions.**

**(5x8=40 Marks)**

14. Write about the types of histamine receptors and their distribution in the human body.
15. What are alkylating agents? Classify them with examples
16. Discuss the SAR of thiazide diuretics
17. Explain how the anti-arrhythmic drugs are classified
18. Classify oral hypoglycemic agents with examples
19. Write about the drugs used in Congestive heart failure
20. Write a note on anti-thyroid drugs with examples
21. Give the synthesis and uses of
  - a) Chlorthiazide and
  - b) Tolbutamide
22. Classify local anaesthetics and write the mechanism of action.

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Code No. 6288/PCI

## FACULTY OF PHARMACY

**B. Pharmacy V-Semester (PCI) (Suppl.) Examination, December 2020**

**Subject : Industrial Pharmacy - I**

**Time: 2 Hours**

**Max. Marks: 75**

### **PART – A**

**Note: Answer any Seven questions.**

**(7 x3=21 Marks)**

1. What is preformulation study
2. Define bulk density and write its importance in Pharmacy
3. Define buccal and sublingual tablets
4. Enlist various types of coating materials of tablets
5. What is the difference between cold cream & Vanishing cream?
6. What is aseptic area?
7. List out various ingredients used in tooth paste
8. What are the vehicles used in the preparation of parenterals?
9. Classify parenteral with suitable examples.
10. What are pyrogens?

### **PART – B**

**Note: Answer One question.**

**(1 x14=14 Marks)**

11. List the excipients used in tablet manufacture with examples. Write their role and mechanism of action.
12. Give the layout for manufacture of parenteral formulations.
13. Explain the formulation and evaluation of aerosols.

### **PART - C**

**Note: Answer any Five questions.**

**(5x8=40 Marks)**

14. Write a note on formulation & labelling of eye drops
15. Explain defects in tablet coating
16. Describe the manufacturing of soft gelatin capsules.
17. Write a note on injectable suspensions
18. What are propellants? Mention their advantages and disadvantages.
19. Write a note on factors influencing choice of containers
20. Write a note on formulation of lipsticks
21. Write a note on LAL test & sterility test.
22. Write a note on palletization process.

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Code No. 6289/PCI

## FACULTY OF PHARMACY

**B. Pharmacy V-Semester (PCI) (Suppl.) Examination, December 2020**

**Subject : Pharmacology - II**

**Time: 2 Hours**

**Max. Marks: 75**

### **PART – A**

**Note: Answer any Seven questions.**

**(7 x3=21 Marks)**

1. What is hyperlipidemia? Mention four drugs used as antihyperlipidemics
2. What is congestive heart failure? Mention two drugs used in congestive heart failure
3. What are the therapeutic uses of vasopressin analogs?
4. What is rheumatism? Mention the drugs used in rheumatism.
5. Describe the triple response of histamine
6. Classify autacoids with examples
7. What are Hematinics? Mention the names
8. Explain about hormonal regulation of plasma calcium level
9. What are anabolic steroids and write the therapeutic uses
10. Define bioassay. List out the types of bioassays

### **PART – B**

**Note: Answer One question.**

**(1 x14=14 Marks)**

11. What is congestive heart failure? Classify the drugs for congestive heart failure  
Write  
the mechanism of action. Adverse drug reactions and therapeutic uses of digoxin.
12. Define and classify diuretics. Write the mechanism of action, adverse drug reactions  
and therapeutic uses of loop diuretics.
13. Classify oral hypoglycemic drugs. Write the pharmacology of sulfonylureas.

### **PART - C**

**Note: Answer any Five questions.**

**(5x8=40 Marks)**

14. Write the mechanism of action, adverse drug reactions and therapeutic uses of ACE inhibitors.
15. What is arrhythmia? Classify antiarrhythmic drugs.
16. Write short notes on pharmacology of vitamin B<sub>12</sub>.
17. Write short notes on oral anticoagulants.
18. Explain about 5-HT receptors and drugs acting on them.
19. Write the pharmacological actions of aspirin.
20. Write the pharmacological actions and therapeutic uses of thyroxine.
21. What are the methods of bioassay of insulin? Discuss any one method in detail.
22. Write notes on oxytocics and tocolytics.

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Code No. 6290 / PCI

## FACULTY OF PHARMACY

**B. Pharmacy V-Semester (PCI) (Suppl.) Examination, December 2020**

**Subject : Pharmacognosy & Phytochemistry – II**

**Time: 2 Hours**

**Max. Marks: 75**

### **PART – A**

**Note: Answer any Seven questions.**

**(7 x3=21 Marks)**

- 1 Define Biosynthesis.
- 2 What are Secondary metabolites? Give examples.
- 3 Write the Biological source, chemical constituents and uses of Guggul.
- 4 Write about macroscopical characters of Vinca.
- 5 Define Alkaloids and give the classification of Alkaloids.
- 6 Write about the estimation of Digoxin.
- 7 Define Terpenoids and give their classification.
- 8 Explain Vitali-morin test.
- 9 Write the Biological source, chemical constituents and uses of Senna.
- 10 Give the therapeutic uses of  
(a) Ruta (b) Mentha (c) Myrrh (d) Aloe

### **PART – B**

**Note: Answer One question.**

**(1 x14=14 Marks)**

- 11 Write in detail about the Acetate malonate and Acetate mevalonate pathway.
- 12 Write the synonym, Biological source, macroscopy, microscopy, chemical constituents, chemical tests and uses of Digitalis leaf.
- 13 What are the different types of chromatographic methods? Give their applications in the evaluation of crude drug formulations.

### **PART - C**

**Note: Answer any Five questions.**

**(5x8=40 Marks)**

- 14 Write about the role of radioactive isotopes in the investigation of biogenetic studies.
- 15 Write a detailed pharmacognostical study of Belladonna.
- 16 Write about the estimation and utilization of Atropine.
- 17 Write the Biological source, macroscopy and uses of  
(a) Ginger (b) Dioscorea



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- 18 Define Glycosides. Classify glycosides with specific examples.
- 19 Write about estimation and utilization of  
(a) Sennoside (b) Caffeine
- 20 Write notes on the application of UV Spectroscopy in identification of phytoconstituents in crude drugs.
- 21 Explain the Biological source, macroscopy, chemical constituents, chemical tests and the therapeutic used Catechu.
- 22 Write in detail about the amino acid pathway.

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## FACULTY OF PHARMACY

**B. Pharmacy V-Semester (PCI) (Suppl.) Examination, December 2020**

**Subject : Pharmaceutical Jurisprudence**

**Time: 2 Hours**

**Max. Marks: 75**

### **PART – A**

**Note: Answer any Seven questions.**

**(7 x3=21 Marks)**

1. Write the labeling requirements for Ophthalmic preparations
2. Define Cosmetic as per Drugs and Cosmetics Act 1940
3. What are Loan License and Repacking Licenses?
4. Differentiate Misbranded drug and Adulterated drug?
5. Define drug as per drugs and cosmetics Act.
6. What are the Objective of drugs and magic Remedies Act?
7. Mention the formula for calculation of retail price under DPCO-1995?
8. What is a patent?
9. What is the difference between the manufacture of alcoholic preparations inside band and outside band.
10. What for schedule M.N, J & U stand for.

### **PART – B**

**Note: Answer One question.**

**(1 x14=14 Marks)**

11. Explain about the code of Pharmaceutical Ethics?
12. Write the Objectives of Pharmacy Act 1948. Explain the constitution and functions of PCI?
13. Write in detail about schedule M of Drugs Cosmetics Act.

### **PART - C**

**Note: Answer any Five questions.**

**(5x8=40 Marks)**

14. Explain the qualification and powers of drug inspector under D & C Act.
15. Write a short note on DTAB?
16. Explain Registration of Pharmacists?
17. Write a short note on Pharmaceutical Legislations?
18. Explain in detail Schedule U?
19. Explain RTI Act?
20. Write a note on Prevention of cruelty to animals Act 1960?
21. What is bonded laboratory discuss the layout and construction of bonded laboratory?
22. Explain the procedure to obtain license for manufacture of schedule C & C<sub>1</sub> drugs.

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## FACULTY OF PHARMACY

B. Pharmacy V-Semester (PCI) (Main) Examination, December 2019

Subject: Industrial Pharmacy - I

Time: 3 Hours

Max. Marks: 75

Note: Answer all questions from Part-A, any two questions from Part-B and any seven questions from Part-C

**PART- A (10 x 2 = 20 Marks)**

- 1 Define Preformulation study.
- 2 Classify tablets.
- 3 Why coating tablets are required.
- 4 Define emulsion & suspension.
- 5 List out various ingredients used in tooth paste.
- 6 What is aseptic area?
- 7 What are the vehicles used in the preparation of parenterals.
- 8 What are pyrogens?
- 9 What are different types of aerosols?
- 10 Classify parenteral with suitable examples.

**PART – B (2 x 10 = 20 Marks)**

- 11 Explain quality control tests of tablets.
- 12 Explain formulation and the production of parenterals.
- 13 Explain the formulation and quantity control tests for hard gelatin or soft gelatin capsules?

**PART – C (7 x 5= 35 Marks)**

- 14 Write a note on polymorphism and its applications.
- 15 Differentiate between flocculated and deflocculated suspension.
- 16 Write the formulation of cold cream.
- 17 Explain quality control tests of eye ointment.
- 18 Write a note on factors influencing choice of containers.
- 19 What are propellants? Mention their advantages and disadvantages?
- 20 Write a note on formulation of hair dyes.
- 21 Write a note on LAL test & sterility test.
- 22 Write a note on palletization process.

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Code No.6060/PCI

## FACULTY OF PHARMACY

### B. Pharmacy V-Semester (PCI) (Main) Examination, December 2019

#### Subject: Medicinal Chemistry-II

Time: 3 Hours

Max. Marks: 75

**Note: Answer all questions from Part-A, any two questions from Part-B and any seven questions from Part-C**

#### PART- A (10 × 2 = 20 Marks)

- 1 What are the uses of cortico steroids. Give two examples of drugs.
- 2 What are proton pump inhibitors? Give four examples
- 3 Give the mechanism of action and uses of Amlodipine.
- 4 Write the mechanism of action of Local anaesthetics.
- 5 Give the structures of any two drugs used as H<sub>2</sub> antagonists.
- 6 What are the drugs used as folate antagonists and give examples?
- 7 Write the mechanism of oral contraceptives along with examples.
- 8 List out the clotting factors of coagulation process.
- 9 What are diuretics? Give the mechanism of loop diuretics with uses.
- 10 What are the drugs used for congestive heart failure.

#### PART - B (2 × 10 = 20 Marks)

- 11 Classify anti-neoplastic agents with examples and one structure for each class. Write the mechanism of alkylating agents. (6+4)
- 12 a) Classify diuretics with examples and write the SAR of thiazide diuretics. (6)  
b) Explain how the potassium sparing diuretics shows the diuretic action. (4)
- 13 Give the synthesis, mechanism of action and uses of
  - a) Cimetidine
  - b) Tolbutamide
  - c) Benzocaine(4+3+3)

#### PART - C (7 × 5 = 35 Marks)

- 14 Write a note on H<sub>2</sub>-Antagonists.
- 15 Discuss the SAR of Local anaesthetics.
- 16 Classify anti-diabetic drugs with examples.
- 17 What are anti-arrhythmic drugs? Classify them with examples.
- 18 Write the SAR of H<sub>1</sub>- anti-histaminics.
- 19 Classify anti-hyperlipidemic agents with examples and one structure for each class.
- 20 Write a note on thyroid and anti-thyroid drugs.
- 21 Write the classifications mechanism of antihypertensive drugs.
- 22 Write a note on sex hormones.





Code No: 6138/PCI

## FACULTY OF PHARMACY

### B. Pharmacy V-Semester (PCI) (Main) Examination, January 2020

#### Subject: Pharmaceutical Jurisprudence (BP505T)

Time: 3 Hours

Max. Marks: 75

**Note: Answer all Questions from Part – A, and Two questions from Part – B, and any Seven questions from Part – C.**

#### PART – A (10 X 2 = 20)

- 1 What are the objectives of pharmacy act?
- 2 Write about loan license.
- 3 Define medicinal hemp and poppy straw.
- 4 What are the following schedules under Drugs and Cosmetics Act stand for  
a) Schedule N b) Schedule J c) Schedule H d) Schedule R
- 5 Write about the role of pharmacist in relation to his job?
- 6 Give various labeling requirements for Ophthalmic preparations.
- 7 Define Drug as per Drugs and Cosmetics Act.
- 8 Differentiate between Manufacture in bond and Manufacture outside bond.
- 9 What is a patent?
- 10 Define spurious drug and misbranded drug.

#### PART – B (2 x 10 = 20)

11. Enlist the Narcotic drugs as per the Narcotic drugs and psychotropic substances act 1985. Write about the official procedures for cultivation, production of opium, sale and distribution of opium products.
12. Write the constitution and functions of Pharmacy Council of India.
13. a) Explain the classes of advertisements prohibited according to Drugs and Magic Remedies Act 1954.  
b) Write a note on intellectual property rights.

#### PART- C (7 x 5 = 35 Marks)

14. Explain about the constitution and functions of DTAB.
15. Explain in detail Schedule M
16. Write a note on CPCSEA guidelines for experiment on animals.
17. What are the qualifications, duties and functions of drug inspector?
18. Explain the salient features of medical termination of pregnancy act.
19. Explain RTI act.
20. Write the procedure for obtaining a manufacturing license for schedule C, C (1) drugs.
21. Write about various pharmaceutical legislations.
22. Write about the Drug price control order.

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Code No: 6063/PCI

## FACULTY OF PHARMACY

**B. Pharmacy V Semester (PCI) (Main) Examination, January 2020**

**Subject: Pharmacognosy and Phytochemistry-II**

**Time: 3 hours**

**Max. Marks: 75**

**Note: Answer all questions from part-A. Any two questions from part-B and any seven questions from part-C**

### **PART – A (10 x 2 = 20 Marks)**

1. Draw structure and write uses of  
a) Quinine (b) Alion.
2. Write one chemical test each for detection of anthraquinone and cardiac glycosides.
3. Write applications of gas chromatography.
4. Write biological source, active constituents and uses of colophony.
5. Write commercial applications of Podophyllotoxin and artemisinin.
6. Write the applications of electrophoresis.
7. Write the applications of TLC.
8. What are the uses of artemisinin or digoxin?
9. Mention any four crude drugs containing glycosides.
10. What are the active constituents in (i) Clove (ii) Cinnamon and their uses?

### **PART – B (2 x 10 = 20 Marks)**

11. a) Write a note on chemistry of sennosides. 4  
b) Write procedures for isolation and estimation of caffeine. 6
12. Discuss about shikimic acid pathway. 10
13. Write procedures for industrial production of any one natural product drug. 10

### **PART – C (7 X 5 = 35 Marks)**

14. Write source and uses of benzoin, cinnamon and asafetida.
15. Write a note on Supercritical fluid extraction.
16. Discuss chemistry of digitalis glycosides.
17. Write about the principle and procedure and applications of TLC.
18. Draw structure and write procedure for isolation of curcumin.
19. Write about chemistry and uses of opium alkaloids.
20. Write the sources and procedures for the isolation of Atropine.
21. Mention two alkaloids containing crude drugs, write their active constituents and uses.
22. Write source, chemical constituents and uses of a) liquorice b) Catechew.



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Code:6062/PCI

## FACULTY OF PHARMACY

### B. Pharmacy V-Semester (PCI) (Main) Examination, January 2020

#### Subject: Pharmacology - II

Time: 3 Hours

Max. Marks: 75

**Note: Answer all Questions from Part – A, and Two questions from Part – B, and any Seven questions from Part – C.**

#### PART – A (10 X 2 = 20)

1. Write the mechanism of action of digoxin.
2. What is hyperlipidemia? Mention the drugs.
3. What are antiplatelet drugs and write their therapeutic uses?
4. What is congestive heart failure? Mention the drugs used.
5. Write the mechanism of action and therapeutic uses of 5-HT<sub>3</sub> antagonists.
6. What are the therapeutic uses of prostaglandin analogs?
7. Write the mechanism of action of glucocorticoids.
8. What are the therapeutic uses of T<sub>3</sub> & T<sub>4</sub>?
9. What are autocoids? Mention the classes.
10. Define bioassay. List out the types of bioassays.

#### PART – B (2 x 10 = 20)

11. Define antihypertensives. Classify with examples. Write the mechanism of action, adverse drug reactions and therapeutic uses of ACE inhibitors.
12. Write the pharmacological actions, adverse effects and therapeutic uses of antihistamines.
13. Discuss about bioassay of insulin.

#### PART - C (7 x 5 = 35)

14. What is angina pectoris? Classify antianginal drugs.
15. Write short notes on pharmacology of vitamin B<sub>12</sub>.
16. Write the mechanism of action, adverse drug reactions and therapeutic uses of loop Diuretics.
17. Classify anticoagulants. Write the therapeutic uses of oral anticoagulants.
18. Write the pharmacology of 5-HT.
19. Classify NSAIDs with examples.
20. Define bioassay. Write brief notes on types of bioassays.
21. Discuss about insulin preparations and mechanism of action of insulin.
22. Write short notes on oral contraceptives.



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