

The West Bengal University of Health Sciences
B.Sc. in Medical Microbiology 2nd Semester December, 2022
Examination

Subject : Metabolism

Time : 2 hrs.

Full Marks : 50

Attempt all questions



1. Answer the following questions : 10 x 1
 - a) Identify the simple lipid from the following.
 - i) Lecithin. ii) Fatty acid. iii) Triacylglycerol. iv) Steroids.
 - b) Which of the following lipid is mostly present in mitochondrial membranes?
 - i) Lecithin. ii) Cephalin. iii) Cardiolipin. iv) Ceramide.
 - c) What is the net gain of ATP during the conversion of glucose to pyruvate?
 - i) 2 ATP. ii) 4 ATP. iii) 6 ATP. iv) 1 ATP + 1GTP.
 - d) Which of the following is not the precursor of a purine ring?
 - i) Glutamine. ii) Lysine. iii) Glycine. iv) Aspartate.
 - e) What is the final product of purine degradation in mammals?
 - i) Guanine. ii) Inosine. iii) Uric acid. iv) Hypoxanthine.
 - f) Which of the following disorder is caused due to the high serum level of urate?
 - i) Gout. ii) Galectosemia. iii) Cystic fibrosis. iv) Maple syrup urine disease
 - g) Transamination reaction in amino acid synthesis is catalysed by enzyme _____ :
 - i) Nitric oxide synthase. ii) Decarboxylase.
 - iii) Aminotransferase. iv) Glutamate decarboxylase.
 - h) Name the type of cell in which synthesis of urea cycle takes place :
 - i) Pancreatic cell. ii) Hepatocyte. iii) Bowman's gland cell. iv) Urinary epithelium cell.
 - i) What is the precursor of fatty acid synthesis?
 - i) Acetyl Co-A. ii) Propionyl Co-A. iii) Succinyl Co-A. iv) Acetoacetyl Co-A.
 - j) The conversion of the acetyl Co-A to malonyl Co-A is the rate limiting step in fatty acid synthesis. Which of the following enzyme catalyse the above mentioned reaction?
 - i) Acetyl Co-A carboxylase. ii) Malonyl Co-A synthetase.
 - iii) Acetyl Co-A decarboxylase. iv) Malonyl Co-A synthase.

2. Answer **any four** of the following questions : 4 x 2
 - a) Name the enzymes catalysing the reactions of urea cycle in the cytosol.
 - b) Explain the decarboxylation of histidine.
 - c) What is hypo ammonia effect?
 - d) Write a substrate level phosphorylation reaction in TCA cycle.
 - e) What is gout? Mention its features.
 - f) Give the sources of atoms for pyrimidine ring synthesis and purine ring synthesis.

3. Answer **any four** of the following questions : 4 x 4
 - a) What is substrate level phosphorylation? Write two reactions of substrate level phosphorylation in glycolytic pathway.
 - b) What is HMP pathway? How does HMP pathway differ from EMP pathway?
 - c) Explain the auto regulation of blood sugar level.
 - d) Give the significance of Fatty acid synthesis complex. How are fatty acids activated?
 - e) What is C4 pathway? Give the significance of C-4 pathway.
 - f) Mention the differences between cyclic and non-cyclic photophosphorylation.

4. Answer **any two** of the following questions : 2 x 8
 - a) How are the following amino acids synthesized?
 - i) Glycine. ii) Serine. iii) Alanine. iv) Aspartate.
 Explain the disorders of amino acid metabolism.
 - b) How NADPH is produced in photosystem I? Differentiate the light and dark reactions of photosynthesis.
 - c) What are the sources of nitrogen and carbon atoms of purine and pyrimidine rings? How is XMP synthesized from ribose-5-phosphate?