



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?
- GLUT I
 - GLUT II
 - GLUT-III
 - GLUT-IV**
8. Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production?
- BOD incubator
 - Sludge digester
 - Industrial oven
 - 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?
- Interferon
 - Peroxynitrate
 - Lysozyme
 - Granzyme**
10. Thiobacillus is a group of bacteria helpful in carrying out:
- Nitrogen fixation
 - Chemoautotrophic fixation
 - Nitrification
 - Denitrification**
11. Which one is considered as power house of the cell
- Ribosome
 - Mitochondria**
 - Endoplasmic reticulum
 - Nucleus
12. Which one of the following inactivates the protein kinases, mTOR related to cell growth in mammalian system?
- Rifamycin
 - Rapamycin
 - Erythromycin
 - Chloramphenicol**
13. In which stage of Arabidopsis embryogenesis is hypothesis first observed?
- Octant**
 - Dermatogen
 - Globular
 - Transition
14. Who discovered cell in 1665?
- Robert Hook**
 - Robert Crook
 - David Thomson
 - 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?
a) Spirochetes
b) Archaeobacteria
c) Mycoplasma
d) Cyanobacteria
34. Name the type of plasmid which has no identified function or phenotypic properties?
a) Cryptic plasmid
b) R-plasmid
c) High-frequency recombination
d) None of above
35. Which of the following climatic zone lies around 40°- 60° latitude?
a) Tropical
b) Subtropical
c) Arctic
d) Temperate
36. Enzyme are.....
a) Carbohydrate
b) RNA
c) Protein
d) Fats
37. The allosteric inhibitor of an enzyme
a) Causes the enzyme to work faster
b) Binds to the active site
c) Participates in feedback regulation
d) Denatures the enzyme
38. Which category of enzymes belongs to class two in the international classification?
a) Hydrolases
b) Ligases
c) Transferases
d) Isomerase
39. Which is the enzyme that acts as a regulatory enzyme in a four-step metabolic pathway?
a) First enzyme
b) Fourth enzyme
c) Second enzyme
d) Third enzyme
40. Which of the following does not act as a restriction enzyme?
a) EcorI
b) BamHI
c) HindIII
d) Polydeoxyribonucleotide synthase
41. The process which begins after the fertilization is known as.....
a) Cleavage
b) Spermiogenesis
c) Organogenesis
d) Embryogenesis
42. Name the type of fertilization where placenta formation does not occur
a) Ovoviviparous
b) Oviparous
c) Viviparous
d) Segmentation

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