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SEAT No. :

P-3875

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F.Y. Pharm. D.

**HUMAN ANATOMY AND PHYSIOLOGY (1.1T)**

**(2019 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Draw a neat, labeled diagram wherever necessary.*
- 3) *Figures to the right indicate full marks.*

**SECTION - I**

**Q1) Attempt any one of the followings (Any 1 out of 2) : [1 × 10 = 10]**

- a) Write composition and functions of blood. Explain morphology of different types of white blood cells.
- b) Enlist lymphatic organs. Explain structure and functions of spleen and define any one disorder of lymphatic system.

**Q2) Attempt any five of the followings (Any 5 out of 7) : [5 × 3 = 15]**

- a) Classify different types of joints with suitable examples.
- b) Write a note on passive diffusion.
- c) Explain coagulation pathways.
- d) Write a note on ECG
- e) Explain muscular tissues.
- f) Explain regulation of blood pressure.
- g) Write a note on Phagocytosis.

**Q3) Attempt any two of the followings (Any 2 out of 4) : [2 × 5 = 10]**

- a) Explain Hemopoiesis in detail.
- b) Explain cardiac cycle.
- c) Draw a neat, labeled diagram of skull and enlist names of cranial and facial bones.
- d) Explain anatomy and functions of Vertebral column.

***P.T.O.***

## SECTION - II

**Q4) Attempt any one of the followings (Any 1 out of 2) : [1 × 10 = 10]**

- a) Explain in detail structure of spinal cord.
- b) Explain in detail structure of kidney and process of urine formation.

**Q5) Attempt any five of the followings (Any 5 out of 7) : [5 × 3 = 15]**

- a) Explain structure of nephron.
- b) Enlist functional areas of cerebrum.
- c) Enlist functions of hormones released by anterior pituitary gland.
- d) Draw a neat labeled diagram of structure of ear.
- e) Explain composition and functions of saliva.
- f) Explain papillae present on tongue.
- g) Explain hormones released by adrenal glands.

**Q6) Attempt any two of the followings (Any 2 out of 4) : [2 × 5 = 10]**

- a) Explain anatomy and physiology of cerebellum.
- b) Explain structure and functions of skin.
- c) Explain physiology of muscle contraction.
- d) Explain chemical digestion in small intestine.



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**First Year Pharm. D.**  
**1.2T : PHARMACEUTICS**  
**(2019 Pattern) (Theory)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Answer to the Two sections should be written in separate answer book.*
- 3) *Draw a neat, labeled diagram wherever necessary.*
- 4) *Figures to the right indicate full marks.*

**SECTION-I**

**Q1)** Attempt any one of the following (any 1 out of 2) **[1×10=10]**

- a) Define and classify monophasic liquid dosage forms. Discuss the various adjuvant used in the formulation of Oral liquid dosage forms.
- b) Define posology. Write the methods for calculation of children and infant doses. Write the factors affecting dose selection.

**Q2)** Attempt any five of the following (any 5 out of 7) **[5×3=15]**

- a) What is Pharmacopoeia? Write salient features of first edition of Indian Pharmacopoeia.
- b) Give the metric equivalents for the following:
  - i) one grain
  - ii) one ounce
  - iii) one teaspoonful
- c) Define and classify' solid dosage forms.
- d) Define throat paint and give the direction for application of throat paint?
- e) Give methods to dispense eutectic substances
- f) Differentiate between liniments and lotions.
- g) Write major events of history of pharmacy profession in India?

**Q3)** Attempt any two of the followings (Any 2 out of 4) **[2×5=10]**

- a) Define prescription and explain Parts of a prescription.
- b) Highlight about National Formulary of India.
- c) Give theoretical aspects of formulation of Ear drops.
- d) Add a note on, Dusting powders.

***P.T.O.***

## SECTION-II

**Q1)** Attempt any one of the followings (Any 1 out of 2) **[1×10=10]**

- a) Define emulsion. Give an account of methods of preparation, stability and preservation of emulsion.
- b) Define Incompatibility, give its classification and methods to overcome Incompatibility in detail.

**Q2)** Attempt any five of the followings (Any 5 out of 7) **[5×3=15]**

- a) Describe sutures and ligatures.
- b) Highlight about Tinctures.
- c) Define suppositories. What are the advantages and disadvantages of suppositories?
- d) Enumerate the ideal characteristics of a suppository base.
- e) Give advantages and disadvantages of suspension as a dosage form.
- f) Differentiate between Flocculated and Non-flocculated suspension.
- g) Explain the standardization of surgical catgut.

**Q3)** Attempt any two of the followings (Any 2 out of 4) **[2×5=10]**

- a) Add a note on, Maceration.
- b) Give importance of Displacement value with example.
- c) Elaborate evaluation methods of suspension.
- d) Add a note on, Absorbable gelatin sponge.



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**First Year Pharm. D**  
**1.3 : MEDICINAL BIOCHEMISTRY**  
**(2019 Pattern) (Theory)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) All questions are compulsory internal choices are given.*
- 2) Answers to the two Sections should be written in separate books.*
- 3) Neat diagrams must be drawn wherever necessary.*
- 4) Figures to the right indicate full marks.*

**SECTION - I**

**Q1) Answer any 1 out of 2 :** **[1 × 10 = 10]**

- a) Define and classify enzymes with suitable examples and discuss various factors affecting enzyme activity.
- b) What is carbohydrate metabolism and discuss HMP shunt in details with net energy calculation?

**Q2) Answer any 5 out of 7 :** **[5 × 3 = 15]**

- a) Explains galactose tolerance test and their significance.
- b) Explain transamination process and its importance.
- c) Discuss metabolism of haemoglobin and related disorders.
- d) Explore on metabolic disorders of carbohydrate metabolism.
- e) Discuss nitrogen balance of human body.
- f) Explain semiconservative method of DNA replication.
- g) What is ETC? Discuss uncouplers of ETC and oxidative phosphorylation.

**Q3) Answer any 2 out of 4 :** **[2 × 5 = 10]**

- a) Enlist various metabolic disorders of carbohydrate metabolism and elaborate diabetes mellitus.
- b) Explain Citric acid cycle (TCA cycle) with net energy calculation.
- c) Discuss Ketogenesis and ketolysis in detail.
- d) Write a note on urea cycle.

**P.T.O.**

## SECTION - II

**Q4) Attempt any one :** **[1 × 10 = 10]**

- a) Elaborate on Bile pigments metabolism. Elaborate various tests carried out for hepatic dysfunction and serum enzymes.
- b) What are Lipoproteins? Add a note on atherosclerosis and discuss serum lipid profile test and its importance.

**Q5) Attempt any five :** **[5 × 3 = 15]**

- a) Write in brief about mutation.
- b) Explain the hormonal regulation for urine formation.
- c) Explain any one immuno chemical technique.
- d) Explain urinary tract calculi.
- e) Explain protein synthesis inhibitors.
- f) Explain the water balance.
- g) Write a note on Isoenzyme and its functions.

**Q6) Attempt any two :** **[2 × 5 = 10]**

- a) Compare the distribution of electrolytes in ECF and ICF and its balance in body.
- b) Elaborate on biosynthesis of creatine and creatinine with its clinical importance.
- c) Explain the abnormalities related to purine metabolism and its treatment.
- d) Discuss the abnormal constituents of urine.



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**F.Y. Pharm. D.**

**1.4T : PHARMACEUTICAL ORGANIC CHEMISTRY**

**(2019 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Answer to the two sections should be written in separate books.*
- 4) *Draw well labeled diagrams wherever necessary.*
- 5) *Do not write anything on question paper except seat number.*

**SECTION - I**

**Q1)** Discuss the Reaction mechanism, Kinetics and Energy diagram of Substitution Nucleophilic unimolecular for tertiary chloride. **[10]**

OR

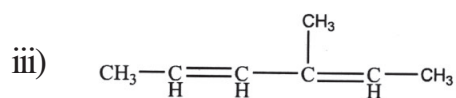
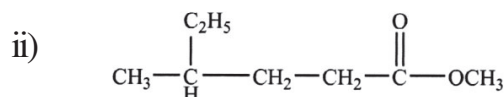
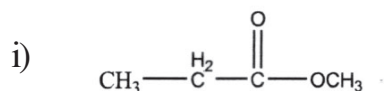
Explain addition of hydrogen halide to alkenes. Add a note on rules for orientation during the addition.

**Q2)** Attempt any five. **[15]**

- a) Write a note on Bayer strain theory.
- b) Define with example.
  - i) Free radical
  - ii) Protic solvent
  - iii) Conjugated diene
- c) Draw the structures of,
  - i) 2, 3 - dimethyl pentanol

**P.T.O.**

- ii) 1, 2 - Dimethoxy - Hexane
- iii) 2 - oxo - hexanoic acid
- d) Discuss allylic rearrangement with suitable example.
- e) Mention IUPAC Names for following compounds.



- f) Discuss hyperconjugation.
- g) Explain aldol condensation with example.

**Q3)** Attempt any Two.

**[10]**

- a) Write a note on Activating and Deactivating groups.
- b) Discuss in detail acidity of phenols and carboxylic acids.
- c) Write a note on Fries Rearrangement.
- d) Discuss Claisen condensation and Benzoin condensation.

### SECTION - II

**Q4)** Explain with suitable example the rearrangement involved in migration to electron deficient nitrogen. Add a note on diazotization reaction. **[10]**

OR

Explain determination of orientation and relative reactivity for Aromatic Electrophilic Substitution Reaction with suitable example.



**Q5) Attempt any Five.**

**[15]**

- a) Define with example Nucleophile and Electrophile.
- b) Draw structures and discuss medicinal uses of following compounds
  - i) Dimercaprol
  - ii) Glyceryl trinitrate
  - iii) Urea
- c) Explain the mechanism involved in Diazo-coupling reaction of amines.
- d) Explain why amines are basic and effect of substituents on basicity of amines.
- e) Comment on replacement reaction for diazo group.
- f) Explain amino group is activating for aromatic electrophilic substitution.
- g) Justify Hydroxy group is ortho-para directing for aromatic Electrophilic Substitution.

**Q6) Attempt any Two.**

**[10]**

- a) Write a note on cyclo-addition reaction.
- b) Discuss carbocations and their stability and rearrangement
- c) Differentiate between  $SN_1$  and  $SN_2$  reaction.
- d) Write Reaction & Mechanism of following reactions.
  - i) Williamson synthesis
  - ii) Kolbe reaction



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SEAT No. :

P-3878

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F.Y. Pharm D

**1.5: PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)  
(2019 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labelled diagrams wherever necessary.*
- 4) *Do not write anything on question paper except seat number.*

**SECTION - I**

**Q1) Write of any 1 out of 2 :**

**[10]**

- a) Write in details about metal ion indicators, masking and demasking reagents. State the principle of complexometric titration.
- b) Write in details about redox titrations discuss about principles and applications of redox titrations.

**Q2) Attempt any 5 out of 7 :**

**[15]**

- a) Discuss about theory of indicators.
- b) What is error? Explain different types of error.
- c) Explain secondary standard solution.
- d) What is the Gravimetric titration?
- e) What is the levelling effect in non-aqueous titration?
- f) Define the term titrant, titrand, indicator.
- g) Discuss Gay Lussac method.

**P.T.O**

**Q3) Write any 2 out of 4 :** [10]

- a) Summarize ostwald theory.
- b) Explain indicators used in redox titration.
- c) What is precipitation titration ? Explain Volhard's and Modified Volhard's method.
- d) Illustrate methodology involved in gravimetric analysis.

**SECTION - II**

**Q4) Write of any 1 out of 2 :** [10]

- a) What is replacement therapy. Explain sodium and potassium replacement therapy.
- b) Classify antimicrobial agent. Discuss various pharmaceutical compound which act as antimicrobial agent.

**Q5) Attempt any 5 out of 7 :** [15]

- a) What is limit test? Explain limit test for sulphate.
- b) Explain Iron as essential trace element.
- c) Short note on Precipitation titrations.
- d) Differentiate between absorbable and non-absorbable antacid.
- e) What is Non aqueous titrations?
- f) What is Radio activity? Explain with example.
- g) Discuss properties dental products.

**Q6) Write any 2 out of 4 :** [10]

- a) Discuss medicinal uses of Oxygen and Carbon dioxide.
- b) Explain role of fluoride in the treatment of dental.
- c) Classify and explain buffers in pharmaceutical systems.
- d) Explain pharmaceutical application of radioactive substances.



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**F.Y. Pharm. D.**

**1.6 (B) : Remedial Biology**

**(2019 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

**SECTION - I**

**Q1)** Write a detail account of plant tissues with neat labeled diagram. Give functions of plant tissues. **[10]**

OR

Define and classify animal tissue. Discuss epithelial tissue in detail.

**Q2)** Solve the following (any five). **[15]**

- a) Differentiate between animal cell and plant cell.
- b) Draw a neat labeled diagram of nerve cell.
- c) Write special features of seeds.
- d) Describe snake as a poisonous animal.
- e) Explain the role of chlorophyll in plants.
- f) Write the characteristics of kingdom Fungi.
- g) What is inflorescence? Give different types of inflorescence.

**Q3)** Answer the following (any two). **[10]**

- a) Describe the different types and uses of routes.
- b) Explain the general structure and function of animal cell.
- c) Discuss the characteristics of meristematic tissues.
- d) Enlist different parts of a plant with function of each part.

**P.T.O.**

## SECTION - II

**Q4)** Describe mammals. Write an account of animal kingdom with examples. [10]

OR

Describe various components of animal cell with a neat labeled diagram.

**Q5)** Solve the following (any five) [15]

- a) What are the general characteristics of Pisces?
- b) Classify kingdom Animalia.
- c) Write note on taxonomy of Liliaceae with examples.
- d) Comment on inflorescence with examples.
- e) Discuss the types and function of vascular bundles.
- f) Write a note on yeast.
- g) Differentiate between bacteria and fungi.

**Q6)** Answer the following (any two) [10]

- a) Describe the characteristics of Umbelliferae family with examples.
- b) Write note on poisonous animals.
- c) Comment on excretory products of plants.
- d) Explain morphology of seed with suitable example.



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SEAT No. :

**P3880**

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**First Year Pharm.D.**

**1.6T (M) : REMEDIAL MATHEMATICS**

**(2019 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw a neat, labeled diagram wherever necessary.*

**SECTION-I**

**Q1)** Attempt any one of the following (Any 1 out of 2)

**[1×10=10]**

- a) Find the Inverse of matrix A by Adjoint method

$$A = \begin{bmatrix} 2 & -1 & 0 \\ 1 & 0 & 4 \\ 1 & -1 & 1 \end{bmatrix}$$

- b) Solve the equation by matrix method

$$3x + y + 2z = 3$$

$$2x - 3y - z = -3$$

$$x + 2y + z = 4$$

**Q2)** Attempt any five of the following (Any 5 out of 7)

**[5×3=15]**

- a) If  $f(x) = x^2 + 6x + 10$  find  $f(2) + f(-2)$

- b) If  $A = \begin{bmatrix} 4 & 2 \\ 8 & 4 \end{bmatrix}$   $B = \begin{bmatrix} 2 & 6 \\ -4 & -12 \end{bmatrix}$  show that, AB is null matrix.

- c) Find K if four points A (0,9) B(1,5) C(-2, 7) and D (4,K) are such that AB perpendicular CD.

**P.T.O.**

- d) Find the laplace transform of following function  $\sin^2 4t$ .
- e) If  $A = \begin{bmatrix} 2 & 4 \\ 1 & 1 \end{bmatrix}$  Show that  $A^2 - 3A = 2I$  where I is unit matrix of order 2.
- f) Simplify  $\log 6 = \log 1 + \log 2 + \log 3$
- g) Find the value of k if the points  $(-2, -3)$   $(k, 4)$  and  $(5, 5)$  are collinear.

**Q3)** Attempt any two of the following (any 2 out of 4) **[2×5=10]**

- a) Find the trigonometric functions value  $(\cos \theta)$

$$\text{If } \sin \theta = \frac{11}{61}$$

- b) Solve  $X \frac{dy}{dx} + y = x^3$
- c) If  $A = \begin{bmatrix} 2 & 3 \\ 4 & 7 \end{bmatrix}$ ,  $B = \begin{bmatrix} 1 & 3 \\ 4 & 6 \end{bmatrix}$  find  $3A - 2B$
- d) Solve  $\int (\tan x + \cot x)^2 dx$

### SECTION-II

**Q4)** Attempt any one of the following (Any 1 out of 2) **[1×10=10]**

- a) Solve  $X (x+y) dy - y^2 dx = 0$
- b) Find the derivative of  $x \sin x$  by first principle of derivative.

**Q5)** Attempt any five of the following (Any 5 out of 7) **[5×3=15]**

- a) Prove that  $1 + \frac{\cot 2\theta}{1 + \operatorname{cosec} \theta} = \operatorname{cosec} \theta$
- b) If  $Y = \frac{1 - \cos 2x}{\sin 2x}$  find  $\frac{dy}{dx}$

- c) Evaluate  $\int \frac{1}{1+x^2} + 5^x$
- d) Solve  $\frac{dy}{dx} = e^{x-y} + x^2 e^{-y}$
- e) Find Laplace transform of following function.  
 $3\cos(4t+7)$
- f) Find  $\frac{dy}{dx}$  if  $Y = \frac{\sec x - 1}{\sec x + 1}$
- g) Find the value of

$$\frac{5\cos^2 60 + 4\sec^2 30 - \tan^2 45}{\sin^2 30 + \cos^2 30}$$

**Q6)** Attempt any two of the following (Any 2 out of 4)

**[2×5=10]**

a)  $\int \frac{dx}{4\cos^2 x + 9\sin^2 x}$

b) Find  $\frac{dy}{dx}$  if  $Y = \sin^3 x$

c) Slove

$$x \cos x \cdot \cos y + \sin y \frac{dy}{dx} = 0$$

d) Evaluate  $\int \frac{dx}{x^2 |4x| 25}$

