

## FACULTY OF PHARMACY

B. Pharmacy 3/4 I – Semester (November) Examination, November 2017

Subject : Pharmacognosy – II

Time : 3 hours

Max. Marks : 70

**Note : Answer all questions. All questions carry equal marks.**

- 1 a) Write diagnostic features of  
 i) Kurchi                      ii) Cinchona                      iii) Datura                      3 x 3 = 9  
 b) Write the Biological source, chemical tests and uses of  
 i) Rauwolfia                      ii) Opium                      5  
**OR**  
 c) Give Pharmacognostic description of Ephedra.                      8  
 d) Describe the microscopical features of  
 i) Vasaka                      ii) Datura                      iii) Nuxvomica                      6
- 2 a) Write the pharmacognostic description of Liquorice.                      8  
 b) Describe the following chemical tests and their importance                      2 x 3 = 6  
 i) Killer-Killani test                      ii) Bontragers test  
**OR**  
 c) Write the Biological source, chemistry, therapeutic use and adulterants of  
 i) Dioscorea                      ii) Digitalis                      10  
 d) Write an informative note on Bitter glycosides.                      4
- 3 a) Describe the isolation and estimation of caffeine from tea.                      8  
 b) Write the biological source, chemical constituents, chemical tests and uses of  
 i) Capsium                      ii) Clove                      6  
**OR**  
 c) Write the isolation and estimation of Tannic acid from myrobalan.                      8  
 d) Write the Biological source, chemical constituents and uses of  
 i) Podophyllum                      ii) Artemisia                      6
- 4 a) Write about  
 i) Embryogenesis                      ii) Clonal propagation                      8  
 b) Write about sterilization techniques used in plant tissue culture technique.                      6  
**OR**  
 c) Discuss the nutritional requirements of an ideal plant tissue culture medium.                      10  
 d) Explain the methodology for initiation of callus culture from a seed.                      4
- 5 a) Write the preparation of  
 i) Bhasma                      ii) Asawas                      iii) Kashayams                      9  
 b) Discuss about the status and practice of Herbal medicine in India.                      5  
**OR**  
 c) Write in detail about Quality Control and standardization of Raw materials.                      10  
 d) Write a note on different type of herbal formulations.                      4

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## FACULTY OF PHARMACY

**B. Pharmacy 3/4 I – Semester (Main) Examination, November 2017**

**Subject : Medicinal Chemistry – I**

**Time : 3 hours**

**Max. Marks : 70**

**Note : Answer all questions. All questions carry equal marks.**

- 1 a) What do you mean by prodrug approach in drug design? How is it achieved? 7  
 b) Write the importance of steric features of drugs. 7  
**OR**  
 c) Define and give their significances for the following : 4 x 3  
 i) Lipophilicity                      ii) Chelation                      iii) Partition coefficient  
 iv) Ionization
- 2 a) Explain the S.A.R. of  $\beta$ -adrenergic blocking agents. 8  
 b) Give the synthesis and uses of i) Salbutamol                      ii) Mecamylamine HCl 3 x 2  
**OR**  
 c) What are cholinergic drugs? Write the mode of action and S.A.R. 8  
 d) Outline the synthesis and uses of the following :  
 i) Dicyclomine                      ii) Meprobamate 2 x 3
- 3 a) Classify Anti-hypertensives with examples and SAR of ACE inhibitors. 8  
 b) Write the synthesis and uses of clonidine and Dipyridamole. 3+3  
**OR**  
 c) Give an account of : 7+7  
 i) Cardiotonic drugs                      ii) Vasodilators
- 4 a) Add a note on positive inotropic agents. 8  
 b) Write the synthesis and uses of i) Amrinone                      ii) Tolbutamide 3+3  
**OR**  
 c) Define and classify diabetes with examples. Write the MoA and uses of carbonic anhydrase inhibitors. 8  
 d) Give the synthesis and uses of following :  
 i) Amiloride                      ii) Furosemide 6
- 5 a) Classify Anti-histamine agents. Give the SAR of any two classes of H<sub>1</sub> – Antihistaminics. 8  
 b) Write a note on proton pump inhibitors. 6  
**OR**  
 c) Discuss in detail about coagulants and anticoagulants. 6  
 d) Write the synthesis and MoA of following : 4+4  
 i) Omeprazole                      ii) Diphenhydramine

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## FACULTY OF PHARMACY

B. Pharmacy 3/4 I – Semester (Main) Examination, November 2017

Subject : Pharmaceutical Technology (Pharmaceutics-II)

Time : 3 hours

Max. Marks : 70

**Note : Answer all questions. All questions carry equal marks.**

- 1 a) Discuss the criteria for selecting preservatives and diluents based on properties for a given formulation. 7  
 b) Explain different surfactants and their properties. 7  
**OR**  
 c) What is bloom strength? Describe various methods of filling of hard gelatin capsules. 8  
 d) Describe manufacturing of soft gelating capsules. 6
- 2 a) Define Stoke's law. Describe problems and trouble shooting in the formulation of suspensions. 7  
 b) Explain various quality control tests for suspensions. 7  
**OR**  
 c) What are emulsions? Describe quality control tests for emulsion. 7  
 d) Describe the stability of emulsion. 7
- 3 a) Describe disintegration test and its limits according to various pharmacopeia. 5  
 b) Describe various processing problems encountered during compression. 9  
**OR**  
 c) Write about polymers used in coating processes. 7  
 d) Describe in detail sugar coating process. 7
- 4 a) Classify injectables based on route of administration. Write a note on sterile powders. 7  
 b) Explain different types of packaging systems used in parenterals. 7  
**OR**  
 c) Describe formulation of eye drops. What are the 'caution' instruction to be printed on the ophthalmic package system according to D&C act. 8  
 d) Write in detail quality control tests and animal testing required for eye ointments. 6
- 5 a) What are propellants? Mention their advantages and disadvantages. 5  
 b) Describe packaging and pharmaceutical applications of aerosols. 9  
**OR**  
 c) Describe quality control tests for plastics. 9  
 d) Write a note on drug and packaging system interaction. 5

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## FACULTY OF PHARMACY

**B. Pharmacy 3/4 I – Semester (Main) Examination, November 2017**

**Subject : Pharmacology – I**

**Time : 3 hours**

**Max. Marks : 70**

**Note : Answer all questions. All questions carry equal marks.**

- 1 a) Write about various phase – I biotransformation reactions with examples. 8  
 b) Define the following :  
 i) Synergism                      ii) Biological Half life                      iii) Tolerance 6  
**OR**  
 c) Explain in detail about the advantages and disadvantages of different routes of drug administration. 14
- 2 a) Classify cholinergic agents and explain the pharmacological effects of acetyl choline. 4+5  
 b) Explain the various therapeutic uses and adverse reactions of Atropine. 5  
**OR**  
 c) Explain the mechanism of action and therapeutic uses of the following : 14  
 i) Adrenaline                      ii) Propranolol                      iii) Physostigmine  
 iv) Hyoscine
- 3 a) Classify anti-epileptic agents and explain the mechanism of action, adverse reactions and therapeutic uses of any three classes of drugs. 5+9  
**OR**  
 b) Write the classification of Non-steroidal anti-inflammatory agents and explain the details of any three classes of drugs. 5+9
- 4 a) Define hypertension. Classify the antihypertensive agents with examples. Write about the mechanism of action and adverse reactions of angiotensin receptor blockers and calcium channel blockers. 2+6+6  
**OR**  
 b) Write short notes on : 7+7  
 i) Bronchodilators  
 ii) Drugs used in the treatment of shock
- 5 a) Classify the agents used in treatment of peptic ulcer disease. Write about the pharmacological actions and therapeutic uses of Omeprazole and Rantidine. 4+6  
 b) Write short notes on carbonic anhydrase inhibitors. 4  
**OR**  
 c) Write about the following : 7+7  
 i) Anti-diarrhoeal agents  
 ii) Anti-emetic agents

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## FACULTY OF PHARMACY

B. Pharmacy 3/4 I – Semester (Main) Examination, November 2017

Subject : Physical Pharmacy – I

Time : 3 hours

Max. Marks : 70

**Note : Answer all questions. All questions carry equal marks.**

- 1 a) Explain polymorphism with examples. Write its significance. 7  
 b) Explain the phase diagram for a two component mixtures. 7  
**OR**  
 c) Write a note on :  
 i) Differential scanning calorimetry 7  
 ii) Liquid crystalline state 7
- 2 a) Explain law of conservation of energy and Hess's law of constant heat summation. 8  
 b) Define, explain and write applications of heat of combustion and heat of neutralization. 6  
**OR**  
 c) Define and explain second law of thermodynamics. 7  
 d) Explain enthalpy and entropy. 7
- 3 a) State Raoult's law. Explain positive and negative deviations of Raoult's law. 7  
 b) Explain the application of any two colligative properties in molecular weight determination. 7  
**OR**  
 c) Explain Arrhenius theory of electrolyte dissociation and its limitations. 7  
 d) Explain ionization of polyprotic electrolytes. 7
- 4 a) What are buffers? Derive Henderson-Hasselbach equation for acidic buffer. 7  
 b) Explain cryoscopic method and sodium chloride equivalent method for adjusting isotonicity. 7  
**OR**  
 c) What is buffer capacity? Write Vanslyke's equation for buffer capacity and maximum buffer capacity. 7  
 d) How do you prepare a pharmaceutical buffer? 7
- 5 a) Give the description and working of glass electrode. 10  
 b) Write the Nernst equation. 4  
**OR**  
 c) Explain ion sensitive electrodes. 7  
 d) How do you determine pKa using potentiometry? 7

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## FACULTY OF PHARMACY

B. Pharmacy 3/4 I-Semester (Suppl.) Examination, May 2017

Subject : Pharmacognosy - II

Time : 3 Hours

Max. Marks: 70

**Note: Answer all questions. All questions carry equal marks.**

- 1 (a) Describe the powder microscopical characters of Ephedra, datura and vasaka. (6)  
 (b) Write sources, chemistry and use of Periwinkle and Deadly night shade. (8)

OR

- (c) Write the general method of isolation and color reactions of alkaloids.  
 (d) Write the chemical test, adulterant and distinguished character from adulterant for  
 (i) Cinchona (ii) Rauwolfia (iii) Nuxvomica

- 2 (a) Define and classify the glycosides.  
 (b) Write chemical structure, use and specific chemical test for  
 (i) Sennoside (ii) Digoxin (iii) Diosgenin

OR

- (c) Write the source, chemical constituents and uses of  
 (i) Gokhru (ii) Satavari (iii) Brahmi  
 (d) Give an informative note on digitalis glycosides.

- 3 (a) Give the chemical structure, Chemical test, source and isolation of  
 (i) Caffeine (ii) Quinine (iii) Sennosides

OR

- (b) Define and classify the resins.  
 (c) Give the sources, chemical constituents and uses of  
 (i) Gaultheria (ii) Artemisia (iii) Asafoetida (iv) Guggul

- 4 (a) Discuss the significance and applications of plant tissue culture. (4)  
 (b) Classify the plant tissue culture techniques and discuss in detail about callus culture technique. (10)

OR

- (c) Write about : (4+5+5)  
 (i) Organogenesis (ii) Biotransformation (iii) Immobilization technique

- 5 (a) List the Traditional systems of medicines practiced in India and write the principles of any two systems. (5)  
 (b) Discuss the methods of various quality control measures in analysis of Herbal medicines. (9)

OR

- (c) Define and describe the preparation of : (9)  
 (i) Aristavas (ii) Bhasmas (iii) Asawas  
 (d) Discuss the importance of plant drugs in discovery of new drugs with suitable examples. (5)

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**FACULTY OF PHARMACY****B. Pharmacy 3/4 I-Semester (Suppl.) Examination, April 2017****Subject : Physical Pharmacy - I****Time : 3 Hours****Max. Marks: 70****Note: Answer all questions. All questions carry equal marks.**

- 1 (a) State and explain Gibbs phase rule. Explain the phase diagram for one component system. (9)
- (b) Write about differential scanning calorimetry and its applications in pharmacy. (5)
- OR**
- (c) Discuss about polymorphism and its applications in pharmacy. (7)
- (d) State the postulates of kinetic molecular theory of gases and explain Vander-Walls equation for real gases. (7)
- 2 (a) State and explain law of conservation of energy. (5)
- (b) Derive expressions for isothermal reversible expansion of an ideal gas and maximum work done in reversible expansion. (5)
- (c) Write a note on Gibbs free energy. (4)
- OR**
- (d) Explain specific heat, sensible heat and latent heat. (6)
- (e) Define free energy. Write about free energy function and its applications. (8)
- 3 (a) What are colligative properties? Explain determination of freezing point depression and its application. (8)
- (b) Explain the importance of activity and activity coefficients. (6)
- OR**
- (c) Define molarity, molality and normality. Explain in which situations these expressions are useful. (4)
- (d) Derive the equation for ionization of a weak acid and write about ampholytes. (6+4)
4. (a) Derive Henderson-Hasselbalch buffer equation for a weak acid and its salt. (7)
- (b) Write a note on pharmaceutical and physiological buffers. (7)
- OR**
- (c) What is buffer capacity? Write the equations for buffer capacity and maximum buffer capacity. (4)
- (d) What is isotonicity? What are the various methods of adjusting isotonicity. A solution contains 1.0g ephedrine sulphate in 100ml. What quantity of sodium chloride must be added to make the solution isotonic (sodium chloride equivalent of ephedrine sulphate is 0.23).. (1+5+4)
- 5 (a) Discuss the construction and working of a glass membrane electrode. (7)
- (b) Write about the method of determining the emf of a cell using potentiometer. (7)
- OR**
- (c) Mention various types of electrodes with examples including the cell reaction representation. (7)
- (d) Write about the importance of applications of oxidation reductions in pharmacy. (7)

## FACULTY OF PHARMACY

B. Pharmacy 3/4 I-Semester (Suppl.) Examination, April 2017

Subject : Medicinal Chemistry - I

Time : 3 Hours

Max. Marks: 70

**Note: Answer all questions. All questions carry equal marks.**

- 1 (a) Explain the importance of Bioisosterism in drug design. (7)  
 (b) Write about phase-I reactions of drug metabolism. (7)
- OR**
- (c) Explain the importance of prodrug and soft drug approach in drug design. (7)  
 (d) How does plasma protein bound drug effect biological activity. Give appropriate examples. (7)
- 2 (a) Classify Anticholinergic drugs with one example each with structure and chemical name. (5)  
 (b) Give the structure and synthesis of following : (3x3)  
 (i) Salbutamol (ii) Dicyclomine (iii) Carbachol
- OR**
- (c) Write the pharmacological actions of Adrenaline and discuss the SAR of Adrenomimetics. (10)  
 (d) Write a note on skeletal muscle relaxants. (4)
- 3 (a) Write a note on digitalis glycosides. (4)  
 (b) Classify Anti-hyper lipidemic agents with examples. (2)  
 (c) Give the structure, synthesis and MOA of clonidine and verapamil. (4+4)
- OR**
- (d) Add a note on vasodilators. (5)  
 (e) Write the structure, synthesis and MOA of following: (3x3)  
 (i) Clofibrate (ii) Captopril (iii) Isosorbide
- 4 (a) Add a note on immune modulators. (5)  
 (b) Give the classification of oral hypoglycemic agents. Discuss the MoA and SAR of Biguanides. Give the synthesis of Tolbutamide and Amrinone. (1+4+2+2)
- OR**
- (c) Write about Anti thyroidal agents. (7)  
 (d) Give a short note on positive inotropic agents. (7)
- 5 (a) Give the SAR of any two classes of H1 – Antihistamines. (5)  
 (b) Write the synthesis and MoA of following : (3x3)  
 (i) Warfarin (ii) Ranitidine (iii) Citrizen
- OR**
- (c) Add a note on proton pump inhibitors. (5)  
 (d) Write the synthesis and MoA of following: (3x3)  
 (i) Omeprazole (ii) Diphenhydramine (iii) Chlorpheniramine



**FACULTY OF PHARMACY****B. Pharmacy 3/4 I-Semester (Suppl.) Examination, May 2017****Subject : Pharmacology - I****Time : 3 Hours****Max. Marks: 70****Note: Answer all questions. All questions carry equal marks.**

- 1 (a) What are different routes of drug administration? Compare the merits and demerits of oral and parenteral routes of administration. (8)
- (b) Define the following: (6)
- Therapeutic Index
  - Biological Half life
  - Synergism

**OR**

- (c) Define and classify the receptors. Explain in detail about G-protein coupled receptors. (2+3+5)
- (d) Write short notes on LD<sub>50</sub> and ED<sub>50</sub>. (4)

- 2 (a) Explain the pharmacological effects and therapeutic uses of : (14)
- Physostigmine
  - Atropine
  - Propranolol
  - Hyoscine

**OR**

- (b) Classify the adrenergic agents with examples. Write their actions on (i) Heart, (ii) Bronchioles, (iii) Intestine and (iv) Eye. Add a note on their therapeutic uses. (4+8+2)

- 3 (a) Write about the classification of anti-depressant agents. Write in detail about the mechanism of action, therapeutic uses and adverse reactions of SSRIs. (6+8)

**OR**

- (b) Define Parkinsonism. Classify anti-Parkinson's drugs with examples? Write the mechanism of action and therapeutic uses of COMT inhibitors and MAO inhibitors. (2+6+6)

- 4 (a) Define arrhythmias. Classify the anti-arrhythmic agents. Discuss the pharmacology of any two drugs of different classes. (2+6+6)

**OR**

- (b) What is bronchial asthma? Classify anti-asthmatic drugs. Explain the pharmacology of any two drugs. (2+4+8)

- 5 (a) Define Diuresis. Classify Diuretics and explain mechanism of action, adverse reactions and therapeutic uses of carbonic anhydrase inhibitors and potassium sparing diuretics. (2+5+7)

**OR**

- (b) Write about the pharmacology of Purgatives. (6)
- (c) Write the mechanism of action and therapeutic uses of following drugs: (8)
- Ondansetron
  - Pantoprazole

**FACULTY OF PHARMACY****B. Pharmacy 3/4 I-Semester (Suppl.) Examination, April 2017****Subject : Pharmaceutical Technology (Pharmaceutics – II)****Time : 3 Hours****Max. Marks: 70****Note: Answer all questions. All questions carry equal marks.**

- 1 (a) Explain the properties and selection of organoleptic agents in pharmaceutical preparations. (7)
- (b) Write a note on surfactants. (7)
- OR**
- (c) What are the different sizes of hard gelatin capsules? Describe various filling methods of hard gelatin capsules? (8)
- (d) Describe quality control tests for soft gelatin capsule. (6)
- 2 (a) What are suspensions? Differentiate flocculated and deflocculated suspensions? Explain different types of additives used in the preparation of suspension. (7)
- (b) Discuss in briefly the formulation of suspensions. How will you evaluate the suspensions? (7)
- OR**
- (c) What are emulsions? Explain different types of emulsions? Write a note on formulation of emulsions. (8)
- (d) What are the different types of identification tests for emulsion? (4)
- (c) Add a note on multiple emulsion. (2)
- 3 (a) Explain in detail quality control tests for the coated tablets with the specifications stated in pharmacopeia. (7)
- (b) Describe various excipients used in the formulation of tablets. (7)
- OR**
- (c) What are the reasons for coating a tablets? Write about types and rationale of different coating processes. (7)
- (d) Describe in detail film coating process. (7)
- 4 (a) Explain in detail the types of parenteral preparations and their advantages. Describe production facilities and environmental control required for the preparation of parenterals. (14)
- OR**
- (b) Explain formulations and manufacture of eye drops. (6)
- (c) Describe in detail evaluation of parenterals. (8)
- 5 (a) Write in detail different types of propellants used in aerosols and describe in detail packaging materials and methods used in the manufacture of aerosols. (14)
- OR**
- (b) What are the ideal properties of packaging materials? What do you mean by tamper proof packaging ? Describe in detail strip and blister packaging. (14)