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FOR KUET EXAM PREPARATION

KUET 2022 Question Paper · M.Sc. Clinical Biochemistry

EXAM	YEAR	TYPE	SUBJECT
KUET	2022	Question Paper	M.Sc. Clinical Biochemistry

Sr. No. 049

ENTRANCE TEST-2022

SCHOOL OF BIOLOGICAL SCIENCES

CLINICAL BIOCHEMISTRY

Question Booklet Series A

Total Questions : 60
Time Allowed : 70 Minutes

Roll No. : | | | | | | |

Instructions for Candidates :

1. Write your Entrance Test Roll Number in the space provided at the top of this page of Question Booklet and fill up the necessary information in the spaces provided on the OMR Answer Sheet.
2. OMR Answer Sheet has an Original Copy and a Candidate's Copy glued beneath it at the top. While making entries in the Original Copy, candidate should ensure that the two copies are aligned properly so that the entries made in the Original Copy against each item are exactly copied in the Candidate's Copy.
3. All entries in the OMR Answer Sheet, including answers to questions, are to be recorded in the Original Copy only.
4. Choose the correct / most appropriate response for each question among the options A, B, C and D and darken the circle of the appropriate response completely. The incomplete darkened circle is not correctly read by the OMR Scanner and no complaint to this effect shall be entertained.
5. Use only blue/black ball point pen to darken the circle of correct/most appropriate response. In no case gel/ink pen or pencil should be used.
6. Do not darken more than one circle of options for any question. A question with more than one darkened response shall be considered wrong.
7. There will be **'Negative Marking'** for wrong answers. Each wrong answer will lead to the deduction of 0.25 marks from the total score of the candidate.
8. Only those candidates who would obtain positive score in Entrance Test Examination shall be eligible for admission.
9. Do not make any stray mark on the OMR sheet.
10. Calculators and mobiles shall not be permitted inside the examination hall.
11. Rough work, if any, should be done on the blank sheets provided with the question booklet.
12. OMR Answer Sheet must be handled carefully and it should not be folded or mutilated in which case it will not be evaluated.
13. Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/ herself.
14. At the end of the examination, hand over the OMR Answer Sheet to the invigilator who will first tear off the original OMR sheet in presence of the Candidate and hand over the Candidate's Copy to the candidate.

SEAL

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1. Which of the following compound contains both ionic and covalent bonds ?
   (A) Methane
   (B) Hydrogen
   (C) Potassium cyanide
   (D) Potassium chloride
2. The substance that can act as both oxidizing as well as reducing agent is :
   (A) $NaNO_3$
   (B) $NaNO_2$
   (C) $Na_2S_2O_3$
   (D) Na_2O_2
3. Which one of the following interactions is the weak and non-specific attractive force ?
   (A) Ionic interactions
   (B) Hydrophobic interactions
   (C) Covalent interactions
   (D) van der Waals interactions
4. The amino acid that has the largest number of rotatable bonds in side chain is :
   (A) Tyrosine
   (B) Proline
   (C) Histidine
   (D) Lysine
5. Which of the following are called non-sugars ?
   (A) Polysaccharides
   (B) Disaccharides
   (C) Monosaccharides
   (D) Oligosaccharides
6. The carboxyl group of each fatty acid is joined to glycerol through a :
   (A) Hydrogen bond
   (B) Covalent bond
   (C) Ionic bond
   (D) van der Waals interactions
7. The deficiency of vitamins that are responsible for causing scurvy and pellagra are :
   (A) Ascorbic acid and Riboflavin
   (B) Ascorbic acid and Thiamine
   (C) Ascorbic acid and Niacin
   (D) Pantothenic acid and Niacin
8. The complete biologically active conjugated enzyme is called :
   (A) Holoenzyme
   (B) Coenzyme
   (C) Simple enzyme
   (D) Apoenzyme
9. Enzymes are sensitive to pH. This pH dependence is due to :
   (A) The structure of the active site
   (B) The structure of the enzyme
   (C) Presence of the charged amino acids at the active site
   (D) Shape and size of the enzyme
10. The inhibitor that binds only to the enzyme substrate complex is called :
    (A) Competitive inhibitor
    (B) Non-Competitive inhibitor
    (C) Un-Competitive inhibitor
    (D) None of the above
11. Number of CO_2 and NADH molecules released during the Krebs cycle is :
    (A) 3 CO_2 and 2 NADH
    (B) 2 CO_2 and 3 NADH
    (C) 1 CO_2 and 2 NADH
    (D) 1 CO_2 and 3 NADH

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12. Hemolytic anemia is caused by the deficiency of which of the following enzymes ?
    (A) Glucose-6-phosphate dehydrogenase
    (B) 6-phosphogluconate dehydrogenase
    (C) α-ketoglutarate dehydrogenase
    (D) Succinate dehydrogenase

13. β-oxidation of palmitic acid (16 carbons) is
    Palmitoyl COA + 7COA + 7FAD + 7NAD + $7H_2O \rightarrow$
    For the oxidation of this 16-carbon atom fatty acid, the complete reaction is :
    (A) 6 acetyl COA + $7FADH_2$ + 7NADH + $7H_2O$
    (B) 8 acetyl COA + $7FADH_2$ + 8NADH + $8H_2O$
    (C) 8 acetyl COA + $7FADH_2$ + 7NADH
    (D) 8 acetyl COA + $7FADH_2$ + 7NADH + $6H_2O$

14. The enzyme that is deficient in children having Lesch-Nyhan Syndrome is :
    (A) Hypoxanthine-guanine phosphoribosyl-transferase
    (B) Adenine phosphoribosyl transferase
    (C) Purine nucleoside phosphorylase
    (D) Ribonucleotide reductase

15. The modern cell theory includes :
    (A) That the cell is the structural and functional unit of life
    (B) That all cells arise from the pre-existing cells
    (C) Energy flow occurs within cells and all the known living things are made up of one or more cells
    (D) All of the above

16. Which one of the following glucose transporters is present on the erythrocyte membrane ?
    (A) GLUT-1
    (B) GLUT-2
    (C) GLUT-3
    (D) GLUT-5

17. The signal sequence of the protein is cleaved by a signal peptidase in which of the following cell organelles ?
    (A) Golgi apparatus
    (B) Cytosol
    (C) Endoplasm Reticulum lumen
    (D) Mitochondria

18. The stage at which the kinetochore spindle fibers pull the two kinetochores towards the opposite poles is
    (A) Metaphase
    (B) Prophase
    (C) Telophase
    (D) Anaphase

19. The major features of B-form of DNA are :
    (A) The two long polynucleotide stands are coiled around a central axis
    (B) Both the strands are wrapped in a right handed helix
    (C) The strands are antiparallel
    (D) None of the above

20. The enzyme that is primarily utilized for DNA repairing and filling of gaps during replication and repair process is :
    (A) DNA polymerase I
    (B) DNA polymerase II
    (C) DNA polymerase III
    (D) All of the above

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21. In bacterial promoter, the -10 and -35 regions has a consensus sequence of :
(A) TTTAC, TTGATA
(B) TTCCAA, TTCGAA
(C) TATAAT, TTGACA
(D) TTGGCA, CCGGCG

22. The Shine Dalgarno sequence is complementary to a region at the 3′ end of :
(A) 28SrRNA
(B) 16SrRNA
(C) 23SrRNA
(D) 5SrRNA

23. The characteristic features of prokaryotic organisms are :
(A) The true membrane bound nucleus is absent
(B) DNA complexed with histones is absent
(C) Mitosis and meiosis absent
(D) All of the above

24. Peptidoglycan is a polymer containing two sugar derivates N-acetylglucosamine and N-acetylmuramic acid that are joined through :
(A) α-1,4 glycosidic bond
(B) β-1,4 glycosidic bond
(C) β-1,6 glycosidic bond
(D) α-1,6 glycosidic bond

25. The nature of nucleic acid in coronavirus is :
(A) dsDNA
(B) dsRNA
(C) ssRNA
(D) ssDNA

26. Puromycin an antibiotic inhibits protein synthesis by binding to :
(A) A site of ribosome
(B) P site of ribosome
(C) E site of ribosome
(D) None of the above

27. The term antibodies was given by
(A) Ehrlich and Metchnikoff
(B) Karl Landsteiner
(C) Emil Von Behring
(D) Louis Pasteur

28. Choose the correct match of the following antibodies :

a.	IgA	1.	Basophils
b.	IgE	2.	Heavy chain
c.	IgG	3.	Secretory component
d.	IgM	4.	Pentamer
		5.	Crosses placenta

(A) a-5, b-4, c-3, d-1
(B) a-3, b-1, c-5, d-4
(C) a-2, b-3, c-5, d-1
(D) a-5, b-4, c-1, d-2

29. Exogenous antigens bind to which class of MHC molecules :
(A) MHC-1
(B) MHC-II
(C) MHC-I
(D) All of the above

30. A patient with a disease produces autoantibodies against the acetylcholine receptors present on the motor end plates of muscles is having :
(A) Graves' Disease
(B) Systemic Lupus Erythematosus
(C) Multiple Sclerosis
(D) Myasthenia Gravis

31. Mendal chose the garden pea for his experiments because :
    (A) Garden pea is easy to cultivate and short life cycle
    (B) Bisexual flowers and discreated characters
    (C) Self-fertilization and easy hybridization
    (D) All of the above

32. Independent assortment of genes occurs due to the orientation of chromosomes at :
    (A) Metaphase of mitosis
    (B) Metaphase I of meiosis
    (C) Metaphase II of meiosis
    (D) All the phases of the cell division

33. Crossing over takes place in which phase of the prophase I stage of meiosis ?
    (A) Leptotene
    (B) Zygotene
    (C) Pachytene
    (D) Diplotene

34. The nucleotide sequence in the telomeres of vertebrates is :
    (A) CCCTAA
    (B) TTTGTT
    (C) CCCAGG
    (D) TTAGGG

35. The endonuclease which digests ssRNA at the 3′ end of the pyrimidine residues is
    (A) RNase A
    (B) RNase H
    (C) Mung bean nuclease
    (D) Si nuclease

36. Choose the correct match of some pharmaceutical recombinant human proteins expressed in transgenic plants :

P. Tobacco and sunflower plant	1. Serum Albumin
Q. Tobacco and potato plant	2. Growth hormone
R. Rice plant	3. Epidermal growth factor
S. Tobacco plant	4. Alpha-interferon

    (A) P-4, Q-3, R-2, S-1
    (B) P-2, Q-1, R-4, S-3
    (C) P-1, Q- 2, R-3, S-4
    (D) P-3, Q-2, R-4, S-1

37. Potrykus and Beyer developed genetically engineered rice known as golden rice rich in :
    (A) Vitamin D
    (B) Vitamin E
    (C) Vitamin C
    (D) Vitamin A

38. Which of the following techniques are used to transfer DNA into the host cell ?
    1. Electroporation
    2. Transformation
    3. Sonication
    4. Transfection
    (A) 1, 2, 3 and 4 only
    (B) 2, 3 and 4 only
    (C) 1 and 2 only
    (D) 1, 3 and 4 only

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39. The end product of the thylakoid reactions are the high energy compounds in the form of :
(A) ADP and $NADP^+$
(B) ATP and NADPH
(C) ADP and NADPH
(D) ATP and $NADP^+$

40. Photorespiration takes place in which of the three organelles of the plant cell ?
(A) Cytosol, chloroplast, mitochondria
(B) Golgi apparatus, chloroplast, mitochondria
(C) Chloroplast, peroxisomes, mitochondria
(D) None of the above

41. The correct sequence for the linear electron flow in plants is :
(A) PSII, cytochrome b6f complex and PSI
(B) PSI, PSII and cytochrome b6f complex
(C) PSI, cytochrome b6f complex and PSII
(D) Cytochrome b6f complex, PSII and PSI

42. The amino acid methionine is the precursor of which of the following plant hormones ?
(A) Gibberellins
(B) Abscisic acid
(C) Cytokines
(D) Ethylene

43. Sodium dodecyl sulphate is used to separate proteins by PAGE because :
(A) It increases the solubility of proteins
(B) It gives the uniform negative charge to the proteins
(C) Increases stability of proteins
(D) It decreases the surface tension of the buffer used in electrophoresis

44. The three-dimensional images of the surface of the cells and tissue can be visualized by :
(A) Scanning electron microscope
(B) Fluorescence microscope
(C) Compound microscope
(D) Transmission electron microscope

45. The molecular mass of the smallest molecules unable to penetrate the pores of a cell is called :
(A) Void volume
(B) Exclusion limit
(C) Bed volume
(D) Internal volume

46. The forces that effect the biomolecules to sediment at the bottom of the tube is :
(A) Force of buoyancy
(B) Force of friction
(C) Centrifugal force
(D) All of the above

47. Which nephron process is the least selective ?
(A) Reabsorption
(B) Active transport
(C) Salt pumping by the loop of Henle
(D) Filtration

48. Which of the following is not an accurate statement ?
(A) Hormones are chemical messengers that travel to target cells through the circulatory system
(B) Hormones are secreted by specialized cells usually located in endocrine glands
(C) Hormones of the same chemical class usually have the same function
(D) Hormones often regulate homeostasis through antagonistic functions

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49. The primary chemical stimulus for breathing is the concentration of :
(A) Carbon monoxide in the blood
(B) Carbon dioxide in the blood
(C) Oxygen in the blood
(D) Carbonic acid in the blood

50. Which of the following is not a primary activity of the stomach ?
(A) Mechanical digestion
(B) Nutrient absorption
(C) Enzyme secretion
(D) Mucus secretion

51. Thyroid hormone's metabolic role includes :
(A) Decreased oxygen consumption
(B) Increased lipogenesis
(C) Increased Lipolysis
(D) Protein Anabolism

52. Which of the following does not describe a thyroid hormone's metabolic function ?
(A) Glycogenolysis
(B) Gluconeogenesis
(C) Glucose oxidation
(D) Glycogenesis

53. The black colour of urine is caused by the presence of :
(A) Inflammation
(B) Creatinine
(C) Alkaptonuria
(D) Pus cells

54. OGTT test is more sensitive than fasting blood sugar and :
(A) Random blood sugar
(B) Serum protein
(C) Hba1c
(D) Serum protein

55. Which of the following statements is not true?
(A) An antigen can have different epitopes
(B) An antibody has more than one antigen-binding site
(C) A pathogen makes more than one antigen
(D) A lymphocyte has receptors for multiple different antigens

56. Following emigration from blood vessels, leucocyte migration to the site of infection or injury is mediated by :
(A) Prostaglandins
(B) Histamine
(C) Bradykinin
(D) Chemokines

57. Regarding Chronic inflammation, which is correct ?
(A) It is characterised by hyperaemia, oedema, and leukocyte infiltration
(B) Monocytes use the same chemotactic pathways as neutrophils
(C) It is always preceded by acute inflammation
(D) Most frequently results in resolution

58. Which of the following is a sign of inflammation ?
(A) Calor
(B) Dolor
(C) Rubor
(D) All of the above

59. V_{max} decreases and K_m remains constant is an example of :
(A) Competitive inhibition
(B) Uncompetitive inhibition
(C) Non-competitive inhibition
(D) None of the above

60. The molecule which does not exhibit dipole moment is :
(A) NH_3
(B) $CHCl_3$
(C) H_2O
(D) CCl_4