

February-2005

[KM 172]

Sub. Code : 2071

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch XIII — Biochemistry

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

Time : Three hours

Maximum : 100 marks

Theory : Two hours and  
forty minutes

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

I. Essay : (2 × 15 = 30)

(1) Discuss the principles of electrophoresis and its applications in clinical biochemistry.

(2) Write briefly on principle and application of spectrophotometry.

II. Write short notes : (10 × 5 = 50)

(a) ELISA

(b) Isoelectric focussing

(c) Donnan membrane equilibrium

(d) Radioimmunoassay

(e) PCR

(f) Gel filtration chromatography

(g) RELP

(h) Paper chromatography

(i) Ultracentrifugation

(j) HPLC.

[KO 172]

Sub. Code : 2071

II. Write short notes on :

(10 × 5 = 50)

**M.D. DEGREE EXAMINATION.**

Branch XIII — Biochemistry

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

Time : Three hours

Maximum : 100 marks

Theory : Two hours and  
forty minutes

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay :

(2 × 15 = 30)

(1) Explain the principles involved and the basic components of HPLC. Mention its application in biology and medicine.

(2) What are the different mechanisms by which enzyme activity is modulated in biological systems? Explain with suitable examples.

(a) Anapleurotic reactions of TCA cycle

(b) Phospholipids

(c) Flame photometry

(d) Mucopolysaccharides

(e) Membrane proteins

(f) Renal mechanism of acid base balance

(g) Factors affecting electrophoresis

(h) Mutarotation

(i) Prostaglandins

(j) Glycosides.



[KP 172]

Sub. Code : 2071

II. Write Short notes on : (6 × 5 = 30)

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch XIII — Biochemistry

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

Time : Three hours

Maximum : 100 marks

Theory : Two hours and  
forty minutes

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay :

1. Discuss the structure of protein in detail. How is the structure of protein established? (20)
2. Discuss in detail radio isotopes and their uses. (15)
3. What are various Buffers system in our body? Discuss their role in regulation of pH. (15)

- (a) Density gradient ultra centrifugation
- (b) Plasma buffers.
- (c) Tandem mass spectrometry
- (d) Membrane transport systems
- (e) HPLC
- (f) Fluid mosaic model.

[KQ 149]

Sub. Code : 2071

M.D. DEGREE EXAMINATION.

Branch XIII — Biochemistry

PHYSICAL AND ORGANIC ASPECTS OF  
BIOCHEMISTRY, INSTRUMENTATION AND  
BIOCHEMICAL TECHNIQUES

Common to :

Paper I (Old/New/Revised Regulations)  
(Candidates admitted from 1988–89 onwards)

and

Paper I (For candidates admitted from 2004–2005  
onwards)

Time : Three hours

Maximum : 100 marks

Theory : Two hours and  
forty minutes

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay :

1. Discuss in detail about the principle, types and applications of Electrophoresis. (20)
2. Describe the fluorimetric techniques and their applications. (15)
3. Enumerate the structure and various functions of heteropolysaccharides. (15)

II. Write short notes on :

(6 × 5 = 30)

- (a) Transport proteins.
  - (b) Biochemical findings in acidosis.
  - (c) Atomic absorption spectroscopy (AAS).
  - (d) Sphingolipids.
  - (e) Ion-exchange chromatography.
  - (f) Small nuclear RNAs (Sn RNAs).
-

[KR 160]

Sub. Code : 2056

M.D. DEGREE EXAMINATION.

Branch XIII — Biochemistry

PHYSICAL AND ORGANIC ASPECTS OF  
BIOCHEMISTRY, INSTRUMENTATION AND  
BIOCHEMICAL TECHNIQUES

Common to :

Paper I (Old/New/Revised Regulations)  
(Candidates admitted from 1988–89 onwards)  
and

Paper I (For candidates admitted from 2004–05 onwards)

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

Answer ALL questions.

I. Essay :

1. Give in detail the structure, classes and properties of immunoglobulins. (20)

2. Principle and applications of spectrophotometry in the study of enzyme kinetics. (15)

3. Describe the structures, functions of polyunsaturated fatty acids and their derivatives. (15)

II. Write short notes on : (6 × 5 = 30)

(a) Poly Acrylamide Gel Electrophoresis (PAGE)

(b) Collagen

(c) Glucose challenge test

(d) Chemical composition of cell membranes

(e) Buffers of renal system

(f) Types of auto pipettes.

**MARCH 2008**

**[KS 148]**

**Sub. Code : 2043**

M.D. DEGREE EXAMINATION.

Branch XIII — Biochemistry

PHYSICAL AND ORGANIC ASPECTS OF BIOCHEMISTRY,  
INSTRUMENTATION AND BIOCHEMICAL TECHNIQUES

Common to all regulations

**Q.P. Code : 202043**

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

Draw diagram wherever necessary.

- I. Essay questions : (2 × 20 = 40)
1. Give an account of the structural organisation of proteins and a note on denaturation. (20)
  2. Write in detail on the technique of high performance liquid chromatography. (20)
- II. Write short notes on : (10 × 6 = 60)
1. Mucopolysaccharides.
  2. Membrane structure.
  3. Phospholipids.
  4. DNA structure.
  5. Ion selective electrodes.
  6. ELISA.
  7. Radio isotopes in metabolic studies.
  8. Ultracentrifugation.
  9. Donnan membrane equilibrium.
  10. Henderson-Hasselbalch equation.
-