

[KD 173]

Sub. Code : 2072

M.D. DEGREE EXAMINATION.

Branch XIII — Biochemistry

(Revised Regulations)

Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION

Time : Three hours (MPR-2001) Maximum : 100 marks

Answer ALL questions.

1. Define active site of an enzyme. Write four characteristics of active site. Explain the active site models. Explain how substrate concentration, pH and temperature affect enzyme activity. What is the significance of K_m and V_{max} . Name two active site directed inhibitors and how they affect the K_m and V_{max} .

(25)

2. Mention the factors required for the synthesis of fatty acid. Explain the steps of reaction in which acetyl - CoA is converted to palmitate in extra-mitochondrial pathway. What are the sources of acetyl - CoA and NADPH? Compare and contrast the fatty acid synthesis intramitochondrially and extramitochondrially. What is the role of citrate?

(25)

3. Write short notes on :

(a) Gluconeogenesis is not just the reversal of glycolytic pathway — Explain it with alanine as an example.

(b) Formation of ammonia in the body and its detoxification in the brain and liver.

(c) Sources, functions and deficiency manifestations of vitamin A.

(d) Glycogen digestion and absorption.

(e) Eicosanoids. (5 × 10 = 50)

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M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch XIII — Biochemistry

Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Describe the various components and the structural organisation of electron transport chain. What are the current concepts of the mechanism of oxidative phosphorylation? (25)
 2. How ammonia is formed and metabolised in our bodies. Mention the inborn errors of metabolism associated with it. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Dietary fibre and its importance.
 - (b) Uses of NADPH.
 - (c) Galactosemia
 - (d) Cobamides.
 - (e) Fluorosis.
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M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch XIII — Biochemistry

Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Discuss the chemistry, sources, requirement, metabolic functions and deficiency manifestations of ascorbic acid in the human body. (25)
 2. Give an account of the formation and disposal of ammonia in the body. Give the normal levels of ammonia and urea in blood. Add a note on the conditions leading to hyperammonemia and ureaemia. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Metabolism of methionine.
 - (b) Bile acids.
 - (c) Allosteric enzymes.
 - (d) BMR.
 - (e) Oxidative Phosphorylation.
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M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch XIII — Biochemistry

Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Discuss the metabolism of glycogen. How is the metabolism of glycogen regulated? Explain the role of hormones on the processes. (25)
 2. Describe the metabolism of tryptophan. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Polyamines
 - (b) Metabolic role of glycine
 - (c) Cytochromes
 - (d) Absorption, transport and storage of iron
 - (e) Leukotrienes.
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April-2003

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Sub. Code : 2072

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch XIII — Biochemistry

Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Discuss the role of vitamins as antioxidants. Describe the source, daily requirements, functions and deficiency manifestation of any one of them. (25)
 2. Discuss one carbon metabolism in detail. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Cytochromes
 - (b) Multi-enzyme complex
 - (c) Carnitine
 - (d) Apo-Lipoproteins
 - (e) Hemoglobinopathies.
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[KJ 173]**Sub. Code : 2072****M.D. DEGREE EXAMINATION.****(Revised Regulations)****Branch XIII — Biochemistry****Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION****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**

M.C.Q. must be answered **SEPARATELY** on the
Answer Sheet provided as per the instructions on the
first page of M.C.Q. Booklet.

Answer ALL questions.**Draw suitable diagrams wherever necessary.**

1. Describe the metabolism of phenyl alanine. (15)
2. Discuss about the inhibitors of Electron transport chain and oxidative phosphorylation. (15)
3. Write short notes on : (10 × 5 = 50)
 - (a) Transmethylation.
 - (b) Acute intermittent porphyria.
 - (c) Glycogen storage disorders.

- (d) Brown adipose tissue.
- (e) One carbon metabolism.
- (f) Folate trap.
- (g) A.T.P. as energy currency.
- (h) Essential Fructosuria.
- (i) Zinc.
- (j) Ionophores.

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M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch XIII — Biochemistry

Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION

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) Describe the pathway of heme biosynthesis, indicating how it is regulated. Write briefly on porphyrias.

(2) Give an account of dietary sources, requirement, biochemical functions and deficiency manifestations of folic acid.

II. Write Short notes on : (10 × 5 = 50)

(a) Reactive oxygen species and role of antioxidants.

(b) Rhodopsin cycle.

(c) Competitive inhibition and any two of its applications

(d) Chemiosmotic theory.

(e) Cycle AMP.

(f) Random enzymes.

(g) Polyamines.

(h) Lipid storage disorders.

(i) Ketogenesis and ketolysis.

(j) Prostaglandins.

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Branch XIII — Biochemistry

Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION

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) Describe how the normal pH of blood is maintained.

(2) Discuss the mechanism of detoxification.

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

(a) Uncouplers of oxidative phosphorylation

(b) Homocystinurias

(c) Plasma proteins

(d) Miester cycle (γ glutamyl cycle)

(e) Ionophores

(f) Synthesis of melanin

(g) Lineweaver Burk plot

(h) Active site

(i) Protein calorie malnutrition

(j) Glutamate dehydrogenase.

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M.D. DEGREE EXAMINATION.

Branch XIII — Biochemistry

Paper II — ENZYMES, INTERMEDIARY
METABOLISM AND NUTRITION

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) Describe how the normal pH of blood is maintained.

(2) Discuss the mechanism of detoxification.

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

(a) Uncouplers of oxidative phosphorylation

(b) Homocystinurias

(c) Plasma proteins

(d) Miester cycle (γ glutamyl cycle)

(e) Ionophores

(f) Synthesis of melanin

(g) Lineweaver Burk plot

(h) Active site

(i) Protein calorie malnutrition

(j) Glutamate dehydrogenase.

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II. Write Short notes on :

(6 × 5 = 30)

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Branch XIII — Biochemistry

Paper II — ENZYMES, INTERMEDIARY METABOLISM AND NUTRITION

Time : Three hours **Maximum : 100 marks**

Theory : Two hours and forty minutes	Theory : 80 marks
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M.C.Q : Twenty minutes **M.C.Q : 20 marks**

Answer ALL questions.

Draw suitable diagrams wherever necessary.

Essay :

1. Discuss in detail the various components and organisation of respiratory chain. Add a note on the inhibitors of ETC. (20)
2. Discuss the mechanism of action of enzymes and the various factors that control enzyme activity. (15)
3. Describe in detail about Biosynthesis and regulation and biomedical significance of cholesterol. (15)

- (a) Lipid storage diseases
- (b) Net protein utilization
- (c) Alkaptonuria
- (d) Anti vitamins
- (e) Poly amines
- (f) Reactive oxygen species and role of anti oxidants.

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M.D. DEGREE EXAMINATION.

Branch XIII — Bio Chemistry

ENZYMES, INTERMEDIATE METABOLISM AND
NUTRITION

Common to

Paper II — (Old/New/Revised Regulations)
(Candidates admitted from 1988-89 onwards)

And

Paper II (For candidates admitted from
2004-2005 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.

Draw suitable diagrams wherever necessary.

I. Essay :

1. Discuss the various mechanisms of regulation of
enzyme activity with suitable examples. (20)

2. Describe the metabolism of aromatic amino acids
and their inborn defects. (15)

3. Enumerate the various oxidative pathways of fatty
acids. (15)

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

(a) Chemiosmotic theory of oxidative
phosphorylation.

(b) Selenium

(c) Lipid peroxidation.

(d) Glycogen storage diseases.

(e) Bile salt synthesis and their function.

(f) Role of folic acid in one carbon metabolism.

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Sub. Code : 2057

M.D. DEGREE EXAMINATION.

Branch XIII — Bio Chemistry

ENZYMES, INTERMEDIATE METABOLISM AND NUTRITION

Common to

Paper II — (Old/New/Revised Regulations)
(Candidates admitted from 1988-89 onwards)

And

Paper II — (For candidates admitted from 2004-2005 onwards)

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes	Theory : 80 marks
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M.C.Q. : Twenty minutes **M.C.Q. : 20 marks**

Answer ALL questions.

I. Essay :

(1) Name the primary, secondary ketone bodies, metabolic pathway, regulation and their utilisation. (20)

(2) Describe the synthesis, degradation and metabolic disorders of glycine. (15)

(3) Oxidoreductases and their mechanism of action with reference to enzymes found in electron transport chain of mitochondria and microsomes. (15)

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

- Hyperammonemias
- Phytonutrients
- Coenzymes of vitamin B₁₂
- Metallo enzymes
- Disorders of β -oxidation
- Glycemic index.

MARCH 2008**[KS 149]****Sub. Code : 2044**

M.D. DEGREE EXAMINATION.

Branch XIII — Bio Chemistry

ENZYMES, INTERMEDIATE METABOLISM AND NUTRITION

(Common to All Regulations)

Q.P. Code: 202044

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

- I. Essay : (2 × 20 = 40)
1. Give an account of the de novo Biosynthesis of Fatty acids.
(20)
 2. Discuss how enzyme activity is regulated. (20)
- II. Write short notes on : (10 × 6 = 60)
1. Uronic Acid pathway.
 2. Coenzymic roles of pantothenic acid.
 3. Heme biosynthesis.
 4. Functions of calcium.
 5. Transdeamination.
 6. Transsulfuration pathway.
 7. Metabolism of galactose and its disorders.
 8. Chemiosmotic hypothesis.
 9. Absorption of Glucose.
 10. Isoenzymes and their applications.
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