MCQs in Carbohydrate Metabolism

1. Which mammalian cell does not have aerobic pathway of glucose catabolism?
   (a) Nerve cell  (b) Sperm cell
   (c) Ovum        (d) Red cell

2. In aerobic glycolysis, glucose is first broken down to pyruvate and then to CO₂ and H₂O in the Kreb's cycle; but in anaerobic glycolysis it does not stop at pyruvate but forms lactate. Why?
   (a) Because pyruvate is toxic in larger concentration.
   (b) Because pyruvate can form amino acid animation.
   (c) Because pyruvate can form glucose back.
   (d) Because this allows the regeneration of NAD from NADH₂ which is formed in earlier step of glycolysis thus assuring continuation glycolysis.

3. Which of the following step is not involved in substrate level phosphorylation?
   (a) Dihydroxyacetone phosphate → Glyceraldehyde- 3-phosphate.
   (b) 1,3- diphosphoglycerate → 3-phosphoglycerate.
   (c) Succinyl CoA → Succinate.
   (d) Phosphoenol pyruvate → pyruvate.

4. How many ATP molecules are produced in the citric acid cycle itself?
   (a) One          (b) Two
   (c) Twelve       (d) Fifteen

5. CO₂ is not produced in the reaction catalysed by the enzyme __________ .
   (a) Pyruvate dehydrogenase
   (b) Succinate dehydrogenase
   (c) Isocitrate dehydrogenase
   (d) α- ketoglutarate dehydrogenase.

6. What is the main aim of citric acid cycle?
   (a) To produce energy from carbohydrates.
(b) To provide keto acids for synthesis of amino acids.
(c) To completely oxidise acetyl CoA to CO$_2$ and H$_2$O with complete release of energy.
(d) To synthesize acids to maintain pH.

7. Which of the following statements is not true of HMP shunt pathway?
   (a) CO$_2$ is not produced in it.
   (b) NADPH is produced.
   (c) Pentoses are produced.
   (d) Does not produce ATP.

8. The _______ utilize fructose but not glucose.
   (a) Ovum
   (b) Spermatozoa
   (c) Adipose tissue
   (d) Mammary gland.

9. Neoglucogenesis occurs predominantly from the following compounds except _______ .
   (a) Lactate  (b) Fatty acids
   (c) Glycerol  (d) Amino acids

10. The uronic acid pathway is unique as it provides _______ to man.
    (a) Ascorbic acid (b) Xylulose
    (c) Glucuronic acid (d) All of these.

11. The _______ hormone does not stimulate hepatic glycogenolysis.
    (a) Thyroxine (b) Adrenaline
    (c) Glucagon (d) Cortisol

12. Suggest a test to distinguish a case of renal glycosuria from diabetic glycosuria.
    (a) Bendict's test (b) Blood sugar
    (c) Urine sugar (d) GTT.
13. NADPH serves to regenerate _______ in red cells to prevent their lysis.
   (a) Cholesterol (b) Glutathione
   (c) NADP (d) Cysteine

14. The G-6-PD deficiency causes hemolytic anemia due to lack of _______.
   (a) NADPH (b) NADP
   (c) Pentoses (d) Cholesterol.

15. How many ATP molecules are produced on complete oxidation of acetyl CoA in the citric acid cycle?
   (a) Six (b) Nine
   (b) Twelve (d) Fifteen.

16. Which acid acts as a carrier molecule in citric acid cycle?
   (a) Citric acid (b) Oxaloacetic acid
   (c) Succinic acid (d) Isocitric acid.

17. Which of the following compound is not a substrate for gluconeogenesis pathway?
   (a) Glycerol (b) Lactate
   (c) Oxaloacetate (d) Glycogen

18. Which of the following enzyme is not involved in gluconeogenesis?
   (a) Pyruvate carboxylase (b) Phosphoenol pyruvate
   (c) Carboxykinase (d) Hexokinase.

19. The most important initial source of blood glucose during fasting is _________.
   (a) Muscle glycogen (b) Muscle protein
   (c) Liver Triglyceride (d) Liver glycogen
20. The major fate of glucose-6-phosphate in tissues in a well-fed state is ________.
   (a) Hydrolysis of glucose
   (b) Conversion to glycogen
   (c) Isomerisation to fructose-6-phosphate
   (d) Conversion to ribulose-5-phosphate

21. The major fuel for the brain after prolonged starvation is ________.
   (a) Glucose  (b) Fatty acids
   (c) Ketone bodies  (d) Glycerol

22. The monosaccharide most rapidly absorbed from the intestine is ________.
   (a) Glucose  (b) Fructose
   (c) Mannose  (d) Galactose

23. Which of the following is not a polymer of glucose?
   (a) Glycogen  (b) Cellulose
   (c) Amylose  (d) Inulin

24. Lactose intolerance is due to-
   (a) ADH deficiency
   (b) Deficiency of bile
   (c) Lactase deficiency
   (d) Malabsorption syndrome

25. In contrast to liver, muscle glycogen does not contribute directly to blood glucose level because:
   (a) Muscles lack glucose-6-phosphatase
   (b) Muscles contain no glucokinase
   (c) Muscles lack glycogen
   (d) Muscles contain no glycogen phosphorylase

26. Which of the following statement is true regarding the α-amylase?
   (a) Breaks glucose from one end of the carbohydrate
(b) Cleaves only $\alpha$-1,4 linkages
(c) Cleaves only $\alpha$-1,6 linkages
(d) All of the above.