T9933, S.Y. B Pharm (CBCS), Sem III - PE
Date: 27/4/18

Q.P. Code: 34246

(3 HOURS) [TOTAL MARKS : 80]

N.B. 1) All questions are compulsory.
2) Draw neat and labelled diagrams wherever necessary.

Q1.
a). With neat and labelled diagrams differentiate between simple and differential manometer. 3M
b). Explain laminar flow in mass transfer. 3M
c). Classify crystallizers. 2M
d). Enlist factors affecting rate of evaporation. 2M
e). Writes notes on simple distillation. 2M
f). What is plastic and explain in brief. 3M
g). Elaborate Crystal Habit. 2M
h). Discuss entrainment separators as evaporator accessory: 3M

Q2.
a). Discuss principal, construction and working of Piston pump. 4M
b). Elaborate design and working of agitated tank crystallizer. **OR** Vacuum crystallizer. 4M
c). Explain construction and working of falling film molecular distillation unit. 4M

Q3.
a). Explain construction and working of Pitot tube. **OR** Pressure differential flowmeter . 4M
b). Discuss expansion traps as evaporator accessories. 4M
c). Elaborate Brine system in refrigeration. 4M

Q.4
a). Discuss an experiment to study laminar and turbulent flow in Fluids. 4M
b) Elaborate modes of heat transfer in detail. 4M

OR

b). Writes note on shell and tube heat exchanger.
c). Explain Miers Theory of supersaturation. 4M

Q.5
a). Explain design and working of centrifugal pump. 4M
b). Elaborate on the construction and working of sieve plate column. 4M

OR

b). Discuss an azeotropic distillation.
c). Elaborate type of fire and its prevention. 4M

Q.6
a) Classify conveyors and discuss construction and working of Pneumatic conveyor. 4M
b) Elaborate on the construction and working of horizontal tube evaporator. 4M
c). Enlist types of factors affecting corrosion and explain any three factors in detail 4M

OR

c). What is corrosion and discuss two methods to prevent corrosion.

B Pharmacy, Sem III (CBCS), PA-I
Date: 25/4/18

Q.P. Code: 33800

3 Hours **(Total marks: 80)**

N.B. 1. All questions are compulsory
2. Figures to right indicate full marks.
3. Draw neat labelled diagrams wherever necessary.
4. Attempt answer of each main question on new page.

Q.1 A. Explain the terms- - reducing agent and self-indicator (2)
B. Balance following half-cell reactions- (2)
a) $HNO_2 \rightarrow NO$
b) $ClO^- \rightarrow Cl^-$
C. Calculate the normality of 4.5 % w/v sulphuric acid solution. (2)
[Atomic weights: H:1, O:16, S:32]
D. Give reasons: (2)
i. In Volhard's method the precipitate of silver chloride needs to be protected with nitrobenzene.
ii. Adsorption indicators show colour change only at the end point
E. Explain the terms : Back EMF and Faradic current (2)
F. The ether-water partition coefficient for drug A is 5. 20mL aliquot of its solution was extracted with 10mL of ether. Calculate the percentage of drug found in both the layers. (2)
G. Define following terms. i) Masking agent ii) Complexing agent (2)
H. Define and classify various types of errors. (2)
I. State Faraday's second law and explain how it is related to electrogravimetry? (2)
J. Define: Primary standard and Normality. (2)

Q. 2 A. What is Karl Fischer reagent? How is it prepared and standardized? (4)
B. What is solubility product? Explain Mohr's method of argentometric titration. (4)
C. What are levelling and differentiating solvents? Explain with suitable examples. (4)

Q. 3 A. Draw a neat labelled diagram of the polarographic apparatus and explain the principle and working. (4)
B. Compare and contrast iodometric and iodimetric methods of redox titrations. (4)
C. Write principle, chemical reactions and end point determination involved in the assay of Soluble Aspirin Tablets. (4)

Q. 4 A. What are titration curves? Draw the neutralization curve depicting titration of a strong acid with strong base. (4)
B. What is gravimetry? Discuss the importance of filtration and washing step. (4)
C. i. Explain the role of Magnesium sulphate in assay of Calcium gluconate injection. (4)
ii. The dried aluminium hydroxide gel has to assayed using back titration, why?

Q. 5 A. i. Calculate the number of significant figures for, 90.7, 0.216, 8000 and 6.7×10^{-3}. (4)
ii. Calculate the mean and standard deviation for the following set of analytical results 15.67, 15.69 and 16.03.
B. Discuss the principle and application of oxygen flask combustion technique. (4)
C. Classify solvent extraction methods. Discuss the methods of continuous extraction. (4)

Q. 6	A.	i.	Calculate the number of moles of Aspirin in its 10 ppm solution. [Atomic weights: C:12, H:1, O:16]	(2)
		ii.	What volume of 0.5 M HCl solution would be required to neutralize 10 ml of 2 M NaOH?	(2)
	B.	i.	Explain the significance of Kjeldhal's method.	(2)
		ii.	What is an external indicator? Explain one application for analysis of one active pharmaceutical ingredient using an external indicator.	(2)
	C.	i.	Enlist and define the problems/interference associated with gravimetric analysis.	(2)
		ii.	Calculate gravimetric factor involved in gravimetric determination of Al as Al-oxinate. [Atomic weights: C:12, H:1, O:16, N:14, Al: 26.98, S:32]	(2)

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S.Y. B pharm Sem III (CBCS) - APP III
Date : 23/4/18

Q.P. CODE: 34608

(3 Hours) [Total marks 80]

N.B. : (1) **All** questions are **Compulsory**
(2) Answer **all** sub questions **together.**
(3) Draw neat labeled diagram wherever necessary.

Q.1	A) Answer the following	16
i.	Write the different chambers of heart.	
ii.	Explain systemic circulation	
iii.	Enlist names of taste buds of tongue.	
iv.	Enlist six basic processes of digestive system.	
v.	Enlist functions of Kidney.	
vi.	Enlist accessory sex organs of male reproductive system.	
vii.	Enlist phases of gastric digestion.	
viii.	Enlist the functions of small intestine.	
Q.1	B) Answer the following	4
i.	_____ is the scientific study of the anatomy, physiology and pathophysiology of kidney.	
ii.	Organisms produce offspring by making germ cells called as_____.	
iii.	Heart lies in the _____.	
iv.	The organs involved in the breakdown of food are collectively called as _____	
Q.2	A) Answer any **TWO** of the following	8
i.	Write in detail about layers of heart wall.	
ii.	Explain cardiac conducting system.	
iii.	Write a note on cardiac output.	
Q.2	B) Answer any **ONE** of the following	4
i.	Write a short note on Hypertension.	
ii.	Write a short note on cardiac arrhythmia.	
Q.3	A) Answer any **TWO** of the following	8
i.	Explain chemical and mechanical digestion of food in mouth.	
ii.	Write anatomy of stomach along with its functions.	
iii.	Write the composition and functions of pancreatic juice.	
Q.3	B) Answer any **ONE** of the following	4
i.	Explain pathophysiology of reflux esophagitis.	
ii.	Write a short note on Jaundice.	
Q.4	A) Answer any **TWO** of the following	8
i.	Explain process of glomerular filtration.	
ii.	Write hormonal regulation in process of tubular reabsorbtion and secretion.	
iii.	Draw neat labeled diagram of Nephron.	
Q.4	B) Answer any **ONE** of the following	4
i.	Write a short note on UTI.	
ii.	Write a short note on Kidney stone.	
Q.5	A) Answer any **TWO** of the following	8
i.	Write in detail about various ducts involved in male reproductive system.	
ii.	Draw neat labeled diagram of Sperm and explain spermatogenesis.	
iii.	Write a note on phases of menstrual cycle.	
Q.5	B) Answer any **ONE** of the following	4
i.	Write a note on STD.	
ii.	Write a note on dysmenorrhea.	
Q.6	A) Answer any **TWO** of the following	8
i.	Write in detail process of fluids and fluids compartment formation.	
ii.	Explain concept of Acid-base balance in body.	
iii.	Draw neat labeled diagram of Ovary.	
Q.6	B) Answer any **ONE** of the following	4
i.	Write a note on Ulcerative colitis	
ii.	Draw neat labeled diagram of liver.	

T9933 | S Y B pharm Sem III CBCS – pp-2
Date: 18/4/18

Q.P. Code : 27798

[Time: 3 Hours] [Marks: 80]

Please check whether you have got the right question paper.

N.B: 1. All questions are compulsory.

1. a) Mention any two attributes for formation of hydrogen bond. 02
b) State what is meant by 'Polymorphism'? 02
c) Explain additive properties with examples. 02
d) Define 'Phase' and 'Components' with regards to Phase Rule. 02
e) What is the effect of pressure on solubility of gases in liquids? 02
f) What are strong electrolytes? Give examples. 02
g) If the pH of a solution is 4.72. What is the hydronium ion concentration? 02
h) What is meant by 'Surface free energy'? 02
i) Explain the term contact angle. 02
j) What are Newtonian fluids? Give suitable examples. 02

2. a) What are Real Gases? 04
Two moles of ammonia are enclosed in a four liter flask at 30^0C. Calculate the pressure exerted by the gas assuming it behaves like a real gas.
(Given: R = 0.082 atm. L. k^{-1} mol^{-1} , a = 4.14 lt^2 atm mol^{-1} , b = 0.037 L. mol^{-1})
b) Classify the methods to adjust isotonicity and explain any one in detail. 04
c) Discuss the effect of temperature on miscibility of phenol-water system. 04

3. a) Give an account of applications of dipole moment. 04
b) Define buffers. Derive the buffer equation for an acidic buffer. 04
c) State Gibb's Adsorption equation for soluble monolayers. 04
Calculate HLB value of a surfactant having sap value of 45.5 and acid value of 276.

4. a) State Raoult's Law and explain deviations from Raoult's Law. 04
OR
Discuss Azeotropic Mixtures.
b) State Distribution Law and give its limitations. 04
c) Define pH and explain in detail method to determine pH. 04

5. a) Describe in detail Linde's method for liquefaction of gases. 04
b) Define 'adsorbent' and 'adsorbate'. Elaborate on Langmuir adsorption isotherm equation. 04
c) Name non-newtonian systems and explain any one in detail. 04
OR
Discuss the term thixotropy and give its significance.

6. a) Discuss in detail Liquid Crystalline state. 04
b) Discuss Drop number method to determine surface tension. 04
OR
Describe Du Nuoy Tensiometer to determine Interfacial Tension.
c) Elaborate on any one method for measurement of flow for Newtonian systems. 04

Date : 16/4/18

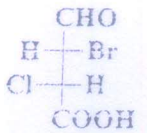
CBCS OC-I

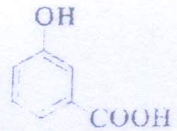
Q.P.Code: 27662

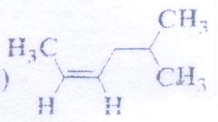
(3 Hours) Total Marks: 80

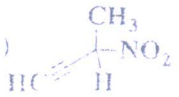
N.B.: 1. All questions are compulsory
2. Answer all subquestions together
3. Figures to right indicate full marks

Q.1 A) Write the systematic nomenclature as per IUPAC rules. Assign R/S, E/Z or D/L notations wherever relevant (4 M)

(i) 

(ii) 

(iii) 

(iv) 

B) Write structures form the following IUPAC names (4 M)

(i) (R) 4-Chloro-2-methylhexane

(ii) 3-Vinyl-1,4-pentadiene

(iii) (E) 3-Methyl-4-propyl-3-octene

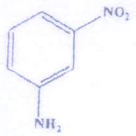
(iv) Ethyl-2-ethylbutanoate

C) Answer the following questions (Any 6) (12 M)

i. Draw and identify the HOMO and LUMO of Acetaldehyde

ii. Draw resonance for:

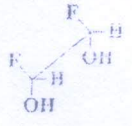
a)



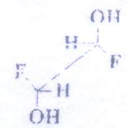
b)

iii. Represent 1,2-dihydroxypropaneamine using Fischer and Sawhorse projection formulae.

iv. Deduce the relationship between two chiral structures. Justify.

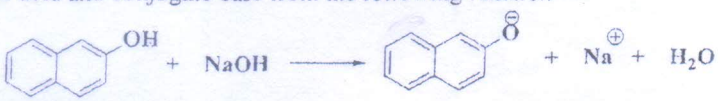


a)



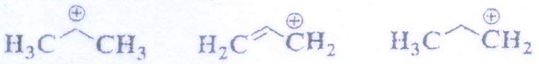
b)

v. Identify conjugate acid and conjugate base from the following reaction



vi. Identify the electrophiles and nucleophiles in the given reactions

vii. Which of the following is more stable? Justify.



Q.2. Answer the following

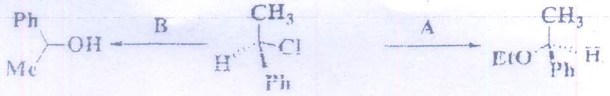
i. Draw the molecular orbital energy diagram for ethene. Label the orbitals. (2M)

ii. Identify the hybridization state of the underlined atom from the given molecules (2M)

a. $\underline{N}H_3$ b. $H_2\underline{O}$

Turn Over

iii. Answer the following with respect to the following reaction: (4M)



(a) Identify the type of reactions A and B.

(b) Which are the preferable solvents used for both the pathways?

iv. Draw the energy profile diagram to depict equilibrium for the following reaction:

aldehyde hydrate

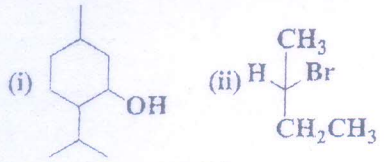
Identify and draw the transition states. State whether the reaction is endothermic or exothermic (4 M)

Q.3 Answer the following

i. Discuss **Ring strain** in cycloalkanes (2 M)

OR

Identify whether the given molecules are chiral or achiral and Justify



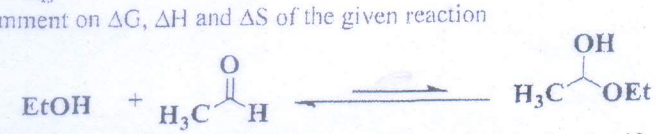
ii. Identify the best leaving group F^-, H_2O, NH_3 and Justify. (2 M)

iii. Predict the major product when **2-Bromo-2-methylbutane** reacts with ethanol. Identify the type of reaction and highlight the mechanism. (4 M)

iv. Write a note on hydrogenation of 1-phenyl-1-propyne using minimum two reducing reagents and comment on the stereochemistry of the product. (4M)

Q.4 Answer the following

i. Define Entropy. Comment on ΔG, ΔH and ΔS of the given reaction (4 M)

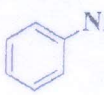


ii. Which one of the following pair is expected to exhibit H-bonding and why. Justify your answer. Methanol and Trimethylamine (2 M)

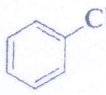
iii. On the basis of solubility, justify the increasing order of log P for the following compounds (2 M)

Nitrobenzene (log P = 1.85), chlorobenzene (log P = 2.84), aniline (log P = 0.90)

iv. Predict the product (Any 4) (4 M)

(i) 

+ Benzoyl chloride $\xrightarrow{NaOH}$

(ii) 

+ NH_2NH_2 $\longrightarrow$

(iii) Aniline + $NaNO_2$ + HCl $\longrightarrow$

(iv) Acetone + 3 NaOI $\longrightarrow$

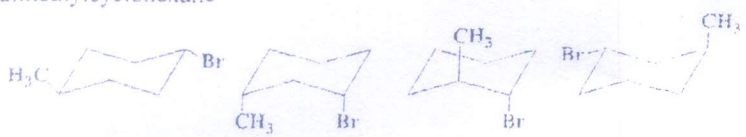
Q.5 Answer the following

i. Arrange the following in increasing order of basicity and justify. (2 M)

Aniline, *o*-nitroaniline, aminocyclohexane

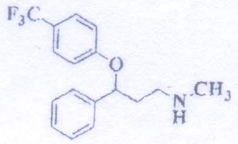
ii. Two compounds A and B have pKa values 7.9 and 3.9 respectively. Which one is the stronger acid? Justify. (2 M)

iii. a. Which of the following conformations represent 1,3-diaxial interactions? Comment on stability of chair form of 1,2-dimethylcyclohexane (2 M)



b. With the help of energy profile diagram, explain diagrammatically conformational analysis of Ethane (2 M)

iv. Identify the functional group in the given moiety which is responsible for H-bonding and hydrophobic interactions. Suggest a suitable modification of this group which will enhance or decrease this interaction (4 M)

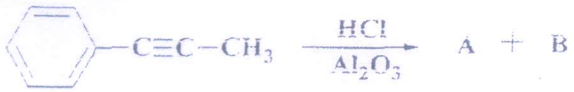


OR

An active pharmaceutical agent possesses phenolic, amine and amide functional groups. What precautions should be taken during its formulation?

Q.6 Answer the following

i. With Predict the product for:



Justify the principle for kinetic *vs* thermodynamics product formation (4 M)

OR

Explain the energy profile diagram for N-methylacetamide. Draw and discuss the stability of *cis* and *trans* conformations.

ii. Explain Huckel's rule for aromaticity. Identify whether the following is aromatic, nonaromatic or antiaromatic **(Any 3)** (4 M)

iii. Identify A, B, C & D from the given set of reactions: (4 M)