Day: Monday

Date: 03-07-2017

Time: 10·00 A·M·To 1·00 P.M.

Max. Marks 70

N.B.:

1) **Q. No. 1** and **Q. No. 5** are **COMPULSORY**. Out of the remaining attempt any **TWO** questions from each section.
2) Figures to the right indicate full marks.
3) Answers to both the section should be written in **SEPARATE** answer book.

SECTION-I

Q.1 **A)** Answer Any **FOUR** of the following: (08)

   i) Draw a neat and labelled diagram of Heart.

   ii) What do you mean by Hemopoeisis.

   iii) Enlist all the blood clotting factors.

   iv) Define the following: Cardiac arrhythmias and Asphyxia.

   v) Write down the functions of thymus gland.

   vi) Write in short about internal respiration.

   B) What do you mean by Spleenomegaly and give its causative factors. (03)

Q.2 **a)** Explain in detail about Nervous tissues and explain their sub types, characteristics and functions. (07)

   b) Give the classification and functions of WBCs. (05)

Q.3 **a)** Write down about cardiac cycle. (07)

   b) Explain the intrinsic pathway of coagulatory mechanism. (05)

Q.4 Write short notes on any **THREE** of the following: (12)

   a) Congestive Heart failure

   b) Complications associated with lymphatic obstructions.

   c) Write a note on different types of joints.

   d) Anatomy and physiology of lungs

P. T. O.

SECTION-II

Q.5 **A)** Answer Any **FOUR** of the following: (08)
  i) Write a note on oogenesis.
  ii) Write a note on reflex arc.
  iii) Draw a neat labelled diagram of ear.
  iv) Give the functions of cerebrum.
  v) Write a note on hormones secreted by adrenal gland.
  vi) Write a short note on Enzymes in digestion.

  b) Give the structure and functions of skin. (03)

Q.6 **a)** Enlist different organs of digestive system. Describe general structure of (07) alimentary canal.

  b) Write a short note on structure and functions of Liver. (05)

Q.7 **a)** Draw a neat labelled diagram of L. S. of kidney and describe the physiology of (07) urine formation.

  b) Write a note on structure and functions of nephron. (05)

Q.8   Write short notes on any **THREE** of the following: (12)
  a) Physiology of sight
  b) Components and function of external, internal and middle ear.
  c) Structure and functions of skin
  d) Structure and functions of skeletal muscle tissue

*   *   *   *

Day : Tuesday
Date : 04 · 07- 2017

Time : 10·00 A·M·To 1·00 P·M.
Max.Marks : 70

N.B. :

1) Q.No.1 and Q.No.5 are **COMPULSORY**. Out of remaining questions attempt **Any TWO** questions from each section.
2) Answers to both the sections should be written in the **SEPARATE** answer books.
3) Figures to the right indicate **FULL** marks.

SECTION-I

Q.1 **A)** Answer **Any FOUR** of the following :   **(08)**

   i) Define the following terms :

   a) Dispensing   b) Isotonicity

   ii) Differentiate between the mouth-wash and gargles.

   iii) Write the Labelling condition and patient counseling for

   a) Nasal drops   b) Enemas

   iv) What is the proof strength of 80% v/v and 45% v/v of ethanol?

   v) Enlist the advantages of solutions.

   B) If the adult dose of Paracetamol is 500 mg then what will be the dose for child **(03)** of 6 years age as per Young's formula?

Q.2 Define the term posology. Explain in detail factors affecting for dose selection **(12)** with examples.

Q.3 **A)** Write the unit operations followed in the powder preparation.   **(07)**

   B) Define prescription. Explain the various parts of prescription in detail.   **(05)**

Q.4 Write short notes on **ANY THREE** of the following :   **(12)**

   i) Patient medication record

   ii) Developmental changes in Indian Pharmacopoeia

   iii) Compounding and dispensing of syrup

   iv) Types of powders with examples

P.T.O.

SECTION-II

Q.5 **A)** Answer **Any FOUR** of the following : (08)

   i) Define and classify the term Ligatures and sutures.

   ii) Differentiate between diffusible and indiffusible suspension with example.

   iii) Write the oil: water: Gum ratio used in the preparation of emulsion.

   iv) Give the labelling directions and patient counseling for

      a) Calamine Lotion   **b)** Inhalation

   v) Differentiate between the simple syrup I.P. and USP.

  B) What is the percentage strength (w/v) of solution of benzolic acid, if 70 ml (03) contains 8 gm.

Q.6 Define and classify the term extraction. Write the principle for extraction. (12) Write in detail about the process of Maceration.

Q.7 **A)** Explain the various steps involved in the preparation of cocoa butter (07) suppository.

  B) Write the factors responsible for cracking of emulsion. (05)

Q.8 Write short notes on **Any THREE** of the following : (12)

   i) Physical incompatibility

   ii) Methods of preparation of emulsion

   iii) Compounding and dispensing aspects of inhalations

   iv) Absorbable Sutures and Ligatures

*   *   *   *   *

Day : Wednesday Time : 10.00 A.M. To 1.00 P.M.

Date : 05-07-2017 Max. Marks : 70

N.B.

1) Q.1 and Q.5 are **COMPULSORY**. And out of remaining solve **TWO** questions from each section.

2) Answer to both the section should be written in **SEPARATE** answer book.

3) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 A) Answer any **FOUR** of the following: (08)

a) What are co-enzymes? Give examples.

b) Define Km for enzyme and state its importance.

c) What is repetitive DNA?

d) What are terminating codons?

e) What is galactose tolerance test?

B) What is gluconeogenesis? State its importance in carbohydrate metabolism. (03)

Q.2 State biochemical functions of calcium. How blood calcium level is regulated? Explain in detail. (12)

Q.3 a) State functions of kidney and describe kidney function tests. (07)

b) Which physiologically important metabolites are obtained from histidine and tryptophan? (05)

Q.4 Write short note on any **THREE** of the following: (12)

a) Gout

b) Enzyme as biological indicators

c) Propionate pathway

d) Active transport

SECTION – II

Q.5 A) Answer any **FOUR** of the following: (08)

a) What is normal range of fasting blood sugar?

b) What is pre-renal condition?

c) What is respiratory acidosis?

d) Why methanol is highly toxic as compare to ethanol?

e) What are allosteric enzymes?

B) State biochemical role iron. (03)

Q.6 What are body fluids? State their classification and explain regulation of body fluids. (12)

Q.7 a) Describe the specificity of enzymes and conformations of active sites. (07)

b) What is β-oxidation? Explain in detail. (05)

Q.8 Write short note on any **THREE** of the following: (12)

a) Lipoproteins

b) Hemolytic jaundice

c) Glycolysis

d) Structure of Bio-membrane

* * *

SUPPLEMENTARY
MANIKGAD – I: SUMMER- 2017
SUBJECT : PHARMACEUTICAL ORGANIC CHEMISTRY

Day : Thursday   Time : 10·00 A·M·To 1·00 P·M
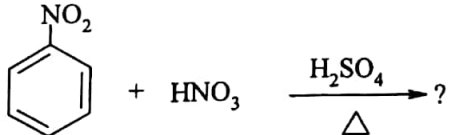
Date : 06-07-2017   Max. Marks : 70

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of the remaining questions attempt **ANY TWO** questions from each section.
2) Answer to both the sections should be written in **SEPARATE** answer books.
3) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 a) Attempt **ANY FOUR** of the following: [08]
   i) What is protic and aprotic solvents?
   ii) What are meso compounds?
   iii) Why F_2 is not practical for radical reaction?
   iv) Draw structure with IUPAC name for any two carboxylic acids.
   v) Draw structure for:
       a) 4 – methyl cyclohexanol
       b) 2 – chloro – 3 – methyl – 2 – butane.

b) How radical chain reaction stops?   [03]

Q.2 Explain the reaction, mechanism and stereochemistry of SN_1 reaction.   [12]

Q.3 a) Differentiate between E_1 and E_2 reactions.   [07]
b) Explain factors affecting SN_2 reaction.   [05]

Q.4 Write short notes on **ANY THREE** of the following: [12]
   a) Geometrical isomerism
   b) Angle strain theory in terms of cycloalkane
   c) Free radical iodination is difficult
   d) Super oxide

SECTION – II

Q.5 a) Attempt **ANY FOUR** of the following: [08]
   i) Why phenols are acidic in nature?
   ii) Explain stability of conjugated dienes.
   iii) How will you convert carboxylic acid to its corresponding amide? Give reaction.
   iv) What is diazocoupling reaction?
   v) Predict the product:

b) Write short note on Michael Addition.   [03]

Q.6 Explain in detail electrophilic substitution reaction in benzene with respect to Friedel Craft's Alkylation and Halogenation. Add a note on Activators and Deactivators in ESR.   [12]

Q.7 a) Explain reactivity and orientation in monosubstituted benzene with respect to electrophilic substitution reaction.   [07]
b) Explain preparation, test for purity, assay and medicinal use of citric acid.   [05]

Q.8 Write short notes on **ANY THREE** of the following: [12]
   a) Cannizaro's reaction
   b) Reformatsky synthesis
   c) Williamson's synthesis
   d) Kolbe reaction

*   *   *   *

SUPPLEMENTARY

MANIKGAD – I: ! SUMMER- 2017

SUBJECT : PHARMACEUTICAL INORGANIC CHEMISTRY

Day : Friday   Time : 10.00 A.M. To 1.00 P.M.
Date : 07-07-2017   Max. Marks : 70

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of the remaining questions attempt **ANY TWO** questions from each section
2) Answers to both the sections should be written in the **SEPARATE** answer books.
3) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 A) Attempt **ANY FOUR** of the following: [08]
  i) State the uses of Barium chloride and alcohol in limit test for sulphate.
  ii) Write principle of Ammonium chloride assay.
  iii) How will you prepare 0.05M Ceric ammonium sulphate?
  iv) Give list of reagents required for limit test for heavy metal.
  v) List out the conditions that are responsible for hypernatremia.

B) Give properties of an ideal Antimicrobial agent.   [03]

Q.2 Describe the Determinate error in detail. Explain how Determinate error can be minimized.   [12]

Q.3 a) Discuss the source, physiological importance and compounds of Iron as essential and trace element.   [07]
  b) Give the theories of indicator in acid base titration.   [05]

Q.4 Write a note on **ANY THREE** of the following: [12]
  a) Cyanide poisoning
  b) Expectorants
  c) Assay of $FeSO_4$
  d) Electrolyte replacement therapy

SECTION – II

Q.5 A) Attempt **ANY FOUR** of the following: [08]
  i) Define antacids and give any two examples of antacids.
  ii) Enlist various indicators used in Non-aqueous titrations.
  iii) What are Gastric Acidifiers?
  iv) Define complexometric titrations and enlist important features of EDTA as complexing agent.
  v) What is common ion effect?

B) What are catharatics? Explain the mechanisms by which they act.   [03]

Q.6 Explain in detail steps involved in Gravimetric analysis.   [12]

Q.7 a) Write a note on Antacid therapy.   [07]
  b) Explain properties of solvents used in non-aqueous titrations.   [05]

Q.8 Write notes on **ANY THREE** of the following: [12]
  a) Concept of masking and demasking
  b) Pharmaceutical aids
  c) Mohr's method
  d) Factors affecting solubility product

*   *   *   *

MANIKGAD – I : SUMMER – 2017
SUBJECT : REMEDIAL MATHEMATICS

Day **Tuesday**

Date **11/07/2017**

Time **10:00 A.M. To 1:00 P.M.**

Max. Marks : **70**

N. B. :

1) Q. No. 1 and Q. No. 5 are **COMPULSORY** out of the remaining attempt **ANY TWO** questions from each section.
2) Figures to the right indicate **FULL** marks.
3) Answers to each sections must be written in **SEPARATE** answer books.

SECTION - I

Q. 1 a) Attempt **ANY FOUR** of the following: **(08)**

i) Solve the following equations by Cramer's rule
$7x - 2y = 4, \quad x + y = 3$

ii) Find K if the following matrix is singular $\begin{bmatrix} 4 & 3 & 1 \\ 7 & K & 1 \\ 10 & 9 & 1 \end{bmatrix}$

iii) Find K, if the following equations are collinear using slopes
A(5, K), B(-3, 1), C(-7, -2).

iv) Find the centre and radius of the following circle.
$x^2 + y^2 - 6x + 14y - 6 = 0$.

v) Show that
$\tan\left(\dfrac{\pi}{4} + \theta\right) = \dfrac{1 + \tan\theta}{1 - \tan\theta}$

vi) Find the focal distance of the point $(4, -8)$ on the parabola $y^2 = 16x$

b) By using cosine rule, prove that, In any $\triangle ABC$ **(03)**
$a(b\cos C - c\cos B) = b^2 - c^2$

Q. 2 Attempt **ANY THREE** of the following: **(12)**

i) Examine the consistency of the following equations.
$3x+2y+4=0, \quad 5x+4y+7=0, \quad 4x+3y+6=0$

ii) Without expanding the determinate, show that
$\begin{vmatrix} x+a & x+b & x+c \\ y+a & y+b & y+c \\ z+a & z+b & z+c \end{vmatrix} = 0$

iii) If $A = \begin{bmatrix} 1 & 2 \\ 3 & 5 \end{bmatrix} B = \begin{bmatrix} 0 & 4 \\ 2 & -1 \end{bmatrix}$ show that $|AB| = |A| \cdot |B|$

iv) If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ then prove that $A^2 - 4A$ is singular matrix.

Q. 3 a)
i) Attempt the following:
Show that the line $x + y + 2 = 0$ is tangent to the parabola $y^2 = 8x$. Also find the point of contact. **(03)**

ii) Obtain the equation of parabola in standard form $y^2 = 4ax$. **(04)**

P.T.O.

b) Find the length of intercept made by the circle $x^2 + y^2 + x - 4y - 12 = 0$ on the co-ordinate axes. **(05)**

Q. 4 Attempt **ANY THREE** of the following: **(12)**

i) Find the acute angle between the following pair of lines
$x + 3y + 5 = 0$ and $2x + y - 1 = 0$

ii) Find the distance between the following pairs of parallel lines.
$6x + 4y - 12 = 0$, and $6x + 4y - 9 = 0$

iii) Show that, the distance of the line $ax + by + c = 0$ from origin $0(0,0)$

is $= \left| \dfrac{c}{\sqrt{a^2 + b^2}} \right|$

iv) Eliminate θ from the relations
$x = a \sec\theta + b \tan\theta$, $y = a \sec\theta - b \tan\theta$

SECTION - II

Q.5 **a)** Attempt **ANY FOUR** of the following: **(08)**

i) Evaluate $\displaystyle\lim_{x \to 2} \left(\dfrac{x}{x-2} - \dfrac{4}{x^2 - 2x} \right)$

ii) Find $\dfrac{dy}{dx}$, if $y = \dfrac{\sin x}{1 + \sin x}$

iii) If $y = \sin x$, then show that $\dfrac{d^2 y}{dx^2} + y = 0$

iv) If $\displaystyle\int_0^a (2x + 1)\, dx = 2$, find a.

v) Find order and degree of the following differential equation:
$\dfrac{d^2 y}{dx^2} - \left(\dfrac{dy}{dx} \right)^2 = 0$

vi) If $f(x) = x^2$ then find $f'(x)$ from first principle

b) Show that $\displaystyle\int_a^b f(x)dx = \int_a^b f(a + b - x)dx$ **(03)**

Q.6 Attempt **ANY THREE:** **(12)**

i) Evaluate $\displaystyle\lim_{x \to 0} \dfrac{9^x - 5^x}{4^x - 1}$

ii) If $y = x^{\sqrt{x}}$, find $\dfrac{dy}{dx}$

iii) If $y = \sin^{-1} x$, show that $(1 - x^2)\dfrac{d^2 y}{dx^2} - x \cdot \dfrac{dy}{dx} = 0$

iv) If $y = \sin(\log x)$ then show that $x^2 \dfrac{d^2 y}{dx^2} + x \dfrac{dy}{dx} + y = 0$

Q.7 Attempt the following:

(i) If $u = \log\left(\dfrac{x^4 + y^4}{x + y} \right)$, then show by Euler's theorem that, $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = 3$ **(03)**

ii) If $u = \sin^{-1}\left(\dfrac{x^2 + y^2}{x + y} \right)$, then show that $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial y}{\partial y} = \tan u$ **(04)**

(b) If u and v are differential functions of x such that $y = u + v$, then prove that **(05)**
$\dfrac{dy}{dx} = \dfrac{du}{dx} + \dfrac{dv}{dx}$

Q.8 Attempt **ANY THREE:** (12)

i) Find $L\{(t^3 + 1)^2\}$

ii) Evaluate $\int\limits_0^{\pi/2} \dfrac{\cos x}{\cos x + \sin x}\,dx$

iii) Solve the following differential equation $\sec^2 x \tan y\, dx + \sec^2 y . \tan x\, dy = 0$

iv) Obtain the differential equation by eliminating the arbitrary constants from the following relations $y = A \cos(\log x) + B \sin(\log x)$

* * *

(SUPPLEMENTARY)

MANIKGAD -I: SUMMER: 2017
SUBJECT: BIOLOGY

10:00 A.M. To 1:00 P.M.

Day: Tuesday

Time:

Date: 11/07/2017

Max. Marks: 70

N.B:

1) Q.No.1 and Q. No 5 are **COMPULSORY**. Out of the remaining, answer any **TWO** questions from each section.

2) Answers to each section should be written in **SEPARATE** answer book.

SECTION –I

Q.1 **A)** Answer any **FOUR:** (08)
1) Define i) Phyllotaxy   ii) Flower
2) Distinguish between tap root and adventitious root.
3) Sketch and label typical stamen of flower.
4) Write a note on runner.
5) Sketch and label L.S of simple fruit.
6) Give function of calyx and corolla.

B) What is Venation? Mention its types with example. (03)
OR
Describe cymose inflorescence with examples.

Q.2 With the help of floral diagram describe the family Rubiaceae. (12)
OR
With the help of floral diagram describe the family Solanaceae.

Q.3 **A)** Describe any two modifications of root. (07)
OR
Describe various types of fruits.

B) Describe xylem with neat labeled diagram. (05)

Q.4 Write short notes on any **THREE** of the following: (12)
a) Write various functions of leaf.
b) Write a note on hypogynous flower.
c) Write the characters of fungi.
d) Distinguish between cymose and racemose inflorescence.

SECTION -II

Q.5 **A)** Answer any **FOUR:** (08)
1) Sketch and label eukaryotic nucleus.
2) Give any four characters of class mammalia.
3) Give any two functions of lysosomes.
4) Sketch and label areolar connective tissue.
5) Write a note on ciliated epithelium.
6) Give importance of plasmids.

B) Write the chemical composition of blood plasma. (03)

Q.6 Sketch, label and describe "Fluid mosaic model" of plasma membrane. Write various functions of plasma membrane. (12)

Q.7 **A)** Write a note on stomach of frog. (07)
OR
Describe the structure of striated muscles.
B) Describe the process of fertilization in frog. (05)

Q.8 Write short notes on any **THREE** of the following: (12)
a) Write the characters of poisonous- scorpion.
b) Sketch and label male reproductive system of frog.
c) Write the mechanism of respiration in frog.
d) Describe internal respiration in mammals

*   *   *