Karanjia Auto College, Karanjia, Mayurbhanj,

CC-10

BIOCHEMISTRY & METABOLIC PROCESS

Section A

Each question carries one mark

Fill in the blanks

1. Citrate is converted to isocitrate by aconitase which contains ____.
2. In EM pathway 2-phosphoglycerate is converted to ____.
3. The conversion of alanine to glucose is termed as ____.
4. Under anaerobic conditions the glycolysis one mole of glucose yields ___ moles of ATP.
5. During glycolysis, Fructose 1, 6 diphosphate is decomposed by the enzyme __.
6. The number of molecules of ATP produced by the total oxidation of acetyl CoA in TCA cycle is __.
7. One molecule of glucose gives _____ molecules of CO_2 in EM-TCA cycle.
8. One molecule of glucose gives _____ molecules of CO_2 in one round of HMP shunt.
9. Fluoride inhibits _____ and arrests glycolysis.
10. __is also called as Christmas factor.
11. When O_2 supply is inadequate, pyruvateis converted to __.
12. Pyruvate kinase requires _____ ions for maximum activity.
13. Synthesis of Glucose from amino acids is termed as____.
14. Dinitrophenol acts as ____ of oxidative phosphorylation.
15. A lipoprotein associated with high incidence of coronary atherosclerosis is____.
16. The main site of urea synthesis in mammals is____.
17. The number of ATP required for urea synthesis is____.
18. The enzyme carbamoyl phosphate synthetase requires____ ion.
19. The 2 nitrogen atoms in urea are contributed by____ and ____.
20. Pulses are deficient in____ amino acid.
21. Ammonia is transported from muscles to liver mainly in the form of____.
22. Pyruvic acid can be obtained by transamination of alanine with____
23. The metabolism of protein is integrated with that of carbohydrate and fat through__.
24. The unwanted amino acids abstracted from the tissues are either used up by the tissue or in the liver converted into____.
25. In human and other ureotelic organisms, the end product of amino acid nitrogen metabolism____.

26. The end product of amino acid nitrogen metabolism in uricotelic organisms (reptiles and birds) is____.
27. One mol. of Urea is synthesized at the expense of the ____ mols. of ATP.
28. Deterioration of food (rancidity) is due to presence of _____.
29. Unpleasant odours and taste in a fat (rancidity) can be delayed or prevented by the addition of _____.
30. Triglycerides are transported from liver to extrahepatic tissues by _____.
31. Cholesterol is transported from liver to extrahepatic tissues by _____.
32. Net generation of energy on complete oxidation of palmitic acid is _____.
33. Free fatty acids released from adipose tissue are transported in blood by ___.
34. Amount of urea excreted per minute is called as _____.
35. The precursor for the synthesis of bile salts is _____.
36. Standard free energy ($\Delta G°$) of hydrolysis of ATP to ADP + Pi is _____.
37. Standard free energy ($\Delta G°$) of hydrolysis of ADP to AMP + Pi is ____.
38. Redox potential (EO volts) of NAD+/NADH is ___.
39. A molybdenum containing oxidase is ___.
40. A copper containing oxidase is _____.
41. Chemiosmotic theory for oxidative phosphorylation has been proposed by ___.
42. In human Glycerol phosphate shuttle is present in ____ fat.

Section- B

Each question carries 1.5 mark (to be answered within 30 words)

Give the location and function of the following:

1. Vitro dentinae
2. F_0-F_1 particle
3. CoQ
4. Complex II of ETC
5. Hexokinase
6. Cytochrome oxidase
7. Aconitase
8. Glycerol phosphate shuttle
9. Malate shuttle

Define in one to two lines:

1. Anabolism
2. Catabolism
3. ATP
4. ETC
5. Chemiosmosis
6. Proton motive force
7. Gluconeogenesis
8. Glycogenesis
9. Glycogenolysis
10. Glucogenic amino acids
11. Ketogenic amino acids

12. Glycerol phosphate shuttle
13. Malate shuttle
14. Importance of oxaloacetate

Section- C

Each question carries 2.5 mark (to be answered within 75 words)

Give reason for:

1. Babies can resist cold more effectively than adults.
2. ATP acts as 'energy currency of cell'.
3. Living beings need constant supply of energy for survival
4. Cyanide and CO are poisonous chemicals.

Calculate

1. Calculate end systolic volume if cardiac output is 5.0 L/min, heart rate is 75 beats/min and end diastolic volume is 145 ml/min.
2. Calculate the stroke volume and then find the cardiac output if end systolic volume is 60 ml, heart rate is 72 beats/min and end diastolic volume is 130 ml/min.

Write short notes

1. Coupled reactions
2. Shuttle system
3. Intermediary metabolism
4. Ketogenesis
5. Redox system
6. Glucogenic amino acids
7. Glycogenelysis
8. Glycerol phosphate shuttle
9. Malate shuttle
10. Importance of oxaloacetate

Differentiate between the following

1. Catabolism and anabolism
2. Anaerobic respiration and Fermentation
3. Glycogenesis and glycogenolysis
4. Glycogenesis and Gluconeogenesis
5. β-oxidation and ω-oxidation of fatty acids
6. Transamination and Deamination of amino acids
7. Inhibitors and un-couplers of ETC
8. Glucogenic and Ketogenic amino acids

Section- D

Each question carries 6 mark (to be answered within 500 words)

1. Describe the metabolic fates of acetyl CoA in the body: How is acetyl CoA completely oxidized?
2. Define cellular respiration and give an account of mechanism of Kreb's cycle.
3. Define cellular respiration and give an account of mechanism of Glycolysis and its regulation.
4. Write a note on HMP pathway.
5. Write a note on gluconeogenesis. Briefly explain its regulation.
6. Write a note on the process of glycogenesis. Add anote on its regulation y epinephrine and calcium ions.
7. Write note on ETC.
8. What is oxidative phosphorylation? Add note on chemiosmotic theory.