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Ph.D. ENTRANCE EXAMINATION - 2020

Subject : Biochemistry
Date : 06.01.2020
Max Marks: 60

Duration: 01:30 Hrs.
Place : Dehradun

Student Name:

Invigilator Name:

Signature:

Signature:

1. **Two Vitamin whose derivatives are involved in transformation of serine to glycine are:**
a. B_6 ad B_{12}
b. B_{12} and nicotinamie
c. Folic acid and B_6
d. Folic acid and B_{12}

2. **Which vitamin is synthesized by intestinal bacteria?**
a. Vit B
b. Vit A
c. Vit D
d. Vit K

3. **Which vitamin is related to a co-factor in glycine metabolism is:**
a. Vit E
b. Folic acid
c. Thiamine
d. Cobalamine

4. **Biological activity of tocopherols has been attributed, in part to their actions as:**
a. Antioxidant
b. Anticoagulants
c. Provitamin
d. Antidotes for selenium poisoning

5. **Vitamin C is present in largest amount in the body in:**
a. Eye
b. Kidneys
c. Testes
d. Adrenal cortex

6. **The following vitamin is important in non-oxidative decarboxylation, transamination and transsulfuration reactions:**
a. Riboflavin
b. Thiamine
c. Pyridoxine
d. Pantothenic acid

7. **Most of vitamin B_{12} in the body is stored as:**
a. Methyl B_{12}
b. Hydroxy B_{12}
c. Cyano cobalamine
d. None of the above

8. **Beri-beri is caused due to the deficiency of:**
a. Thiamine
b. Pyridoxine
c. Ascorbic acid
d. Riboflavin

9. **Which of the following is not true of Vit D?**
a. Its active form is calcitriol
b. Increase calcium absorption from the intestines
c. Its deficiency results in rickets
d. Its decrease cause phosphate reabsorption from the kidneys

10. The action of vitamin K in formation of clotting factor is through:
a. Post transcription
b. Post translation
c. Golgi complex
d. Endoplasmic reticulum

11. Specific disease caused by vitamin B_1 deficiency
a. Pellagra
b. Angular cheilitis
c. Megaloblastic anemia
d. Peripheral polyneuritis

12. Deficiency of vitamin A causes the following except:
a. Night blindness
b. Corneal dryness
c. Bitot's spots
d. Myopia

13. Active form of vitamin D in kidney is:
a. 1 dihydroxy cholecalciferol
b. 25 hydroxy cholecalciferol
c. 1,25 dihydroxy cholecalciferol
d. 7 dihydroxy calciferol

14. Tertiary structure of protein is maintained by all except:
a. H_2 bond
b. Hydrophobic
c. Ionic bond
d. None of the above

15. Which of the following is a derived a derived protein:
a. Protamines
b. Peptones
c. Prolamines
d. Lactalbumin

16. Quaternary structure of protein is:
a. The arrangement sequence of amino acids in the polypeptide chain
b. Inter relation between amino acids in a single polypeptide chain
c. Inter relation of amino acids in 2 polypeptide chains
d. The inter relation and arrangement of polypeptides in a protein with more than 2 polypeptide chains

17. Indole ring is present in:
a. Tryptophan
b. Valine
c. Methionine
d. Histidine

18. The following is false about tryptophan:
a. Non essential amino acid
b. Involved in serotonin synthesis
c. Involved in niacin synthesis
d. Involved in melatonin in synthesis

19. Non essential amino acids are not:
a. Used by the body
b. Forming part of the proteins
c. Required in the diet
d. Absorbed in the intestines

20. The major fuel for the brain after several weeds of starvation:
a. Glucose
b. Fatty acid
c. Beta hydroxy butyrate
d. Glycerol

21. One of the following is nonessential amino acid:
a. Tyrosine
b. Valine
c. Methionine
d. Cystine

22. The process by which a base sequence of messenger RNA is synthesized (by a RNA polymerase) on a template of complementary DNA is called:
a. Transcription
b. Transduction
c. Translation
d. Translocation

23. Hydroxylation of proline require the following except:
a. Fe^{+2}
b. O_2
c. Ascorbic acid
d. Succinate

24. The process of transfer of information from the RNA to the proteins is called:
a. Mutation
b. Translation
c. Transcription
d. Conjugation

25. The amino acid, which is used is the estimation of collagen is:
a. Hydroxyproline
b. Proline
c. Lysine
d. Glycine

26. Which of the following is present in the plasma but absent in the serum?
a. Albumin
b. Globulin
c. Lecithin
d. Firbinogen

27. Synthesis of protein occurs on:
a. Mitochondria
b. Poly ribosomes
c. Nucleus
d. Golgi bodies

28. Which of the following amino acids is quickly converted to tyrosine?
a. Arginine
b. Glycinec
c. Phenylalanine
d. Leucine

29. Alkaptonuria, an inherited metabolic disorder of L0tyrosine metabolism is due to lack of:
a. Parahydroxy phenyl pyruvate Hydroxylase
b. Tyrosine transaminase
c. Homogentisate oxidase
d. Tyrosine oxidase

30. During phagocytosis, the metabolic process called respiratory burst involves the activation of:
a. Oxidase
b. Hydrolase
c. Peroxidase
d. Dehydrogenase

31. Heme is converted to bilirubin mainly in:
a. Kidney
b. Liver
c. Spleen
d. Bone marrow

32. Fatty acid oxidation occurs in:
a. Cytoplasm
b. Microsomes
c. Mitochondria
d. All of the above

33. Which of the following fatty acids are not syntehsised in human body:
a. Oleic, linoleic and linolenic acid
b. Arachidonic, linolenic and linoleic acid
c. Palmitic Oleic and arachidonic
d. Linoleic, arachidonic and stearic acid

34. A fatty acid that is not synthesized in man is:
a. Linoleic acid
b. Oleic acid
c. Palmitic acid
d. Stearic acid

35. The lipoprotein particles that have the highest percentage concentration of cholesterol is:
a. Chylomicron
b. VLDL (Very low density lipoprotein)
c. LDL (Low density lipoprotein)
d. HDL (High density lipoprotein)

36. Fat provides ___% of body's calories
a. 40%
b. 30%
c. 50%
d. 75%

37. The major lipids that make up the cell membrane are:
a. Triglycerides
b. Phospholipids
c. Sphingomyelins
d. Fatty acids

38. The following is not a phospholipid:
a. Sphingomyelin
b. Lecithin
c. Cerebroside
d. Cephalin

39. Which of the following is a phospholipid:
a. Glycogen
b. Sphingomyelin
c. Prostaglandin
d. Oleic acid

40. In Niemann-Pick's disease the following substrance accumulate in CNS in excess:
a. Glycerophosphatides
b. Phosphoinositides
c. Phosphosphingosides
d. Glycerosphingosides

41. The lipid, which acumulates in fatty liver, is:
a. Triglycerides
b. FFA
c. Lipoprotein
d. Cholesterol

42. The product of oxidation of odd chainfatty acids is:
a. Aceto acetyl CoA
b. Malonyl CoA
c. Propionyl CoA
d. Fumaryl CoA

43. The ketone bodies, which are excreted in diabetic ketoacidosis?
a. Acetoacetic acid and pyruvic acid
b. Acetoacetic acid and oxalocacetic acid
c. Acetoacetic acid and alpha ketoglutaric acid
d. Acetoacetic acid and beta hydroxyl butyric acid

44. The precursor of cholesterol synthesis is:
a. Acetic acid
b. Acetyl CoA
c. Oxalo acetic acid
d. Pyruvate

45. Which is not seen in HMG CoA pathway?
a. Pyruvate
b. Cholesterol
c. Mevalonate
d. Acetyl CoA

46. Lipid from tissue is carried to liver by:
a. LDL
b. VLDL
c. HDL
d. Chylomicrons

47. Detoxification of drugs is controlled by:
a. Cytochrome
b. Cytochrome P450
c. Cytochrome C
d. Cytochrome A

48. In Cytochrome p450, P stands for:
a. Structural proteins
b. Substrate protiens
c. Pigment
d. Polyme

49. Detoxification or protective synthesis occurs by:
a. Oxidation
b. Reduction
c. Conjugation
d. Any of the above

50. Which of the following about biological membrane is true?
a. Lipid moiety is amphipathic
b. Rigid assembly of protein, lipid and carbohydrate
c. Symmertrical bi leaflet structures
d. Lipid and protein moiety are held by covalent interactions

51. The major driving force for formation of membrane lipid bilayer is:
a. Hydrogen bonding
b. Hydrophobic interactions
c. Vander wall forces
d. Not known

52. Normal blood PH is:
a. 6.8 - 7.0
b. 7.0 - 7.12
c. 7.38 - 7.4
d. 7.7 - 8.0

53. The most important buffer in RBC is:
a. O_2 Hb +Na hemoglobinate
b. O_2Hb +K hemoglobinate
c. H_2CO_3 + $KHCO_3$
d. H_2CO_3 +$NAHCO_3$

54. To keep blood PH at 7.4 the HCO_3 : H_2CO_3 ratio should be:

a. 20 : 1
b. 30 : 1
c. 15 : 1
d. 1 : 1

55. In ECF main electrolyte is:

a. Na+
b. K+
c. Cl
d. Proteins

56. Most importent compansatory mechanism in metabolic acidosis:

a. Hyperventilation
b. Increased NH3 excretion by kidneys
c. Increased urinary phosphates
d. Increased HCO3 Production

57. The main function of mitochondria is:

a. Protein synthesis
b. Oxidation
c. Electron transfer
d. Fat synthesis

58. Which cell organelle contains DNA

a. Mitochondrion
b. Golgi body
c. Endoplasmic reticulum
d. Centriole

59. Cell membrane consists of:

a. Lipids and proteins
b. Lipids only
c. Protein only
d. None of the above

60. Golgi bodies function are:

a. Protein lipid synthesis
b. Protein synthesis
c. Sorting of glycoproteins
d. None of the above

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