

FIRST YEAR PHARM. D : SUMMER - 2018

SUBJECT : BIOLOGY

Day : **Wednesday**

Time : **10.00 AM to 01.00 PM**

Date : **18/04/2018**

S-2018-4025

Max. Marks : 70

N.B.:

- 1) Q.1 and Q.5 are **COMPULSORY**. Out of the remaining answer any **TWO** questions from each Section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to each section should be written in **SEPARATE** answer book.

SECTION – I

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

- a) Write a note on cymose inflorescence.
- b) Define i) Flower ii) Placentation
- c) Give any four salient features of Division- Algae.
- d) Name various taxa of classification according to hierarchy.
- e) Sketch and label typical leaf.
- f) Write a note on concept of species.

B) Give characteristics of stem. (03)

OR

Sketch and label L.S. of typical flower.

Q.2 With the help of diagrams describe the family Liliaceae. (12)

OR

With the help of diagrams describe the family Solanaceae.

Q.3 A) Describe simple permanent tissues. (07)

OR

Give an account of meristematic tissues.

B) Describe essential whorl of a flower. (05)

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

- a) Write a note of Rhizome.
- b) What is phyllotaxy? Explain its types.
- c) Write a note on xylem.
- d) Give economic importance of Lichens.

SECTION – II

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

- a) What are glands? Name any two exocrine glands.
- b) Give any one function of
i) Ciliated epithelium and ii) Columnar epithelium.
- c) Distinguish between white fibres and yellow fibres.
- d) Write any two functions of Lysosomes.
- e) Sketch and label cardiac muscle fibre.
- f) Give any four silent features of phylum – porifera.

B) Write the functions of Bone. (03)

OR

Write a note on plasmids.

Q.6 With the help of well labeled diagram describe male reproductive system of frog. (12)

OR

With the help of well labeled diagrams describe the histological structure of small intestine of human.

Q7 A) Give an account of Lysosomes.. (07)

OR

Describe the structure of Bone.

B) Give salient features of phylum-Arthropoda. (05)

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

- a) Sketch and label Multipolar neuron.
- b) Write a note on plasmids
- c) Explain the structure of cardiac muscles.
- d) Give salient features of class-mammalia.

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FIRST YEAR PHARM. D : SUMMER - 2018
SUBJECT : HUMAN ANATOMY & PHYSIOLOGY

Day : **Thursday**
Date : **05/04/2018**

Time : **10.00 AM to 01.00 PM**
Max. Marks : 70

S-2018-4019

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 **SEPARATE** answer books.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Figures to the right indicate **FULL** marks.

SECTION – I

- Q.1** A) Solve **ANY FOUR** of the following: [08]
i) Give significance of Rh factor in blood group.
ii) What are major functions of connective tissue?
iii) Draw a neat labelled diagram of Heart.
iv) Differentiate between arteries and veins.
v) Give the functions of plasma membrane.
B) Explain structure and function of spleen. [03]
- Q.2** Define Blood Pressure. Discuss factors affecting blood pressure and add a note on regulation of blood pressure. [12]
- Q.3** a) Give types and the common locations of epithelial tissues in body. Explain characteristics of epithelial tissues. [07]
b) Explain the mechanisms of respiration. [05]
- Q.4** Write a note on **ANY THREE** of the following: [12]
a) Cardiac arrhythmias
b) Structure and functions of pancreas
c) Anatomy of lymphatic system
d) ECG

SECTION – II

- Q.5** A) Solve **ANY FOUR** of the following: [08]
i) Enumerate the hormones of anterior pituitary gland.
ii) Define spermatogenesis.
iii) Draw a neat labelled diagram of interior of eye.
iv) Give the functions of skin.
v) Give the functions of medulla oblongata.
B) Explain functions of Thyroid hormones. [03]
- Q.6** Draw a neat labelled diagram of female reproductive system and explain the phases of menstrual cycle. [12]
- Q.7** a) Explain anatomy and physiology of skeletal muscle. [07]
b) Discuss the various family planning methods. [05]
- Q.8** Write a note on **ANY THREE** of the following: [12]
a) Renin angiotensin system
b) Structure and function of sperm
c) Drugs and athletics
d) Cerebellum

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FIRST YEAR PHARM. D : SUMMER - 2018

SUBJECT: MEDICINAL BIOCHEMISTRY

Day: ~~Tuesday~~
Date: 10-04-2018

S-2018-4021

Time 10.00 AM to 01.00 PM
Max Marks: 70

N.B:

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

SECTION-I

- Q.1** A) Solve **ANY FOUR** of the following: (08)
- a) What is transamination?
 - b) What is clinical hyperglycemia?
 - c) Give clinical manifestation of the deficiency of enzyme methyl- malonyl coenzyme mutase.
 - d) Give importance of initiating codon.
 - e) Give structure of ATP.
- B) What is reverse transcription? (03)
- Q.2** What are essential amino acids? Give their examples and how urea cycle help in the process of ammonia detoxication. (12)
- Q.3** a) What is β - oxidation? Explain in detail. Give energetic of oxidation of palmitate. (08)
- b) State biochemical role of vitamin folic acid. (04)
- Q.4** Write short notes on **ANY THREE** of the following: (12)
- a) Renal acidosis
 - b) Glycogen biosynthesis
 - c) List any four abnormal constituents of urine with their clinical significance.
 - d) Lipoproteins

SECTION-II

- Q.5** A) Solve **ANY FOUR** of the following: (08)
- a) Define mutation. State examples of mutation.
 - b) What is competitive enzyme inhibition?
 - c) What is substrate level phosphorylation?
 - d) State the role of glucose- 6- phosphate dehydrogenase.
 - e) What is ketosis?
- B) State the role of transketolase in carbohydrate metabolism. (03)
- Q.6** What are enzymes? Give their classification with examples. (12)
- Q.7** a) What is gluconeogenesis? Explain in detail. (07)
- b) What are body fluids? Give their types. (05)
- Q.8** Write short notes on **ANY THREE** of the following: (12)
- a) Allosteric enzymes
 - b) Glycolysis
 - c) Biochemical significance of pentose phosphate pathway
 - d) Post translation modifications

FIRST YEAR PHARM. D : SUMMER - 2018
SUBJECT : PHARMACEUTICAL INORGANIC CHEMISTRY

Day : **Monday**
Date : **16/04/2018**

Time : **10.00 AM to 01.00 PM**
Max. Marks : **70**

S-2018-4023

N. B. :

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

SECTION - I

- Q.1** A) Solve **Any FOUR** of the following : **(08)**
- i) What do you mean by volumetric titrations? Classify them with suitable examples.
 - ii) Explain in brief dissociation constant of weak acid.
 - iii) Give the principle and reaction involved in the assay of Hydrogen peroxide.
 - iv) Write the chemical reaction involved in the limit test for Iron.
 - v) What do you mean by Radioisotope?
- B) Give various conditions required by a substance to be primary standard. **(03)**
- Q.2** a) Give the source, physiological importance and deficiency symptoms of Iodine and Copper. **(07)**
- b) Describe in detail ideal properties of antioxidant. **(05)**
- Q.3** What do you mean by errors? Classify them with suitable example. Add a note on salt hydrolysis. **(12)**
- Q.4** Write short notes on **Any THREE** of the following : **(12)**
- a) Redox indicators
 - b) Neutralization curves
 - c) Limit test for Arsenic
 - d) Electrolyte combination therapy

P.T.O.

SECTION – II

- Q.5 A)** Solve **Any FOUR** of the following : **(08)**
- i)** Give the ideal properties of antacids.
 - ii)** Give the properties, uses and storage conditions of nitrogen gas.
 - iii)** What is non-aqueous titration and classify non-aqueous solvents.
 - iv)** Give the chemical reaction and principle involved in assay of sodium bicarbonate.
 - v)** Why the magnesium sulphate is added in the assay of calcium gluconate?
- B)** Give the preparation and standardization procedure of 0.1 M silver nitrate solution. **(03)**
- Q.6 a)** Discuss the different methods of end point detection in precipitation titrations. **(07)**
- b)** Explain in detail metallochrome indicator used in complexometric titrations. **(05)**
- Q.7** What is Gravimetric analysis? Discuss in detail the unit operation of Gravimetric analysis. **(12)**
- Q.8** Write short notes on **Any THREE** of the following : **(12)**
- a)** Co- precipitation and post precipitation
 - b)** Dentifrices
 - c)** Assay of sodium chloride injection
 - d)** Combination antacid therapy

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FIRST YEAR PHARM. D : SUMMER - 2018
SUBJECT : PHARMACEUTICAL ORGANIC CHEMISTRY

Day : **Thursday**
Date : **12/04/2018**

Time : **10.00 AM to 01.00 PM**
Max. Marks : **70**

S-2018-4022

N. B. ;

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

SECTION - I

- Q. 1 A)** Solve **ANY FOUR** of the following: **(08)**
- i) Explain concept of dipole moment.
 - ii) Define and explain Diastereomers with examples.
 - iii) What is Lewis acid-base? Give example.
 - iv) What is E_1 (CB) reaction?
 - v) Write structure and IUPAC name of any two carboxylic acids.
- B)** Differentiate between elimination and substitution reaction with suitable example. **(03)**
- Q. 2** Classify the Isomerism and explain in detail with suitable examples. **(12)**
- Q. 3 a)** Explain reaction, mechanism and stereochemistry of SN_2 reaction with suitable example. **(07)**
- b)** Differentiate between E_1 and E_2 reactions. **(05)**
- Q. 4** Write a note on **ANY THREE** of the following: **(12)**
- a) Auto – racemization
 - b) Free radical chain reaction
 - c) Racemization of SN_1 reaction.
 - d) Stability of free radicals

SECTION - II

- Q. 5 A)** Solve **ANY FOUR** of the following: **(08)**
- i) What is Kolbe reaction?
 - ii) What is mean by diazotization?
 - iii) What is mean by hyperconjugation?
 - iv) Why phenols are acidic in nature?
 - v) Explain methyl group in toluene is o/p director.

P. T. O.

- B)** Halogens are electron withdrawing but they are o/p directors in aromatic electrophilic substitution reaction. Illustrate. **(03)**
- Q. 6** What are nucleophilic aromatic substitution reactions? Explain bimolecular displacement mechanism involved in nucleophilic aromatic substitution reaction with example. **(12)**
- Q. 7** a) Explain in detail cannizaro's reaction and crossed cannizaro's reaction with examples. **(07)**
- b) Explain preparation, test for purity, assay and medicinal uses of mephenesin. **(05)**
- Q. 8** Write a note on **ANY THREE** of the following: **(12)**
- a) Cross aldol condensation
 - b) Perkin condensation
 - c) Michael addition
 - d) Williamson's synthesis

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FIRST YEAR PHARM. D : SUMMER - 2018
SUBJECT: PHARMACEUTICS

Day: **Saturday**
Date: **07/04/2018**

Time: **10.00 AM to 01.00 PM**
Max. Marks: 70

S-2018-4020

N.B.:

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

SECTION-I

- Q.5** a) Answer any **FOUR** of the following: **(08)**
- i) Define the terms compounding and dispensing.
 - ii) Differentiate between liniments and lotions.
 - iii) Why the nasal sprays are preferred over nasal drops?
 - iv) Write the labeling directions and patient counselling for mouthwashes and elixirs.
 - v) Enlist the advantages of granules over powders.
- b) What is the proof strength of 60% v/v and 90% v/v of ethanol? **(03)**
- Q.6** Explain in detail factors affecting dose selection. **(12)**
- Q.7** a) Write about the prescription errors with examples. **(07)**
b) Define the term isotonicity. Explain its importance in sterile dosage forms. **(05)**
- Q.8** Write short notes on any **THREE** of the following: **(12)**
- a) Patient Medication Record
 - b) Enemas
 - c) Pricing of the prescriptions
 - d) Dusting powders

SECTION-II

- Q.5** a) Answer any **FOUR** of the following: **(08)**
- i) Define the following terms: Tinctures and Maceration.
 - ii) Enlist the ideal properties of sutures and ligatures.
 - iii) Define the term displacement value with example.
 - iv) Differentiate between flocculated and deflocculated suspensions.
 - v) What are the advantages of emulsions?
- b) Write briefly about creaming of emulsions. **(03)**
- Q.6** Define incompatibility. Explain in detail chemical incompatibility. **(12)**
- Q.7** a) Explain in detail factors responsible for extraction. **(07)**
b) Write briefly about physical stability of suspension. **(05)**
- Q.8** Write short notes on any **THREE** of the following: **(12)**
- a) Ideal properties of bases in suppository
 - b) Percolation
 - c) Catgut
 - d) Methods of preparation of emulsions

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FIRST YEAR PHARM. D : SUMMER - 2018

SUBJECT : REMEDIAL MATHEMATICS

Day : **Wednesday**

Time : **10.00 AM to 01.00 PM**

Date : **18/04/2018**

S-2018-4024

Max. Marks : 70

N. B. :

- 1) Q.1 and Q.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 sections should be written in **SEPARATE** answer book.

SECTION – I

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

i) Test whether the following matrix is singular or not

$$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 5 \end{bmatrix}.$$

ii) Find x , if $\begin{vmatrix} x & -3 \\ -1 & x+2 \end{vmatrix} = 0$.

iii) Show that $\sqrt{2} \sin\left(\frac{\pi}{4} + \theta\right) = \cos\theta + \sin\theta$.

iv) Show that, the following pairs of lines are parallel to each other
 $3x + 2y - 5 = 0$ and $9x + 6y - 25 = 0$.

v) Find the equation of circle having (5,2) and (-1,4) as the end points of diameter.

vi) Find the length of latus rectum for the parabola $y^2 = 24x$.

b) Attempt any **ONE** of the following: **(03)**

i) By using cosine rule prove that $b \cos C + c \cos B = a$.

ii) Show that $\frac{\sin A + \sin B}{\cos A + \cos B} = \tan\left(\frac{A+B}{2}\right)$.

Q.2 Answer any **THREE** of the following: **(12)**

a) Show that, the following equation are consistent.

$$2x + 3y = -1, \quad x + 2y = -1, \quad x + y = 0.$$

b) If $A = \begin{bmatrix} 1 & 3 & 3 \\ 3 & 1 & 3 \\ 3 & 3 & 1 \end{bmatrix}$ then prove that $A^2 - 5A$ is scalar matrix.

c) Find the distance between the following pairs of parallel lines
 $2x - 3y + 7 = 0$ and $2x - 3y - 6 = 0$.

d) For any angles C and D prove that

$$\sin C + \sin D = 2 \sin\left(\frac{C+D}{2}\right) \cos\left(\frac{C-D}{2}\right).$$

e) Find the length of x-intercept made by the circle $x^2 + y^2 + x - 4y - 12 = 0$.

P.T.O.

Q.3 a) In any ΔABC , with usual notations prove that cosine rule in the form of (07)
 $a^2 = b^2 + c^2 - 2bc \cos A$. Hence prove that

$$1 + \cos A = \frac{(b+c+a)(b+c-a)}{2bc} .$$

b) Prove that, (05)

i) $\tan x + \cot x = \sec x \cdot \operatorname{cosec} x .$

ii) $\sqrt{\frac{1-\cos x}{1+\cos x}} = \operatorname{cosec} x - \cot x .$

Q.4 Answer any **THREE** of the following: (12)

a) If ' θ ' is the acute angle between the lines with slope m_1 and m_2 respectively,

then prove that $\tan \theta = \left| \frac{m_1 - m_2}{1 + m_1 \cdot m_2} \right| .$

b) Find the length of tangent to the circle
 $x^2 + y^2 - 10x + 10y + 1 = 0$ from the point (2,2).

c) If the line $2x + ky + 3 = 0$ touches the parabola $y^2 = 6x$, find k .

d) Show that

$$\frac{\sin 3\theta}{\sin \theta} - \frac{\cos 3\theta}{\cos \theta} = 2.$$

SECTION – II

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

i) Evaluate

$$\lim_{x \rightarrow 2} \frac{x-2}{x^2+x-6} .$$

ii) Find $\frac{dy}{dx}$, if $y = x \cdot \cos x$.

iii) Determine the order and degree of the differential equation

$$\left(\frac{d^2 y}{dx^2} \right)^2 - \frac{dy}{dx} - 1 = 0 .$$

iv) Evaluate $\int_0^{\pi/4} (\sin x + \cos x) dx$.

v) Find $L\{t^{10} + 6t - 9\}$.

vi) State Euler's theorem on homogeneous function.

b) Answer any **ONE** of the following: (03)

i) If $y = \sin 2x$, then show that $\frac{d^2y}{dx^2} + 4y = 0$.

ii) If $y = \tan^{-1}\left(\frac{6x}{1+16x^2}\right)$ then find $\frac{dy}{dx}$.

Q.6 Answer any **THREE** of the following: (12)

a) If $y = \sin^{-1} x$, then show that $(1-x^2) \cdot \frac{d^2y}{dx^2} - x \cdot \frac{dy}{dx} = 0$.

b) If u and v are differential functions of x and $y = u + v$ then prove that $\frac{dy}{dx} = \frac{du}{dx} + \frac{dv}{dx}$.

c) If $z = \sec^{-1}\left(\frac{x^3 + y^3}{x + y}\right)$, then by Euler's theorem show that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = z \cot z$.

d) If $u = \log(x^3 + y^3 + z^3 - 3xyz)$, then show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = \frac{3}{x + y + z}$.

Q.7 a) Answer the following: (07)

i) Evaluate

$$\int_0^{\pi/2} \frac{\sqrt{\tan x}}{\sqrt{\tan x} + \sqrt{\cot x}} dx.$$

ii) Find the particular solution of the differential equation $xdy + 2ydx = 0$ when $x = 2, y = 1$.

b) Answer any **ONE** of the following: (05)

i) Prove that $\int_0^a f(x) dx = \int_0^a f(a-x) dx$.

ii) Evaluate $\int_4^7 \frac{(11-x)^2}{(11-x)^2 + x^2} dx$.

Q.8 Answer any **THREE** of the following: (12)

a) Find $L\{\sin 3t - 2 \cos 5t\}$.

b) Prove that

$$L\{\sinh at\} = \frac{a}{s^2 - a^2}.$$

c) If $L\{f(t)\} = \phi(s)$ and a is a real number then prove that $L\{e^{at} f(t)\} = \phi(s-a)$.

d) Find $L\{t^2 e^{3t}\}$.