



திருவள்ளூர் பல்கலைக்கழகம், வேலூர்
THIRUVALLUVAR UNIVERSITY, VELLORE

Ph.D., - COMMON ENTRANCE TEST (CET9) – JUNE SESSION 2022

Subject : **BIOCHEMISTRY**

Exam Date : **26.06.2022**

Time : 11.00 A.M. TO 12.30. P.M

Maximum Marks : 50

NAME		REGISTER NO	
		HALL TICKET NO.	
MOBILE NO		EMAIL ID	
CANDIDATE SIGNATURE		HALL INVEGILATOR SIGNATURE WITH DATE	

SECTION – A (50 x 1 = 50 Marks)
All Questions carry equal marks.

- In adults, water constitutes about
 - 60% of body weight
 - 40% of body weight
 - 80% of body weight
 - 25% of body weight
- Which of the following is a DNA element that instructs RNA polymerase where to bind on DNA?
 - Operator
 - Promoter
 - Enhancer
 - Hormone response element
- Recombinant DNA molecule is produced by ligating (K2)
 - Two DNA segments
 - Two m-RNA molecules
 - One m-RNA with one t-RNA
 - One m-RNA with DNA segment
- DNA is present in
 - nucleus only
 - nucleus, mitochondria ER
 - nucleus, mitochondria and chloroplast
 - nucleus, mitochondria and ER
- RNA is
 - Single strand
 - Double stranded
 - Triple stranded
 - Both a and b
- Purines found both in DNA and RNA are
 - Adenine and thymine
 - Adenine and guanine
 - Guanine and cytosine
 - Cytosine and thymine

7. Which of the following glucose transporters is insulin dependent?
- a) GLUT I
 - b) GLUT II
 - c) GLUT-III
 - d) **GLUT-IV**
8. Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production?
- a) BOD incubator
 - b) Sludge digester
 - c) Industrial oven
 - d) **Bioreactor**
9. Many cytotoxic T lymphocytes initiate killing of target cells via delivery molecules that could induce target cell damage directly. Which one of the following is the most appropriate?
- a) Interferon
 - b) Peroxynitrate
 - c) Lysozyme
 - d) **Granzyme**
10. Thiobacillus is a group of bacteria helpful in carrying out:
- a) Nitrogen fixation
 - b) Chemoautotrophic fixation
 - c) Nitrification
 - d) **Denitrification**
11. Which one is considered as power house of the cell
- a) Ribosome
 - b) **Mitochondria**
 - c) Endoplasmic reticulum
 - d) Nucleus
12. Which one of the following inactivates the protein kinases, mTOR related to cell growth in mammalian system?
- a) Rifamycin
 - b) Rapamycin
 - c) Erythromycin
 - d) **Chloramphenicol**
13. In which stage of Arabidopsis embryogenesis is hypothesis first observed?
- a) **Octant**
 - b) Dermatogen
 - c) Globular
 - d) Transition
14. Who discovered cell in 1665?
- a) **Robert Hook**
 - b) Robert Crook
 - c) David Thomson
 - d) Marie Francois

15. Name the process in which the passage of water goes from a region of higher concentration to a region of lower concentration through a semi permeable membrane?
- Diffusion
 - Osmosis**
 - Both a) and b)
 - Neither a) nor b)
16. Blue green Algae are:
- Prokaryotes**
 - Eukaryotes
 - Both a) and b)
 - Neither a) nor b)
17. The β' subunit of polymerase has a function of
- Promoter binding
 - Elongation
 - Cation binding**
 - Termination
18. How many types of histone molecules are found in nature?
- 3
 - 4
 - 5**
 - 6
19. Nucleosome is made up of
- DNA, histone core protein
 - DNA, histone core protein, linker H1**
 - RNA, histone core protein
 - RNA, histone core protein, linker H1
20. Primer used for the process of polymerase chain reaction are
- Single stranded DNA oligonucleotide**
 - Double stranded DNA oligonucleotide
 - Single stranded RNA oligonucleotide
 - Double stranded RNA oligonucleotide
21. Which of the following is a mismatch?
- Polymerase – Taq polymerase
 - Template – double stranded DNA**
 - Primer – oligonucleotide
 - Synthesis – 5' to 3' direction
22. Which of these are rare amino acid in a protein?
- Leucine and serine
 - Lysine and glutamic acid
 - Tryptophan and methionine**
 - Leucine and lysine
23. Class of carbohydrate which cannot be hydrolyzed further, is known as?
- Disaccharides
 - Polysaccharides
 - Proteoglycan
 - Monosaccharide**

24. Which of the following amino sugar are present in the bacterial cell wall?
- a) **N-acetylmuramic acid**
 - b) Sialic acid
 - c) Aminoglycoside
 - d) Azide
25. Name the cytokines which released in response to virus infection?
- a) **Interferons**
 - b) Monokines
 - c) Lymphokines
 - d) Interleukins
26. Which of the following is an example of ligases enzyme?
- a) Mutases
 - b) Epimerases
 - c) Racemases
 - d) **Carboxylases**
27. Which of the following is not a catalytic strategy for an enzyme to perform specific reaction?
- a) Covalent catalysis
 - b) Metal ion catalysis
 - c) **Michaelis constant**
 - d) Acid-base catalysis
28. Double-helix structure of DNA is discovered by
- a) Gobind Khurana
 - b) Nirenberg
 - c) **Watson and Crick**
 - d) Darwin
29. What is the origin of replication?
- a) **Particular site at which DNA replication starts**
 - b) Site which prevents initiation
 - c) Random location on the DNA
 - d) Site at which replication terminated
30. Name the protein, which is used for termination of replication?
- a) DnaC
 - b) SSB
 - c) **Tus protein**
 - d) DNA polymerase
31. Name the regulatory component of the cell cycle?
- a) **Cyclin**
 - b) CDK
 - c) DNA
 - d) APC
32. Name the enzyme which causes ubiquitylation and destruction of cyclin.
- a) Acid hydrolases
 - b) Hyaluronidase
 - c) **Ubiquitin ligase**
 - d) Phosphatase

33. Name the group of bacteria which uses histone to condense DNA molecule?
- Spirochetes
 - Archaeobacteria**
 - Mycoplasma
 - Cyanobacteria
34. Name the type of plasmid which has no identified function or phenotypic properties?
- Cryptic plasmid**
 - R-plasmid
 - High-frequency recombination
 - None of above
35. Which of the following climatic zone lies around 40°- 60° latitude?
- Tropical
 - Subtropical
 - Arctic
 - Temperate**
36. Enzyme are.....
- Carbohydrate
 - RNA
 - Protein**
 - Fats
37. The allosteric inhibitor of an enzyme
- Causes the enzyme to work faster
 - Binds to the active site
 - Participates in feedback regulation**
 - Denatures the enzyme
38. Which category of enzymes belongs to class two in the international classification?
- Hydrolases
 - Ligases
 - Transferases**
 - Isomerase
39. Which is the enzyme that acts as a regulatory enzyme in a four-step metabolic pathway?
- First enzyme
 - Fourth enzyme
 - Second enzyme
 - Third enzyme**
40. Which of the following does not act as a restriction enzyme?
- EcoRI**
 - BamHI
 - HindIII
 - Polydeoxyribonucleotide synthase
41. The process which begins after the fertilization is known as.....
- Cleavage
 - Spermiogenesis
 - Organogenesis
 - Embryogenesis**
42. Name the type of fertilization where placenta formation does not occur
- Ovoviviparous**
 - Oviparous
 - Viviparous
 - Segmentation

43. What occurs when egg and sperm fuse?
- Differentiation
 - Development
 - Fertilization**
 - Cleavage
44. *In vitro* fertilization is a technique that involves transfer of which one of the following into the fallopian tube?
- Zygote only
 - Embryo only, upto 8cell stage
 - Either zygote or early embryo up to 8 cell stage**
 - Embryo of 32 cell stage
45. Dolly sheep was genetically similar to
- The mother from which nucleated fertilized egg was taken
 - The mother from which nuclear DNA of mammary gland of female cell was taken**
 - The surrogate mother
 - Both surrogate mother and nuclear donor mother
46. Name the phase which is a period of adaptation of the cells to the new environment
- Lag phase**
 - Log phase
 - Exponential phase
 - Stationary phase
47. The most commonest indicator in animal cell culture medium is
- Rose bengal
 - Bromocresol purple
 - Phenol red**
 - Crimson orange
48. In animal cell culture, particularly mammalian cell culture, transformation means
- Uptake of new genetic material
 - Phenotypic modification of cells in culture**
 - Both (a) and (b)
 - Release of genetic information
49. Which of the following is not the explanation technique?
- Slid culture
 - Carrel flask culture
 - Roller test tube culture
 - Adherent primary culture**
50. Which of the following is the technique used for the embryo culture?
- Organ culture on plasma clots
 - Organ culture on agar
 - Whole embryo cultures
 - All of these**