

[KD 172]

Sub. Code : 2071

M.D. DEGREE EXAMINATION.

Branch XIII — Biochemistry

(Revised Regulations)

Paper I — PHYSICAL AND ORGANIC ASPECTS OF
BIOCHEMISTRY, INSTRUMENTATION AND
BIOCHEMICAL TECHNIQUES

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. What is quaternary structure of protein? Give examples for proteins having quaternary structure. Write the forces that stabilize this structure. Justify that the structure of collagen is suitable for its function. (25)

2. Mention the normal serum level of Na^+ and K^+ in the blood. Explain the principle behind the flame photometric analysis of these electrolytes. Describe how these electrolytes are estimated colorimetrically. (25)

3. Write short notes on :

(a) Donnan's membrane equilibrium.

(b) Mucopolysaccharides — composition and function of any three of them.

(c) Radioisotope and clinical applications of any three of them.

(d) Surface tension and its biological application.

(e) Biologically important buffers and their applications. (5 × 10 = 50)

November-2001

[KE 172]

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Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Discuss the structure and function of different classes of immunoglobulins. Elaborate on the mechanism of anti-body synthesis at the cellular level. (25)
 2. What is a Buffer? Discuss in detail the role of buffers in maintaining the pH of blood. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Ion Exchange Chromatography.
 - (b) Polymerase chain reaction.
 - (c) ELISA.
 - (d) Ionophores.
 - (e) H.P.L.C.
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Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Describe the structure of hemoglobin as related to its physiological functions. (25)
2. What are radioisotopes and stable isotopes? Describe the methods employed for the measurement of radioactivity. Discuss the application of isotopes in Biochemistry. Add a note on radioisotopes of medical significance. (25)
3. Write briefly on : (5 × 10 = 50)
 - (a) Biologically active peptides.
 - (b) Active transport.

(c) Functions of nucleotides.

(d) Beer–Lambert's law.

(e) Henderson – Hasselbalch equation and its significance in the bicarbonate buffer system.

September-2002

[KH 172]

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Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. What are glycosaminoglycans? Describe the structure and functions of the different glycosaminoglycans. Add a note on proteoglycans. (25)
 2. What are the different levels of protein organisation? Describe the methods used to determine the primary structure of proteins. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Blot transfer techniques.
 - (b) RIA.
 - (c) Phospholipids
 - (d) Methods of separation of lipoproteins.
 - (e) Glutathione.
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April-2003

[KI 172]

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Branch XIII — Biochemistry

Paper I — PHYSICAL AND ORGANIC ASPECTS OF
BIOCHEMISTRY INSTRUMENTATION AND
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Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. What are proteins? Describe the structural organization of proteins. Discuss how the protein are precipitated. (25)
 2. What is Beer's law? Describe in detail about various colourimeters. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Henderson – Hesselbalch reaction or equation
 - (b) Water as ideal biological solvent – Discuss
 - (c) Glyco–Lipids and their biomedical significance
 - (d) Affinity chromatography
 - (e) Radial immuno diffusion (Mancini's technique).
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Time : Three hours , Maximum : 100 marks

Theory : Two hours and Theory : 80 marks
Forty minutes

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

M.C.Q. must be answered **SEPARATELY** on the
answer sheet provided as per the instructions given on
the first page of M.C.Q. Booklet.

Answer ALL questions.

Draw suitable diagrams wherever necessary.

1. Discuss the factors involved in transport across
cell membrane. (15)

2. Discuss the principle of electrophoresis and
mention different types of electrophoresis available. (15)

3. Write short notes on : (10 × 5 = 50)

- (a) Principles of Radio Immuno Assay
- (b) Iso Electric focusing
- (c) ELISA technique
- (d) Watson Crick model of DNA
- (e) Glutathione
- (f) Phospholipids
- (g) Structure of Glycogen
- (h) Calmodulin
- (i) Flame photometry
- (j) Sickle cell hemoglobin.