Date : 16/4/18

CBSGS - OCT

Q.P. Code :32360

[Time: Three Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B: 1. .All Question are compulsory.
2. .Figures to right indicate full marks

Q.1 A) Answer the Following questions

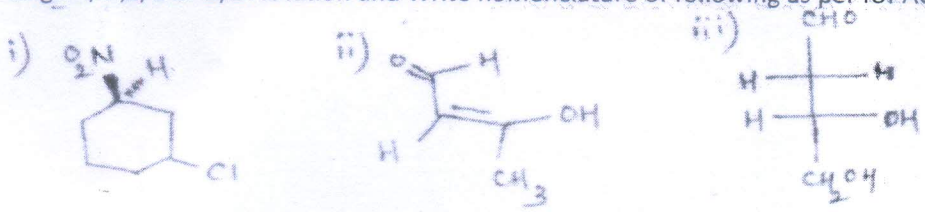
a) Give suitable structures for the following compounds (any two) 2 M

i) 3- oxopentanoic acid

ii)4- hydroxymethoxybenzene

iii)3-bromobutane-1-amine

b) Assign R/S ,E/Z or D/L Notation and Write nomenclature of following as per IUPAC rule (any two) 2 M



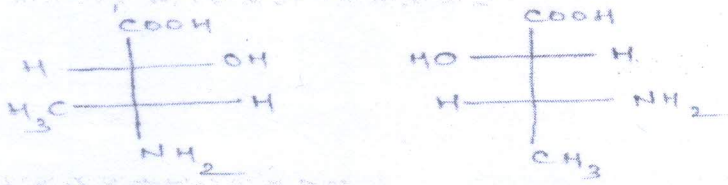
c) Draw possible resonating structure for following compounds 2 M

i) Bromobenzene ii)

d) Arrange the following in increasing order of acidity and justify 2 M

3 – chloropropionic acid, 2,2 – dichloropropionic acid, 2-chloropropionic acid

e) Establish relationship between following pair of the molecule 2 M



f) Arrange the following in the increasing order of basicity and justify 2 M

Aniline, p-nitroaniline, methylamine

B) Give the product for the following reaction (any three) 3 M

i)Benzene +n-propyl bromide $\xrightarrow{AlCl_3}$

ii)Chlorobenzene $\xrightarrow{NaNH_2,\ liq\ NH_3}$

iii)Propene $\xrightarrow[Cl_2,\ H_2O]{}$

iv)1,3-butadiene $\xrightarrow{Br_2}$

Q2) A) Give different types of tautomers with example. 2 M

B) Arrange the following carbanion in the increasing order of stability and justify. 1 M

C) Write any two example of nucleophiles. 1 M

D) Give strcture of product expected when 1-methylcyclopentene is treated with the following reagents 3 M

i) Br_2, H_2O

ii) H_2SO_4, H_2O

iii) NBS

E) Identify product, type of reaction and give mechanism for the following reaction 4 M

$C_6H_5\text{-}CH_2\text{-}CH_2\text{-}Br \xrightarrow{alc.\ NaOH}$

Q3) A) Identify major product for the following reaction 4 M

$C_2H_5\text{-}CH_2\text{-}Br \xrightarrow[H_2O]{KOH}$

Discuss effect of the following factors on the above reaction

i)reactivity of alkyl halide, ii) nucleophile, iii) Solvent

B) Explain following terms with the suitable example (any three) 3 M

i)Racemic mixture, ii) Enantiomers, iii) Meso compounds, iv) Atropisomerism

C) Write all the possible geometric isomers of the following compound 2 M

$CH_3\text{-}CH_2\text{-}CH{=}CH\text{-}CH{=}C(CH_3)C_2H_5$

D) Suggest suitable method for resolution of basic racemic mixture 2 M

Q4) A) Discuss orientation and reactivity of NH_2 substituent towards electrophilic aromatic substitution reaction 2 M

B) Explain mechanism involved in the nitration of benzene 2 M

C) Convert the following (any three) 3 M

i) 1-butene to 1-cyclopropylethane

ii) Propene to propyne

iii) Phenol to p-hydroxyacetophenone

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iv) 3-bromo-2-methylbutane to 2-methyl-2-butene

D) Give the product for the following (any four) 4M

i) $CH_3CH_2CH_2COOAg \xrightarrow{Br_2}$

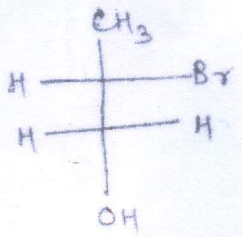
ii) 2-Butyne $\xrightarrow{H_2, \text{Lindlar Catalyst}}$

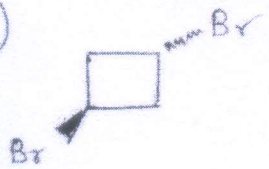
iii) Cyclohexene $\xrightarrow[H_3O^+]{CH_3COOH}$

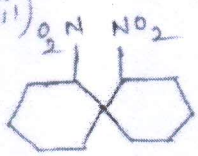
iv) Isobutylene $\xrightarrow{O_3/Zn, H_2O}$

v) $CH_2=CH-CH(CH_3)_2 + HBr \xrightarrow{\text{peroxide}}$

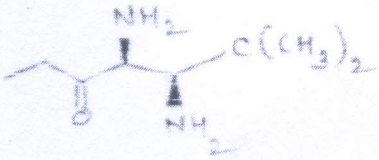
Q5) A) Identify the following molecules are chiral or achiral. Justify 3 M

i) 

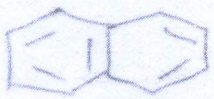
ii) 

iii) 

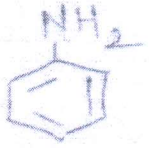
B) Identify assymetric center in the following molecules 1 M



C) State Huckel Rule for the aromaticity. Identify if the following molecules are aromatic, antiaromatic or non-aromatic 4M

i) 

ii) 

iii) 

D) Explain elimination-addition mechanism for aromatic nucleophilic substitution reaction 3 M

Q6) A) Explain orientation of product formation when 1-propene reacts with Br_2 2 M

B) Define and discuss with example concept of stereospecific and stereoselective reaction 2M

C) Identify following reagents 3 M

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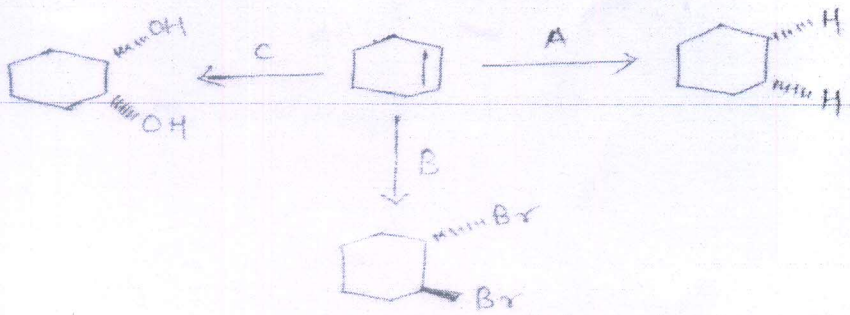

D) Predict the product for the following (any four) 4 M

i) 

ii) 

iii) $CH_3 - C \equiv CH \xrightarrow{Cl_2}$

iv) $CH_3 - CH_2 = CH_2 \xrightarrow{H_2O,\ H^+}$

v) $2\ CH_3I \xrightarrow{Na\ /\ ether}$

T9923 - S. Y. B Pharm Sem III CBSGS - BC II
Date : 18/4/17

QP Code : 27948

(3 hours) Total Marks: 70

N.B.: **All** questions are compulsory

1. Answer the following

a) Give 2 examples of physiological uncouplers of oxidative phoshorylation 1
b) Name a drug that inhibits DNAPolymerase III 1
c) Name the enzyme involved in synthesis of eukaryotic mRNA 1
d) Name drug which inhibits HMG CoA reductase 1
e) Name enzyme involved in removal of primer in prokaryotic replication 1
f) Name a drug inhibiting thymidylate synthase 1
g) How does tetracycline inhibits protein synthesis 1
h) Give the significance of glyoxylate pathway 2
i) Give names of two shuttle systems for transfer of reducing equivalents to mitochondria 2
j) Enlist any two ketone bodies with its structure 2
k) Define Substrate level phosphorylation with an example 2

2. a) Give the names and structures of the substrate and product for the following enzymatic reactions (any 2) 4
i) HMG CoA synthase
ii) Pyruvate carboxylase
iii) β- Ketoacyl ACP reductase
b) Write structures of given substrate and product with name of the enzyme catalysing the reaction (any 2) 4
i) α-D- ribose-5- phosphate to 5-PRPP
ii) Fructose-6-phosphate to Fructose-1,6-bisphosphate
iii) Squalene to Squalene- 2,3-epoxide
c) What is Salvage pathway? 3

3. a) Outline series of reaction involved in Kreb's cycle 4
b) Write reactions for actual β-oxidation of palmitic acid with net ATP yield 4
c) Write note on telomere and telomerase 3

4. a) Discuss post transcriptional modifications 4
b) Describe *de novo* synthesis of IMP 4
c) Draw schematic representation of ETC 3

5. a) Discuss translation in detail 4
b) Write reactions for oxidative phase of pentose phosphate pathway. 4
c) Explain any one method for DNA sequencing 3

6. a) Discuss solid phase DNA synthesis 3
b) Give the biosynthesis of UTP 3
c) Compare enzymatic biosynthesis against chemical synthesis of peptide 3
d) Describe role of proteases and peptidases in peptide sequencing 2

S.Y. B pharmacy (Sem III) CBSGS PE
Date: 24/4/18

Q.P.Code: 27872

[Time: 3 Hours] [Marks: 75]

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

Q.1.a	Give the merits and demerits of Simple manometer	(3)
b	Elaborate on interfacial mass transfer	(3)
c	Discuss relative humidity with respect to caking of crystals	(2)
d	Define Economy and Capacity of an Evaporator	(2)
e	Draw neat diagram of vapour-liquid equilibrium of minimum boiling point azeotropic mixture	(2)
f	Write a note on Copper and its alloys	(3)
Q.2.a	Explain briefly the principle and working of positive displacement pumps	(4)
b	Classify Crystallizers and discuss the design and working of Vacuum OR Swenson Walker Crystallizer	(4)
c	Give an account of Principle and applications of Molecular Distillation	(3)
Q.3.a	Classify flowmeters and explain any one in detail	(4)
b.	Outline the working of Expansion Trap	(3)
c	Give an account of parameters to be considered to estimate the refrigeration load	(4)
Q.4.a	Explain the terms viscosity, compressibility, surface tension and Reynold's number	(4)
b	Write a note on Thermocouples OR Modes of heat transfer	(4)
c	Elaborate on Mier's theory of crystallization	(3)
Q.5.a	Give the salient features of Centrifugal Pumps	(3)
b	Describe construction and working of Bubble Cap Columns OR Packed Columns	(4)
c	What are Hazards ? Give an account of Fire Hazards	(4)
Q.6.a	Define conveying. Explain in detail Pneumatic Conveyors	(3)
b	Describe the design and working of Multiple effect Evaporator	(4)
c	Classify various types of Corrosion and describe any one	(4)

S. Y. B Pharm (Sem III) CBSGS - APP III, Date: 2/05/

Q. P. Code: 35406

Time: 3 hours

N.B.: 1. All questions are compulsory
2. Figures to the right indicates full marks
3. Draw neat and labelled diagram wherever necessary

Total Marks 70

Q1. A) Answer the following 12

i. Define 'Pre load and After load'
ii. What is Hypertension?
iii. Define 'Glomerular Filtration Rate'
iv. Write a short note on Sodium as an electrolyte.
v. What is deglutition? What are the various stages of Deglutition?
vi. Give an account of pathophysiology of Hepatitis

B) Fill in the Blanks 3

i. _____ are the functional units of kidney.
ii. _____ cells secretes pepsinogen and gastric lipase.
iii. The scientific study of normal heart and the diseases associated with is known as_____

Q2. A) Answer **ANY TWO** of the following 8

i. Write a note on process of Oogenesis
ii. Draw a neat and labelled diagram of section of Testis
iii. Enlist the hormones involved in Female Reproductive System and describe their physiological role.

Q2. B) Answer **ANY ONE** of the following 3

i. Write a note on Sexually Transmitted Diseases
ii. Give an account of pathophysiology of Infertility

Q3. A) Answer **ANY TWO** of the following 8

i. What is Cardiac Cycle? Discuss stages of Cardiac Cycle
ii. Give the difference between arteries and veins
iii. Draw a neat and labelled diagram showing internal structure of Heart

Q3. B) Answer **ANY ONE** of the following 3

i. Write a note on Congestive Heart Failure
ii. Describe Cardiac Arrythmia

Q4. A) Answer **ANY TWO** of the following 8

i. Describe the process of re-absorption and secretion in proximal convoluted tubule
ii. Draw a neat labelled diagram of pancreas. Enlist the functions of pancreas
iii. Write detailed note on body fluid compartment

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Q4. B) Answer **ANY ONE** of the following 3

i. Write a note on pathophysiology of Renal Calculi
ii. Write a note on Urinary Tract Infection

Q5. A) Answer **ANY TWO** of the following 8

i. Draw neat and labelled diagram showing histology of Small Intestine
ii. Explain the phases of gastric secretion in detail
iii. Describe the process of digestion and absorption of carbohydrates across the GIT

Q5. B) Answer **ANY ONE** of the following 3

i. Write a note on pathophysiology of Peptic Ulcer
ii. Describe with a suitable diagram anatomy of Large Intestine

Q6. A) Answer **ANY TWO** of the following 8

i. Describe neural and hormonal regulation of gastric and intestinal physiology
ii. Write a note on Baroreceptor and Chemoreceptor reflux
iii. Discuss pathophysiology of Atherosclerosis

Q6. B) Answer **ANY ONE** of the following 3

i. Differentiate between stable and unstable Angina
ii. What is ECG? Explain different waves with its function

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S.Y. Pharm (Sem-III) (CBSGS) Mathematics

Date - 04/05/2018

Q. P. Code : 38400

Duration: 3 Hrs **Maximum marks: 70**

Note: **All** Questions are **compulsory**.
Use of **simple calculator** is **allowed**.
Figure at right indicate **maximum marks**.

Q1. (a) **Attempt any 7 [2 marks each]:** [14]

(i) If $A = \begin{bmatrix} 4 & -2 \\ -5 & 7 \end{bmatrix}$ $B = \begin{bmatrix} -3 & 6 \\ 4 & 3 \end{bmatrix}$ then $(2A + B)^T$ is :

(a) $\begin{bmatrix} 5 & 2 \\ -6 & 17 \end{bmatrix}$ (b) $\begin{bmatrix} 4 & -5 \\ -2 & 7 \end{bmatrix}$ (c) $\begin{bmatrix} 5 & -6 \\ 2 & 17 \end{bmatrix}$ (d) $\begin{bmatrix} 3 & 4 \\ 6 & -3 \end{bmatrix}$

(ii) The N^{th} derivative of $y = 2\cos^2 x$ is :
(a) $-2^n \cos(2x+n\pi/2)$ (b) $-4\cos x \sin x$ (c) $2^n \cos(2x+n\pi/2)$ (d) $2^n \sin(2x+n\pi/2)$

(iii) For $f(x, y) = x^2 + xy + y^2$, the value of $\frac{\partial^2 f}{\partial x \partial y}$ is:
(a) $2x + y$ (b) 1 (c) 2 (d) $x + 2y$

(iv) $\Delta f(x)$ for the function $f(x) = 1/x$, by taking $h = 1$ is :
(a) $-1/x^2$ (b) $1/x^2$ (c) $-1/(x^2 + x)$ (d) $1/(x^2 + x)$

(v) The volume of the solid obtained by the revolution of area $y = \sin x$ and x-axis between the interval 0 to π is :

(a) 2π (b) $\pi^2/2$ (c) $\pi^2/4$ (d) $\pi/2$

(vi) The solution of the differential equation $x\,dx + y\,dy = 0$ is:
(a) $x^2 + y^2 = c$ (b) $x^2 - y^2 = c$ (c) $x + y = c$ (d) $x - y = c$

(vii) The value of $\int \log x \, dx$ is :

(a) $x\log x - 1 + c$ (b) $x\log x + 1 - c$ (c) $x(\log x + 1) + c$ (d) $x(\log x - 1) + c$

(viii) The differential equation for the function $y = mx$ is:

(a) $x\,dy - y\,dx = 0$ (b) $x\,dy + y\,dx = 0$ (c) $y\,dy - x\,dx = 0$ (d) $y\,dy + x\,dx = 0$

(ix) The inverse of the matrix $A = \begin{bmatrix} 2 & -2 \\ 4 & 3 \end{bmatrix}$ is:
(a) $\frac{1}{14}\begin{bmatrix} 3 & -4 \\ 2 & 2 \end{bmatrix}$ (b) $\frac{1}{12}\begin{bmatrix} -3 & 4 \\ -2 & 2 \end{bmatrix}$ (c) $\frac{1}{14}\begin{bmatrix} 2 & -4 \\ -2 & 3 \end{bmatrix}$ (d) $\frac{1}{14}\begin{bmatrix} 2 & 2 \\ -4 & 3 \end{bmatrix}$

(b) Attempt any 1: [1]

(x) The value of $\int_{-2}^{2} \frac{x}{1+x^2} dx$ is: (a) -2 (b) 2 (c) 0 (d) 4

(xi) N^{th} derivative of $y = \frac{1}{9x+2}$ is (a) $\frac{(-1)^{n-1}(n-1)!9^n}{(9x+2)^n}$ (b) $\frac{(-1)^n(n)!9^n}{(9x+2)^{n+1}}$
(c) $\frac{(-1)^{n-1}(n-1)!9^n}{(9x+2)^{n+1}}$ (d) $\frac{(-1)^n(n)!9^n}{(9x+2)^n}$

TURN OVER

Q2. (a) Attempt any two (4 marks each) [8]

(i) Find the N^{th} derivative of $y=\frac{x}{(x+3)(x-2)}$

(ii) Using Taylor's series, expand sin x in ascending powers of $(x-\frac{\pi}{2})$

(iii) If $U = y \sin(xy)$, prove that $y\frac{\partial U}{\partial y} - x\frac{\partial U}{\partial x} = U$

(b) Attempt any one(3 marks) [3]

(i) Verify Rolle's theorem for the function $f(x)=x^2-3x+2$ in [1,2]

(ii) If $y=x^3\log x$, find: y_4 using Leibnitz's theorem.

Q3. (a) Attempt any two (4 marks each) [8]

(i) Obtain the reduction formula for $\int_0^{\frac{\pi}{2}} Sin^n\, x\, dx$, hence evaluate $\int_0^{\frac{\pi}{2}} Sin^{10}\, x\, dx$

(ii) Find the whole area of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$

(iii) Prove that $\int_0^{\frac{\pi}{2}} cos^2 x\, dx = \frac{\pi}{4}$

(b) Attempt any one(3 marks) [3]

(i) Find the area bounded by the parabola $x^2=4y$, X-axis and the lines x=1 and x=3

(ii) By using the properties of Definite Integral, Evaluate $I=\int_0^2 (\frac{x^2-4}{x^2+4})\, dx$

Q4. (a) Attempt any two (4 marks each) [8]

(i) By using the Adjoint method, find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$

(ii) Prove that $\begin{vmatrix} 1 & x & x^2 \\ 1 & y & y^2 \\ 1 & z & z^2 \end{vmatrix}$ = (x-y)(y-z)(z-x)

(iii) Verify Cayley Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 2 \\ -1 & 3 \end{bmatrix}$

(b) Attempt any one(3 marks) [3]

(i) Find the rank of the matrix $A=\begin{bmatrix} 2 & 3 & 4 \\ 4 & 3 & 1 \\ 1 & 2 & 4 \end{bmatrix}$

(ii) Solve by Cramer's rule:-
x+y+z=6; 2x+y-2z=-2; x+y-3z=-6

Q5. (a) **Attempt any two (4 marks each)** [8]

(i) Find the particular solution of: $(D^2+D-2)y=0$, when x=0, y=1 and $\frac{dy}{dx}=0$

(ii) Solve the differential equation: $(1-x)dy-(1+y)dx=0$

(iii) Solve: $(D^2+3D+2)y=x+x^2$

(b) **Attempt any one (3 marks)** [3]

(i) Form the differential equation for $x^2 + y^2 - 2ax = 10$

(ii) Solve $(1-x)dy-(1+y)dx = 0$. Also find the particular solution, if y = 2 when x =1

Q6. (a) **Attempt any two (4 marks each)** [8]

(i) Use Lagrange's Interpolation formula to find the polynomial passing through the points (0,8),(1,4) & (3,2). Hence find the value of y when x=2.

(ii) Evaluate $\int_0^2 x^2 dx$ by using Trapezoidal rule (with h=0.2)

(iii) Estimate the missing value by using E and Δ from the following:

x	1	2	3	4	5
y	2	4	8	-	32

(b) **Attempt any one (3 marks)** [3]

(i) For a certain function f(x), f(1) = 10, f(2)=16, f(3) =26 and f(4) = 40 , estimate f(2.5) by Newton's forward difference formula.

(ii) Solve. $(\frac{\Delta^2}{E})x^4$ by taking h =1