

02

- N.B.:** 1. All questions are compulsory  
2. Figures to right indicate full marks

Q1) A] Answer the following questions

- a) Explain terms : Dihedral angle , Conformation, Ring Flipping , 1,3-diaxial interaction (4M)  
b) Draw all possible resonating structures of Anthracene and Phenanthrene (2M)  
(c) Give identification test for (3 M)

- i) An alcohol            ii) Carboxylic acid    iii) Aromatic primary amine

C] Give the products for the following reactions (Any six) (6 M)

- i) p-Nitrobenzaldehyde  $\xrightarrow{\text{Strong NaOH}}$             ii) Anthracene  $\xrightarrow{\text{Na, EtOH}}$   
iii) 2 Moles of Benzaldehyde  $\xrightarrow{\text{Aq. alc. KCN}}$             iv) Ethyl benzoate  $\xrightarrow{\text{Aq. NaOH}}$   
v)  $\text{CH}_3\text{CH}_2\text{COCl} + \text{t-BuOH} \longrightarrow$             vi)  $\text{C}_6\text{H}_5\text{NH}_2 + \text{C}_6\text{H}_5\text{COCl} \longrightarrow$   
vii)  $\text{CH}_3\text{COOH} \xrightarrow[\text{ii) H}_2\text{O}]{\text{i) HN}_3}$

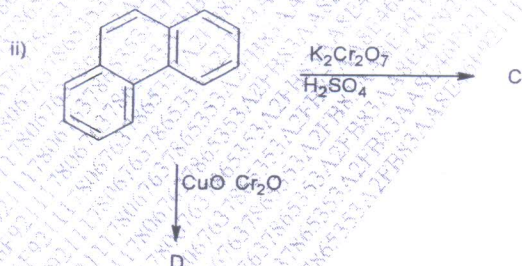
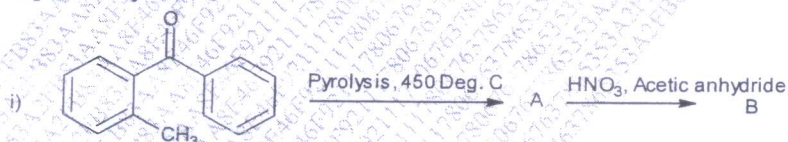
Q2) A] Give the mechanism of any two rearrangements of the following (4 M)

- i) Steven alkylation            ii) Favorski rearrangement  
iii) Hoffman rearrangement

B] Complete the following reactions (3 M)

- i)  $\text{C}_6\text{H}_5\text{CH}=\text{CHCH}_2\text{OH} \xrightarrow[\text{EtOH}]{\text{Raney Ni/H}_2}$             ii)  $\text{C}_6\text{H}_5\text{COCH}_3 \xrightarrow[\text{CHCl}_3]{\text{CF}_3\text{CO}_3\text{H}}$   
iii)  $\text{C}_6\text{H}_5\text{COCl} \xrightarrow{\text{NaBH}_4}$

C] Identify A, B, C and D (4 M)



Q3) A] Draw conformers of n-butane and arrange them in the order of relative stability (2 M)



B] Draw neatly the cis and trans conformers of cyclohexane-1,2-diol and briefly discuss stability for them (3 M)

C] Attempt the following conversions (Any three) (6 M)

- i) Benzoic acid to phenylacetic acid      ii) Salicylic acid to catechol  
 iii) o-Methylbenzophenone to anthracene    iv) Phenol to ethylphenyl ether

Q4) A] Discuss any two methods of preparation of carboxylic acid (4 M)

B] Write structure of products formed (3 M)

i) When naphthalene is reacted with

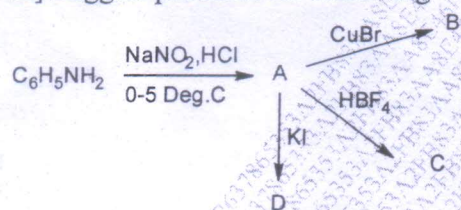
- a) Na+ Ethanol      b) O<sub>2</sub>/ V<sub>2</sub>O<sub>5</sub>, Heat, c) H<sub>2</sub>, Ni, 200°

ii) Which product gets formed when beta-naphthol reacts with benzene diazonium chloride in cold (1 M)

C] Give detailed mechanism for alkaline hydrolysis of ester (3 M)

Q5) A] Explain electrophilic substitution on phenol with respect to activation of ring and orientation. Cite example of nitration and bromination (4 M)

B] Suggest products for following (4 M)



C] A molecule C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>(A) on treatment with thionyl chloride gives C<sub>4</sub>H<sub>7</sub>ClO (B). This on treatment with ethyl alcohol in presence of H<sup>+</sup> gives C<sub>5</sub>H<sub>8</sub>O<sub>2</sub> (C). C on hydrolysis reverts back to product A. Write structures for A, B and C (3 M)

Q6)A] Give mechanisms for the following (Any 2) (4 M)

- i) Reformatsky reaction      ii) Claisen condensation      iii) Beckman alkylation

B] Give any three methods for the preparation of alcohols (3 M)

C] A hasty chemist forgot to label the containers and now wants to use basics in organic chemistry to solve the problem. He has four containers namely A, B, C and D and wants to identify which of them contains propionic acid, benzamide, o-toluidine and acetophenone. He carried out following four reactions to arrive at conclusion:

Container A: Compound + NaOH, boil and smell of ammonia

Container B: Added NaHCO<sub>3</sub> to compound and observed a brisk effervescence

Container C: Added 2,4-DNP and observed thick orange precipitate

Container D: Compound in Conc.HCl + NaNO<sub>2</sub> in HCl at 0-5 deg.C, mix and add beta-naphthol in NaOH gave orange dyestuff. Identify Contents of container A, B, C and D (4 M)



PA - I  
Sem - IV CBSGS KT  
11/05/18

Q. P. Code: 40385

[Time: Three Hours]

[Marks: 70]

1. NB: Please check whether you have got the right question paper.
2. All questions are compulsory
3. Figures to right indicate full marks
4. Draw neat labelled diagram, write chemical reaction and give example wherever necessary
5. Attempt answer of each main question on new page

Q.1 [A] Explain the following terms

5M

- i) complexing Agents
- ii) common ion effect
- iii) solubility product
- iv) masking Agent
- v) Partition coefficient

[B] Answer the following Questions

10M

- i) State faraday's first & second law
- ii) Balance the following reaction  $\text{Cr}_2\text{O}_7^{2-} + \text{Fe}^{+2} + \text{H}^+ \rightarrow \text{Cr}^{+3} + \text{Fe}^{+3}$
- iii) What is half wave potential?
- iv) explain IIKovic equation
- v) Partition coefficient of solute between water and diethyl ether is 5. If 25 ml of an aqueous solution of a compound is extracted with 15 ml of organic solvent, what percentage of original solute will be found in organic layer after equilibrium?

Q.2 (a) Explain in brief different methods of argentometric titration

4M

(b) Give descriptive account of Coulometric techniques

4M

(c) Explain levelling and differentiating effect of solvent in non aqueous titration

3M

Q.3 (a) Enlist the components of Pharmacopoeial monograph for API as per IP and give the principle involved in the assay of Aspirin API

4M

(b) what is the difference between iodometry and iodimetry titration

4M

(c) write a short note on pulse polarography and give application of polarography

3M

Q.4 (a) Explain Ostwalds theory of neutralization indicator

4M

(b) Enlist unit operations in gravimetric analysis and discuss Precipitation in detail

4M

(c) Name the analytes assayed by each of the following type of redox reaction

3M

i] permanganometry      ii] cerrimetry      iii] iodimetry

Q.5 (a) A sample of drug A was analysed and percentage concentration obtained after analysis was as follows 8.50, 8.75, 8.14, 8.20, 8.58. Calculate mean, median, variance and RSD for the given data

4M

(b) write short note on following (i)pM Indicators (ii) demasking agents

4M

(c) classify solvent extraction methods and explain any one in detail

3M



- Q.6 (a) Discuss construction and working of Oxygen flask combustion method 4M  
(b) 50ml of 0.5 M HCl is titrated with 0.5 M NaOH. Calculate the pH values at the start of titration & after addition of 5,15,25 ml of titrant. 4M  
(c) Calculate gravimetric factor for 3M

Substance sought	Substance weighted
P	Ag <sub>3</sub> PO <sub>4</sub>
Ba	BaSO <sub>4</sub>

At wt. S=32.06, O=15.99, P=38.97, Ba=137.33, Ag=107.87, C=12, H=1, O=16, Fe=55.84

\*\*\*\*\*

- NB: 1. All questions are compulsory  
2. Figures to the right indicate full marks

- 1 a. Classify dispersed systems. Comment on role of surface free energy in suspension stability. 3  
 b. Comment on physiological factors affecting skin penetration. 2  
 c. Enlist desirable features of suppositories. Give disadvantages of suppositories as dosage forms. 3  
 d. Discuss problems/hazards involved in handling of blood products. 2  
 e. Enlist the various quality control tests on ligatures. Discuss tensile strength determination of catgut. 3  
 f. Discuss pharmaceutical applications of emulsions. 2
- 2a. Enlist various quality control tests for suspensions. Elaborate with suitable diagram large scale manufacturing of suspensions. 4

**OR**

- Enlist various quality control tests for emulsions. Elaborate on any one equipment used in emulsion production.
- b. Enlist properties of an ideal suppository base. Elaborate on any one suppository base. 4  
 c. Explain and classify non-absorbable sutures. Elaborate on any one non-absorbable suture of natural origin. 3
- 3a. Explain the following (i) DLVO Theory (ii) Schulze Hardy Rule 4  
 b. Discuss Plasmapheresis 4

**OR**

- Discuss Gamma Globulin preparations.
- c. Enlist various Quality control tests for suppositories. Explain any one test. 3
- 4a. Discuss salient features of raw materials used in semisolid preparations. 4  
 b. Classify Emulsifying agents. Explain selection of emulsifier by HLB method. 4  
 c. What are plasma volume expanders? Discuss the salient features of plasma volume expanders with suitable examples. 3

**OR**

- Discuss steps involved in production of clinical grade Dextran in brief.
- 5a. Enlist various methods for preparation of suspensions. Explain any one method in detail. 4  
 b. Explain large scale manufacturing of any one semisolid preparation. 3  
 c. Explain salient features of Theobroma oil as a suppository base. 4

**OR**

- Describe any two large scale manufacturing techniques of suppositories.
- 6a. Discuss manufacturing and processing of catgut. 3  
 b. Elaborate on physical stability of emulsions. 4

**OR**

- Elaborate on preservation of emulsions.
- c. Classify Penetration enhancers with examples. Discuss any two methods to evaluate skin penetration. 4

\*\*\*\*\*



[Time: 3 Hours]

[Total Marks: 70]

Instructions:

- All Questions are compulsory.

Q.1 Answer the following

- |   |   |
|---|---|
| a. Name the diagnostic test for tuberculosis  | 1 |
| b. Define and give significance of DRT  | 1 |
| c. Explain bacterial capsule  | 1 |
| d. Name the causative agent of typhoid  | 1 |
| e. Name the biological indicator of filtration sterilization                            | 1 |
| f. Define resolution limit  | 1 |
| g. Define oncogenic viruses   | 1 |
| h. Write incubation conditions in sterility testing and name of sterility testing media | 2 |
| i. Name any two fungal infections with the causative agent                              | 2 |
| j. Name any two chlamydial infections with the causative agent                          | 2 |
| k. How to prevent contamination in an aseptic area                                      | 2 |

- Q.2 a) Explain fluorescence microscopy using a neat labelled diagram with its applications 4
- b) Discuss moist heat sterilization with respect to method, the mechanism of action and applications 4
- c) Write a note on preservation of bacteria 3
- Q.3 a) Describe lysogenic cycle for bacteriophage 4

- b) Discuss in detail kelseyskeys test of disinfectant evaluation 4
- c) Distinguish between bacteria and fungi 3

**OR**

Distinguish between prokaryote and Eukaryote

- Q.4 a) Enlist different methods of counting of bacteria and explain any one viable method 4
- b) Discuss in detail infections caused by Protozoa 4
- c) Explain asexual methods of fungal reproduction 3
- Q.5 a) Discuss in detail radiation sterilization or gaseous sterilization 4

- b) Write a note on alcohol as a disinfectant 4
- c) Explain economical significance of algae 3

- Q.6 a) write a note on gram positive cell wall using a neat labelled diagram 4
- b) Explain phases of bacterial growth cycle 4
- c) Explain the principle of Acid fast staining technique 3

Please check whether you have got the right question paper.

- N.B:**
1. All questions are **compulsory**.
  2. Figure to the right indicate full marks.

1. (a) Answer the following 12
  - I. Define bioavailable and bioequivalence
  - II. Differentiate between potency and efficacy of a drug
  - III. What are the clinical uses of skeletal muscle relaxants?
  - IV. Classify muscarinic receptors along with their location
  - V. Carbonic anhydrase inhibitors are used as mild diuretics. Justify
  - VI. Give the mechanism of action of quinidine.
  
1. (b) 03
  - I. What do you mean by pharmacological antagonism? Give examples.
  - II. Differentiate between sympathetic and parasympathetic nervous system in terms of present neurotransmitters.
  - III. Give the pathogenesis of cardiac arrhythmia.
  
2. (a) Answer any two of the following 08
  - I. Classify parasympathomimetics and add note on their therapeutic uses.
  - II. Give the pharmacological action of Acetylcholine.
  - III. Write note on depolarizing and non-depolarizing ganglionic blockers.
  
- (b) Answer any one of the following 03
  - I. Explain the various phases of drug metabolism with example.
  - II. Define renal clearance, Volume of distribution and half life of drug
  
3. (a) Answer any two of the following 08
  - I. Classify antiarrhythmic agents and explain the role of calcium channel blockers.
  - II. Explain the role of diuretics in managements of hypertension
  - III. Explain various toxic effects of drug on different organs and systems.
  
- (b) Answer any one of the following 03
  - I. Give the pharmacotherapy of Angina pectoris
  - II. How pharmacokinetic factors affects action of drug?
  
4. (a) Answer any two of the following 08
  - I. Discuss atropine like substitutes in-detail.
  - II. Enlist the therapeutic uses of Noradrenaline and explain its mechanism of action.
  - III. What treatment will you prescribe to the patient suffering from cardiac arrhythmia if he/she is having asthma?



- (b) Answer any one of the following 03
- I. Classify nicotinic receptor antagonist
  - II. Explain the role of sympathomimetics in asthma
5. (a) Answer any two of the following 08
- I. Discuss various types of receptors and explain their functioning with examples.
  - II. Explain physiological and chemical antagonism with suitable examples.
  - III. Differentiate between competitive and non-competitive inhibition.
- (b) Answer any one of the following 03
- I. Classify routes of drug administration.
  - II. Drug administered via different routes will have same half life. Justify
6. (a) Answer any two of the following 08
- I. Write note on antihyperlipidemic drug
  - II. Give the classification of sodium channel blocker along with their uses.
  - III. Give the therapeutic uses of following drugs (any 4)
    - a) Succinly Co A
    - b) Physostigime
    - c) Quinidine
    - d) Spirinolactone
    - e) Diltiazem
- (b) Answer any one of the following 03
- I. Discuss the effect of protein binding capacity and related drug action.
  - II. Discuss patient related factors affecting drug action.
-