II ... Sept 2017, 8/12/17, Semester [illegible], OC-I.

AIKT

Q.P. Code : 03078

[Time: 3 Hours] [Marks:70]

Please check whether you have got the right question paper.

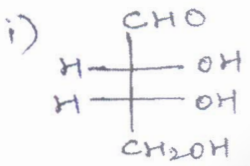
N.B: 1. All questions are compulsory.
2. Figures to the right indicate full marks.

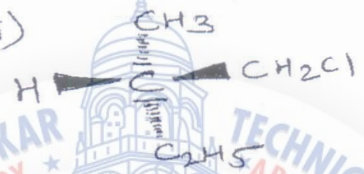
Q.1 A) Answer the following questions:- (12)

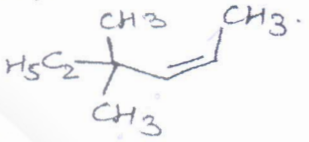
a) Give the suitable structures for the following compounds (Any two) (02)

i. N-Ethyl-N-Methylaniline.
ii. m-methylbenzylalcohol.
iii. 2-Methyl-3-phenylpropenoic acid

b) Assign E/Z or R/S or D/L notation and nomenclate the following as per IUPAC rules (Any two) (02)

i) 

ii) 

iii) 

c) Draw possible resonating structures for the following compounds. (02)
i) Phenol ii) Benzoic acid

d) Arrange the following in increasing order of acidity and Justify? (02)
p-nitrobenzoic acid, o-nitrobenzoic acid, m-nitrobenzoic acid.

e) Establish the relationship between following pair of Molecules. (02)

f) Arrange the following in increasing order of basicity and justify? (02)
Ammonia, Methylamine, Aniline.

B) Give the product for the following reactions.(Any three) (03)

i) $CH_3CH_2CHClCH_3 \xrightarrow{KOH\ (alc)}$

ii)  $\xrightarrow[2)\ NaBH_4]{1)\ Hg(OAc)_2}$

iii) $CH_3-C\equiv C-CH_3 \xrightarrow{Ag^+}$

iv) $CH_3\text{-}C(CH_3)=CH_2 \xrightarrow{O_3/Zn}$

Q.2 A) Identify tautomeric system present in the following pair Molecules. (02)

i) 

ii) 

B) Arrange the following Carbocations in increasing order of stablitiy and justify. (02)

C) i) Identify electophiles/nucleophiles from the following:- (02)

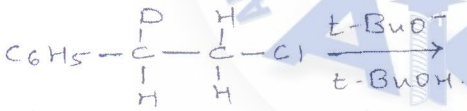
$H^+$, $R_3C^+$, $Cl^-$, $^-OH$, $NH_3$, $AlCl_3$, $BF_3$, $CN^-$

ii) Which type of stereochemistry exist in substituted biphenyl compounds. (02)

D) Discuss stereochemistry for Hydroboration Oxidation reaction of alkenes by taking examples. (03)

Q.3 A) Give the major product of the following reaction and write the reaction mechanism (eg.$E_1$ and $E_2$) through which reaction proceeds. (04)

i) 

ii) 

B) Explain the following term with suitable example. (03)

i. Point of symmetry
ii. Conformation
iii. Dihedral angle

C) Explain stereochemistry involved in $S_N2$ reaction. (04)

Q.4 A) Discuss the orientation and reactivity of nitro group towards electrophilic aromatic substitution reaction. (02)

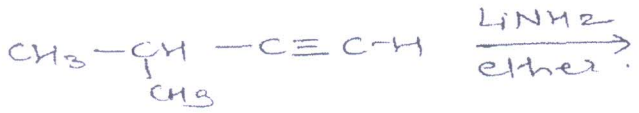
B) Give complete reaction mechanism for Halogenation of alkanes. (02)

C) Attempt the following Conversions (Any Four) (04)

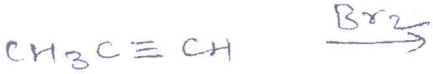
i. Propene to Isopropylalcohol.
ii. Acetylene to Acetaldehyde.
iii. Toluene to 2-bromo-4-nitrotoluene.
iv. Propene to propane.
v. n-chloroethane to n-Butane

D) Give the product for the following reactions.(Any three)

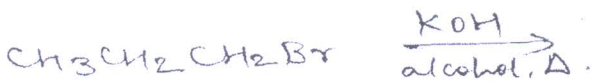
i)



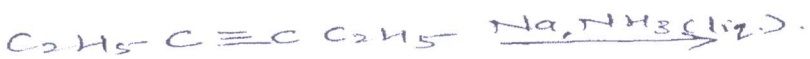
ii)



iii)



iv)



Q.5 A) Identify and mark the stereogenic centers in the compound given below and comment on chirality:- (02)

i)

ii)

B) Enlist different methods used for resolution of racemic mixture and explain the resolution of racemic mixture of acidic Compounds. (02)

C) State the Huckel's rule for aromaticity Identify whether the given molecules are aromatic, anti-aromatic or non-aromatic. (04)

i)

ii)

iii)

D) Give bimolecular displacement mechanism for nucleophilic aromatic substitution reaction by giving suitable example. (03)

Q.6 A) Write Any two methods for preparation of alkyl halide. (02)

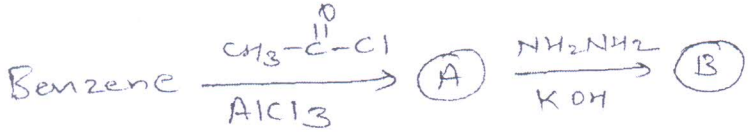
B) Write the structure of the products from hydroboration bromination of Z-2-butene and E-2-butene.

C) Attempt the following conversions.(Any 3) (03)

i. Isobutylene to 2,2,4-Trimethylpentane.
ii. 1-Propene to Propyne.
iii. Isobutylene to Acetone.
iv. 2,3-dibromobutane to 2-butene.

D) Explain 1,4 and 1,2-addition of $Br_2$ to conjugated diene by giving suitable example. (02)

E) Complete the following reaction and Identify A and B . (02)



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III nd Half 2017

Q.P. Code :02230

[Time: Three Hours] [ Marks:70]

Please check whether you have got the right question paper.

N.B: 1. All Questions are compulsory.

1. **Answer the following**
   a) Draw the structure of GMP 1
   b) Name the initiation codon and its respective amino acid 1
   c) Enlist the components of ETC 1
   d) Name the shuttle which transports reducing equivalent from cytosol to mitochondria) matrix 1
   e) Give the net ATP yield after oxidation of palmitic acid 1
   f) Name two drugs inhibiting cholesterol synthesis; also mention the step which is inhibited 2
   g) Name two drugs inhibiting translation 2
   h) Give the significance of Pentose phosphate pathway 2
   i) Calculate total ATPs formed when two molecules of acetyl CoA are consumed in TCA cycle 2
   j) Explain why DNA polymerase III is the primary enzyme for replication instead of DNA polymerase I 2

2. a) Give the names and structures of the substrate and product of the following enzymatic reactions **(any 2)** 4
   i) $\alpha$ —ketoglutarate dehydrogenase complex
   ii) $\beta$ — Ketoacyl ACP reductase
   iii) Glutamine- PRPP amidotransferase

   b) Write structures of given substrate and product with name of the enzyme catalysing the reaction (any 2) 4
   i) Inosinate to adenylosuccinate
   ii) Pyruvate to oxaloacetate
   iii) Acetoacetyl CoA to HMG CoA

   c) Differentiate biosynthesis and $\beta$ - oxidation of fatty acid 3

3. a) Give the biosynthesis of UTP. Predict the effect of methotrexate on pyrimidine nucleotide synthesis. 4
   b) Discuss post transcriptional modification in eukaryotes 4
   c) Give the significance of telomeres and telomerase inhibitors 3

4. a) Distinguish between oxidative and substrate level phosphorylation 4
   b) Compare biosynthesis with chemical synthesis of peptides 4
   c) Draw schematic representation of DNA replication in prokaryotic cell 3

5. a) Write a note on glycogenolysis 4
   b) Explain the Preparatory phase of glycolysis 4
   c) Explain DNA sequencing by Sanger dideoxy method 3

6. a) Write a note on Salvage pathway and give it significance 3
   b) Differentiate between prokaryotic and eukaryotic translation 3
   c) Give steps for synthesis of mevalonate 3
   d) Describe role of proteases and peptidases 2

19923 - SY B pharm, Sem III (CBSGS) PD
IInd half 2017 13/12/17

Q.P. Code :05551

[Time: Three Hours] [ Marks:70]

Please check whether you have got the right question paper.

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

Q.1 a Convert the following: 2
i) 2 pound =.....mg
ii) 100 minims=.....ml
iii) 5 litres =.....pints
iv) 50 grains=.....mg

b Enlist the salient points to be considered as good pharmaceutical practices in compounding and dispensing laboratory. 2

c Calculate the dose of an antiepileptic drug for a 10 years old girl. The adult dose of the same drug is 400 mg 1

d Write a brief note on collodions. 2

e Discuss in brief about dispersion of oil in inhalation 2

f Explain any two tests used to differentiate between o/w and w/o emulsion 2

g Enlist the ingredients used in compounding of kaolin poultice BPC stating the role of each ingredient. 2

h Enlist the advantages of capsules as a dosage form 2

Q.2 a How would you prepare 250 g of 20% w/w calamine ointment from ointments containing 7%, 12% and 26% w/w calamine 3

b Comment on the following prescription 4

Rx

| | |
|---|---|
| Sodium sulphate | 30% w/w |
| Effervescent base | qs |

Dosa:1 tsp to be added to a tumblerful of water and consumed before breakfast

OR

Classify powders. Describe the salient features of compounding and dispensing of tablet triturates.

c Enlist the various types of ointment bases. Write a note on **any ONE** type of base 4

Q.3 a Classify creams. Write a note on preservation of creams 3

b Enlist the advantages of solution as a dosage form. Comment on the following prescription 4

Rx

100ml of Zinc chloride and zinc sulphate mouthwash BPC

| | |
|---|---|
| Zinc chloride | 1% w/v |
| Zinc sulphate | 2% w/v |

Label: To be diluted with 20 times its volume of warm water before use

OR

Give an account of solutions instilled into body cavities

c Summarize the compounding and dispensing of pills 4



D22DB1B264D0DADCC265B273A9F88176

Q.4 a Explain the "Dry Gum" method used for compounding of emulsions. 3

b Enlist the properties of good suspension. Write a note on thickening agents used in the compounding of suspension. 4

OR

Write a note on compounding and dispensing of suspensions containing indiffusible solids

c Write a detailed note on prescription and its parts. 4

Q.5 a Find the amount of NaCl to be included in 100 ml of a 0.3% w/v solution of Zinc sulphate so that, on dilution with an equal quantity of water, it will be iso-osmotic with tissue fluids. 3

Given

Freezing point of 1% w/v solution of zinc sulphate is $-0.076^0C$

Freezing point of 1% w/v solution of sodium chloride is $-0.576^0C$

b Give a detailed account of disadvantages of cocoa butter as a suppository base 4

OR

Discuss polyethylene glycol as suppository base

c What in incompatibility. Discuss physical incompatibility 4

Q.6 a Give the labeling instructions for any 2 of the following dosage forma: 2

1. Ear drops
2. Liniments
3. Mouthwashes

b Give the English translation of the following Latin terms or abbreviations: 2

1. Guttae
2. Si opus sit
3. Lente
4. b.i.d

c How would you dispense proprietary medicines? 3

d In what proportions would you mix tween 80 (HLB 15) and span 80 (HLB 4.5) to obtain 50 g of an emulgent having a HLB of 10 2

e Enlist the steps involved in compounding of suppositories made with cocoa butter base 2

 S. Y. B pharm Sem III CBS aiktcdspace.org 13/12/17

Q.P.Code: 27871

[Time: - 3 Hours] [Marks: 70]

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

| | | | |
|---|---|---|---|
| Q.1.a | Give the working of Bourdon Gauge | (3) |
| b | Elaborate on mass transfer in Turbulent flow | (3) |
| c | Discuss factors affecting caking of crystals | (2) |
| d | Explain methods to improve rate of Evaporation | (2) |
| e | Draw neat diagram of Simple Distillation Unit | (2) |
| f | Write a note on Nickel and its alloys as material of construction | (3) |
| Q.2.a | Explain briefly the principle and working of Rotary pumps | (4) |
| b | Define crystallization and discuss the design and working of Krystal **OR** Circulating Magma Crystallizer | (4) |
| c | Give an account of Steam Distillation | (3) |
| Q.3.a | Classify flowmeters and explain Venturimeter **OR** Pitot tube | (4) |
| b. | Outline the working of Contact Condensers | (3) |
| c | Give an account of a Simple Refrigeration system | (4) |
| Q.4.a | Explain in detail Reynold's Experiment | (4) |
| b | Write a note on Tubular Heat Exchangers **OR** Modes of heat transfer | (4) |
| c | Elaborate on stage of Supersaturation and Crysta growth in crystallization | (3) |
| Q.5.a | Give salient features of Centrifugal Pumps | (3) |
| b | Explain the principle of fractionation and write a note on Sieve Plate **OR** Bubble Cap Columns | (4) |
| c | What are Hazards ? Give an account of Chemical Hazards | (4) |
| Q.6.a | Explain in detail Belt Conveyors | (3) |
| b | Describe the design and working of Climbing Film Evaporator | (4) |
| c | Discuss the factors affecting rate of Corrosion **OR** Elaborate on any one type of Corrosion | (4) |

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Sem III, IInd half 2017 AR.PE (CBSGS)

Q.P. Code :07263

[Time: 3 Hours] [ Marks:70]

Please check whether you have got the right question paper.

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

Q.1 A) Answer the following 12

i) Define "Total Peripheral Resistance".
ii) How primary hypertension is different from secondary hypertension?
iii) Define "Glomerular Filtration Rate".
iv) What are the causes of renal calculi?
v) What is deglutition? What are various stages of deglutition?
vi) Define functions of large intestine?

B) Fill in the Blanks 3

i) -------- is also known as pacemaker of heart.
ii) -------- are the functional units of the kidneys.
iii) The absorptive cells of the small intestine synthesize digestive enzymes, called ---------- enzymes, and insert them in the plasma membrane of the microvilli.

Q.2 A) Answer ANY TWO of the following 8

i) Draw a neat and labeled diagram of section of testes.
ii) Write a note on process of oogenesis.
iii) Discuss in details female reproductive cycle.

B) Answer ANY ONE of the following 3

i) Write a note on Dysmenorrhea.
ii) Discuss secondary sexual characteristic in males and females.

Q.3 A) Answer ANY TWO of the following 8

i) Draw a neat and labeled diagram showing Pericardium and layers of heart wall.
ii) What is cardiac cycle. Discuss stages of cardiac cycle.
iii) Enlist valves present in heart and discuss their function.

B) Answer ANY ONE of the following 3

i) What is congestive Cardiac Failure? Discuss its pathophysiology.
ii) Write a note on Angina Pectoris.

TURN OVER

Q.4 A) Answer ANY TWO of the following 8

i) Draw neat and labeled diagram showing internal view of renal corpuscle.
ii) Explain the process of urine formation.
iii) Discuss on anatomy and secretions of pancreas.

B) Answer ANY ONE of the following 3

i) Write a note on hormonal Regulation of Tubular Reabsorption and Tubular Secretion.
ii) Explain in detail the causes, symptoms and treatment of glomerulonephritis.

Q.5 A) Answer ANY TWO of the following 8

i) Discuss anatomy and physiology of small intestine.
ii) Write a note on Mechanical and Chemical Digestion in the Stomach.
iii) Discuss anatomy and function of gallbladder.

B) Answer ANY ONE of the following 3

i) Write a note on peptic ulcer.
ii) Discuss pathophysiology of Inflammatory Bowel Diseases.

Q.6 A) Answer ANY TWO of the following 8

i) Discuss pathophysiology of Ischemic Heart Disease.
ii) Write a note on regulation of blood pressure.
iii) Describe the process of defecation reflex.

B) Answer ANY ONE of the following 3

i) Write a note on coronary circulation.
ii) Discuss anatomy of artery.

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Q.P. Code :09452

[Time: 3 Hours] [ Marks:70]

Please check whether you have got the right question paper.

N.B: 1. **All** questions are **compulsory**.
2. **Use** of **simple calculator** is **allowed**.
3. **Figures** to the **right** indicate **full marks**.

**Q.1** (A) Attempt any 7 [2 marks each] 14

1) If $A=\begin{bmatrix}3 & 4\\ 5 & 7\end{bmatrix}$ then the inverse of the A is:
   a) $\begin{bmatrix}7 & -4\\ -5 & 3\end{bmatrix}$
   b) $\begin{bmatrix}3 & 5\\ 4 & 7\end{bmatrix}$
   c) $\begin{bmatrix}-4 & 7\\ -5 & 3\end{bmatrix}$
   d) $\begin{bmatrix}7 & -5\\ -4 & 3\end{bmatrix}$
2) With respect to Rolle's theorem the value of 'c' corresponding to $f(x)=x^2-4x+3$ is:
   a) 1
   b) 2
   c) 3
   d) 4
3) The value of $\int logx\ dx$ is:
   a) 1/x
   b) xlogx+x+c
   c) xlogx-x+c
   d) xlogx-x
4) If y=2x, then $\Delta y$ by taking h=1 is:
   a) 4
   b) 2
   c) 3
   d) 1
5) If $A=\begin{bmatrix}3 & 1 & 2\\ 1 & 2 & 3\\ x & 2 & 4\end{bmatrix}$ is a singular matrix, then the value of x is:
   a) 1
   b) 2
   c) 4
   d) 6



[P.T.O]

6) The $N^{th}$ derivative of f(x)=log(2x+1) is:

a) $y_n = \frac{1}{2(2x+1)}$

b) $y_n = \frac{(1)^{n-1}(n-1)!2^n}{(2x+1)^n}$

c) $y_n = \frac{(1)^n(n)!2^n}{(2x+1)^n}$

d) $y_n = \frac{(1)^n(n-1)!2^n}{(2x+1)^n}$

7) General solution for the differential equation $(D^3-6D^2+9D)y=0$ is:

a) $(c_1x+c_2)e^{3x}+c_3$

b) $c_1e^{3x}+c_2e^{3x}+c_3e^{0x}$

c) $(c_1x+c_2x)e^{3x}+c_3$

d) $(c_1x+c_2)e^{3}+c_3e^{3x}$

8) The partial derivative of $Z=3x^2+2xy+xy^2$ with respect to x is:

a) $6x+2y+2xy$

b) $6x+2y+2y^2$

c) $3x+2y+y^2$

d) $2x+xy+xy^2$

9) If $A = \begin{bmatrix} 3 & 1 & 2 \\ 1 & 2 & 3 \\ t & 2 & 4 \end{bmatrix}$ is a singular matrix, then the value of t is:

a) 1

b) 2

c) 4

d) 6

1

(B) Attempt any one (3 marks)

10) Which of the following is not a homogeneous differential equation?

a) f(x,y)=2x-9y

b) $f(x,y)=3x^2-7y^3$

c) $f(x,y)=x^2+3y^2-3xy$

d) a and c

11) The value of $\int_{-2}^{2} x^5 \, dx$ is:

a) 16/3

b) 8/3

c) 0

d) 3/16

8

**Q.2** (A) Attempt any two (4 marks each)

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

2) Using Maclaurin's series, give the expansion of f(x)=sin x.

3) Examine the function $f(x,y)=x^3+3xy^2-15x^2-15y^2+72x$ for maxima and minima.



[P.T.O]

(B) Attempt any one (3 marks) 3

1) Verify Rolle's theorem for the function $f(x)=x^2-3x+2$ in[1,2]
2) If $y=x^3\log x$, find : $y_4$ using Leibnitz's theorem.

**Q.3** (A) Attempt any two (4 marks each) 8

1) Obtain the reduction formula for $\int_0^{\frac{\pi}{2}} sin^n x\, dx$, hence evaluate $\int_0^{\frac{\pi}{2}} sin^9 x\, dx$.
2) Find the length of the curve $x=a\sin\theta$ , $y=a\cos\theta$ from $\theta=0$ to $\theta=\pi/4$
3) Evaluate: $\int e^x \cos x\, dx$

(B) Attempt any one (3 marks) 3

1) Find the area bounded by the parabola $x^2=4y$, X-axis and the lines x=1 and x=3
2) By using the properties of Definite Integral, Evaluate $I=\int_0^2 \left(\frac{x^2-4}{x^2+4}\right) dx$

**Q.4** (A) Attempt any two (4 marks each) 8

1) By using the Adjoint method, find the inverse of the matrix $A=\begin{bmatrix}1 & 2 & 3\\ 4 & 5 & 6\\ 7 & 8 & 9\end{bmatrix}$
2) Prove that $\begin{vmatrix}1 & x & x^2\\ 1 & y & y^2\\ 1 & z & z^2\end{vmatrix}$ = (x-y)(y-z)(z-x)
3) Verify Cayley Hamilton theorem for the matrix: $A=\begin{bmatrix}1 & 0 & 1\\ 0 & 1 & 0\\ 0 & 0 & 1\end{bmatrix}$

(B) Attempt any one (3 marks) 3

1) Find the rank of the matrix $A=\begin{bmatrix}2 & 3 & 4\\ 4 & 3 & 1\\ 1 & 2 & 4\end{bmatrix}$
2) Solve by Cramer's rule :
x+y+x=6; 2x+y-2z=-2; x+y-3z=-6

**Q.5** (A) Attempt any two (4 marks each) 8

1) Find the particular solution of: $(D^2+D-2)y=0$, when x=0, y=1 and $\frac{dy}{dx}=0$
2) From the differential equation for y = A cos(logx)+ B sin(logx)
3) Solve $(x^3+y^3)dy=x^2y\,dx$

(B) Attempt any one (3 marks) 3

1) Solve (1-x)dy-(1+y)dx = 0. Also find the particular solution, if y = 2 when x = 1
2) Form the differential equation for $x^2+y^2-2ax = 10$

Q.6 (A) Attempt any two (4 marks each) 8

1) Use Lagrange's Interpolation formula estimate y when x=4

| x | 0 | 2 | 5 | 6 |
|---|---|---|---|---|
| Y | 7 | 11 | 17 | 19 |

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

3) 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

1) Given :

| x | 1 | 3 | 4 |
|---|---|---|---|
| f(x) | 1 | 5 | 7 |

Assuming $\Delta^3 f(x) = 0$, find f(2), take h=1

2) Evaluate : $\left(\frac{\Delta^2}{E}\right) Sinx$