

MANIPAL ACADEMY OF HIGHER EDUCATION
FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2018
SUBJECT: BIOCHEMISTRY – PAPER I (ESSAY)

Monday, June 04, 2018

Time: 10:20 – 13:00 Hrs.

Maximum Marks: 80

✍ **Answer ALL the questions.**

1. Describe aerobic glycolysis under the following headings:

- 1A. Reactions
- 1B. Regulation
- 1C. Energetics

(5+3+2 = 10 marks)

2. A 5 month old female infant was admitted to the hospital with vomiting. Her mother also gave history of lethargy and irritability in the baby. Biochemical investigation of the patient revealed markedly high plasma ammonia levels.

- 2A. Name the transport form of ammonia.
- 2B. Discuss the steps of the pathway involved in detoxification of ammonia in brain and liver.
- 2C. What is the normal blood urea level?
- 2D. Name two conditions in which blood urea level is elevated.

(1+7+1+1 = 10 marks)

3A. Mention any four clinical applications of radio isotopes.

3B. What are mucopolysaccharides? Give three examples with one function each.

3C. Mention any four functions of phospholipids.

3D. Write a short note on the significance of HMP shunt pathway.

3E. Discuss the specificity of enzymes.

3F. Name the ketone bodies. How are the ketone bodies utilized? Mention the causes of ketosis.

3G. Mention any four diagnostically important enzymes and indicate their use.

3H. Write a short note on fatty liver.

3I. Discuss the formation of:

- i) Glycine from serine.
- ii) Creatine from glycine.

3J. Classify lipoproteins and mention the function of each of them.

3K. A full term infant was observed to have hypopigmentation of skin and hair.

- i) Name the deficient pigment.
- ii) Name the amino acid from which the pigment is synthesized.
- iii) Name the enzyme responsible for the defect.
- iv) Write the biochemical reaction catalysed by the enzyme.

3L. Discuss chemiosmotic theory.

3M. What are the functions of albumin?

3N. Indicate the defect in following disorders:

- i) Tangier's disease.
- ii) Refsum's disease.
- iii) Maple syrup urine disease.
- iv) Alkaptonuria.

3O. Give reasons:

- i) Elevation of plasma cholesterol levels is observed in nephrotic syndrome.
- ii) Blood is collected in fluoride vacutainers for estimation of blood glucose.
- iii) Ethanol can be used to treat methanol poisoning.
- iv) Asparaginase can be used in treatment of leukemia.

(4 marks × 15 = 60 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2018
SUBJECT: BIOCHEMISTRY– PAPER II (ESSAY)

Tuesday, June 05, 2018

Time: 10:20 – 13:00 Hrs.

Maximum Marks: 80

Answer ALL the questions.

1. Describe the process of translation with the help of diagrams. Add a note on post translational modifications. Mention the inhibitors of translation.

(6+3+1 = 10 marks)

2. The biochemical investigations in an adult patient with jaundice are as follows.

Total bilirubin-18 mg/dl, Direct bilirubin- 14 mg/dl, AST- 68U/L, ALT-80 U/L, ALP-450U/L

2A. Indicate the type of jaundice.

2B. List the causes in this type of jaundice.

2C. How is bilirubin formed, transported and excreted?

2D. Discuss van den Bergh's test.

(1+2+5+2 = 10 marks)

3A. Name the blood buffers. Mention the constituents of the most significant blood buffer. Justify its significance.

(4 marks)

3B. Outline the major steps involved in recombinant DNA technique.

(4 marks)

3C. **Write short note on:**

i) Gout

ii) Henderson Hasselbalch equation

(2+2 = 4 marks)

3D. Indicate the biochemical defect in the following:

i) SCID

ii) Dubin Johnson syndrome

iii) Xeroderma pigmentosum

iv) Sickle cell anemia

(4 marks)

3E. Discuss briefly the steps and applications of PCR.

(3+1 = 4 marks)

3F. Describe the action of calcitriol.

(4 marks)

3G. Indicate the normal values and clinical significance of:

- i) Serum calcium
- ii) Serum potassium

(2+2 = 4 marks)

3H. Explain the biochemical basis for the following:

- i) Aminopterin is used in cancer treatment.
- ii) Pyridoxine deficiency leads to microcytic hypochromic anemia
- iii) Puromycin cannot be used as antibiotic in humans.
- iv) Anion gap is increased in patients with diabetic ketoacidosis.

(4 marks)

3I. A 4 year old boy presented with diarrhoea and dermatitis to pediatric OPD. Child was lethargic and showed edema of face and pot belly. His serum albumin level was 1.8g/dl.

- i) Identify the nutritional disorder.
- ii) Give reasons for the oedema formation.
- iii) What is the dietary supplementation required for this disorder?

(1+2+1 = 4 marks)

3J. i) How are the following compounds detoxified in the body?

- a) Benzoic acid
- b) Atropine

ii) Serum creatinine is a better parameter than urea in assessing renal function. Explain.

(2+2 = 4 marks)

3K. Write briefly on tumour markers.

(4 marks)

3L. Mention the coenzyme forms of the following, and give an example of a reaction where they are requisites.

- i) Riboflavin
- ii) Pantothenic acid

(2 +2 = 4 marks)

3M. **Write briefly on:**

- i) Dietary fibre
- ii) SDA

(2 +2 = 4 marks)

3N. Write the deficiency manifestations of:

- i) Vitamin E
- ii) Vitamin K

(2 +2 = 4 marks)

3O. Discuss the absorption, transport and storage of iron.

(4 marks)

