



K21P 0055

Reg. No. :

Name :

Ph.D. Entrance Examination, 2020-21
Part – B : BIOCHEMISTRY

Time : 70 Minutes

Total Marks : 50

SECTION – A

Answer **all** questions :

(20×1=20)

1. Which of the following is false about Klenow fragment ?
 - a) Polymerization activity
 - b) 3' → 5' exonuclease activity
 - c) 5' → 3' exonuclease activity
 - d) 324 – 928 residue of polymerase I
2. The introns are degraded due to
 - a) Specific enzymatic sequence
 - b) Unprotected ends
 - c) Lariat formation
 - d) Endonuclease activity
3. Which of the following bases has the highest pKa value ?
 - a) NaOH
 - b) NaNO_3
 - c) KNO_3
 - d) KCl
4. Oxaloacetate is reduced to malate by
 - a) Pyruvate carboxylase
 - b) Malate dehydrogenase
 - c) Pyruvate kinase
 - d) Phosphofructokinase-I
5. Which of the following enzyme is secreted by the pancreas ?
 - a) Ribonuclease
 - b) Lysozyme
 - c) Cytochrome c
 - d) Myoglobin

P.T.O.



6. In 3° structure of proteins, folding and shaping is done by
 - a) Hydrophobic interactions
 - b) Polar interactions
 - c) Hydrogen bonding
 - d) None of the mentioned
7. Name the vector system used for plant transformation.
 - a) Agrobacterium
 - b) Cosmids
 - c) M13 phage
 - d) Resistance plasmid
8. Name the first transgenic virus resistant plant.
 - a) Rice
 - b) Cotton
 - c) Tobacco
 - d) Tomato
9. Name the multipolar neuron which is located entirely within the central nervous system.
 - a) Motor neuron
 - b) Efferent neuron
 - c) Afferent neuron
 - d) Interneuron
10. A relatively dense layer of band which is found in the thermosphere is known as
 - a) Troposphere
 - b) Mesosphere
 - c) Stratosphere
 - d) Ionosphere
11. Name the group of species which exploit the abiotic and biotic resources in a similar way
 - a) Guild
 - b) Ecads
 - c) Biomes
 - d) Community
12. When milk has been pasteurized successfully, the milk will no longer contain the enzyme
 - a) Polymerase
 - b) Phosphatase
 - c) Peroxidase
 - d) Purinase
13. Nonbiological foreign chemicals are termed
 - a) Probiotics
 - b) Prebiotics
 - c) Xenobiotics
 - d) Neurobiotics



14. Water treatment typically requires three stages to make it potable from sewage. Which is the secondary stage ?
- a) Skimming
 - b) Settling
 - c) Biodegradation
 - d) Filtration
15. Nitrates maintain the red color of preserved meats and
- a) Are among the most widely used preservatives
 - b) Inhibit germination of botulism spores
 - c) Maintain a high osmotic pressure to kill microorganisms
 - d) Prevent mold
16. Which is NOT true about aflatoxins ?
- a) Cause frameshift mutations
 - b) Are carcinogenic
 - c) Are alkaloids
 - d) Fluoresce
17. There is an increased sensitivity to aflatoxins in individuals previously infected with
- a) Hepatitis B
 - b) Measles
 - c) Mumps
 - d) Chickenpox
18. E.coli O157 : H7 is thought to have acquired enterohemorrhagic genes from
- a) Clostridium
 - b) Campylobacter
 - c) Shigella
 - d) Listeria
19. Which type of fermentation is used to produce yogurt ?
- a) Mesophilic
 - b) Thermophilic
 - c) Therapeutic
 - d) Yeast-lactic fermentations
20. Converting a toxin to a toxoid
- a) makes the toxin more immunogenic
 - b) reduces the pharmacologic activity of the toxin
 - c) enhances binding with antitoxin
 - d) increases phagocytosis



SECTION – B

Answer **any six** from the following :

(6×5=30)

1. Write an essay on industrial production of secondary metabolites.
 2. Briefly discuss the molecular tools in phylogenetic analysis.
 3. Write an essay on DNA damage and repair.
 4. Write an essay on oncogenes and cancer.
 5. What are the considerations in vector construction that need to be taken into account with over expression of a protein ?
 6. Discuss the application of PCR in site directed mutagenesis.
 7. Stem cell research has made a noteworthy contribution to the medical field. Evaluate this statement by describing what are stems cells, where they are harvested, their uses and the ethical issues associated with them.
 8. Explain different mechanism of antibiotic resistance in bacteria.
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K19P 0573

Reg. No. :

Name :

Ph.D. Entrance Examination, 2019
Part – B : MEDICAL BIOCHEMISTRY

Time : 70 Minutes

Total Marks : 50

SECTION – A

Multiple choice questions : Choose the most appropriate answer :

(1×20=20)

1. Which of the following is a negative acute phase reactant protein ?

- | | |
|----------------|-----------------------|
| a) Haptoglobin | b) Alpha1 antitrypsin |
| c) Transferrin | d) Ferritin |

2. Alkaline phosphatase in serum is elevated in all the following conditions EXCEPT

- | | |
|---------------------|-------------------------|
| a) Growing children | b) Cholestatic jaundice |
| c) Pregnant women | d) Cancer of prostate |

3. Respiratory alkalosis occurs following

- | | |
|--------------------------|------------------------|
| a) Starvation | b) Ventilatory support |
| c) Overdose of sedatives | d) Persistent vomiting |

4. Plasma calcium level may be elevated in

- | | |
|---------------------|-----------------------|
| a) Multiple myeloma | b) Rickets |
| c) Hypoalbuminemia | d) Hypoparathyroidism |

P.T.O.



5. The enzyme which catalyses an energy producing reaction is
- a) Glucokinase
 - b) Pyruvate kinase
 - c) Phosphofructokinase
 - d) Hexokinase
6. Which of the following enzymes catalyses reaction utilizing carbon dioxide ?
- a) Phosphoenol Pyruvate carboxy kinase
 - b) Isocitrate dehydrogenase
 - c) Acetyl CoA carboxylase
 - d) Citrate synthetase
7. The apoprotein which activates lipoprotein lipase is
- a) Apo A1
 - b) Apo B100
 - c) Apo B48
 - d) Apo CII
8. From the pairs of aminoacids and alpha ketoacids pick out the mismatched pair
- a) Aspartate and oxaloacetate
 - b) Glutamine and acetoacetate
 - c) Alanine and Pyruvate
 - d) Cysteine and beta mercaptopyruvate
9. The enzyme produced by human beings is
- a) Urease
 - b) Uricase
 - c) Restriction endonuclease
 - d) 1 alpha hydroxylase
10. Iron absorption requires
- a) Vitamin C
 - b) Vitamin A
 - c) Vitamin K
 - d) Vitamin B6



11. All are nutritional deficiency disorders EXCEPT
 - a) Pellagra
 - b) Beri beri
 - c) Nyctalopia
 - d) Cystinosis
12. Hyperuricemia is not seen in
 - a) Von Gierke's disease
 - b) Subacute Combined Immunodeficiency (SCID)
 - c) Lesch Nyhan syndrome
 - d) Chemo therapy for cancer
13. The aminoacid used for synthesis of both purine and pyrimidine nucleotides is
 - a) Glycine
 - b) Alanine
 - c) Glutamine
 - d) Valine
14. Which of the following is a DNA virus ?
 - a) HIV
 - b) SARS
 - c) NIPAH
 - d) Adenovirus
15. The coding unit of a polypeptide chain is
 - a) Exon
 - b) Intron
 - c) Cistron
 - d) Codon
16. Cellular DNA exists as
 - a) Supercoiled chromosomes
 - b) Linear double stranded helix
 - c) Spherical nucleosomes with histones
 - d) Clover leaf structure
17. Which of the following is a tumour marker for Carcinoma of liver ?
 - a) Carcinoembionic antigen
 - b) CA-125
 - c) Alpha feto protein
 - d) Beta HCG



18. A specific DNA sequence is identified by
- a) Polymerase chain reaction
 - b) Southern blotting
 - c) Nick translation
 - d) Western blotting
19. Sanger's reagent is used for
- a) DNA staining
 - b) End group analysis of polypeptide chains
 - c) Separating serum protein fractions
 - d) Northern blotting
20. Which of the following techniques is used to separate lipoproteins ?
- a) Immunoelctrophoresis
 - b) ELISA
 - c) Thin layer chromatography
 - d) Ultracentrifugation

SECTION – B

Write short notes on **any six** of the following :

(5×6=30)

- 1) Gluconeogenesis
 - 2) Low density lipoprotein
 - 3) Inborn errors of metabolism of aromatic aminoacids
 - 4) Functions of mitochondria
 - 5) Glycogen storage diseases
 - 6) Post translational modifications of proteins
 - 7) Recombinant DNA technology
 - 8) Deficiency manifestations of Vitamin A.
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