



திருவள்ளூர் பல்கலைக்கழகம், வேலூர்
THIRUVALLUVAR UNIVERSITY, VELLORE

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

Subject : BIOTECHNOLOGY

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.

- Which of the following is the largest single membrane-bound intracellular compartment?
(a) Ribosome (b) Nucleus (c) Endoplasmic reticulum (d) Golgi apparatus
- $\text{HCO}_3^- - \text{Cl}^-$ transporter is an example of _____
(a) Uniport (b) Antiport (c) Symport (d) Facilitated diffusion
- The enzyme activated by cyclic AMP, passing on the hormonal signal is _____
(a) Protein kinase B (b) Protein kinase
(c) Protein kinase A (d) G protein receptor kinase
- Insulin, a protein, consisting of _____
(a). 2 Polypeptide chains (b).3 Polypeptide chains
(c). 4 Polypeptide chains (d).6 Polypeptides chains
- Name the class of secondary metabolites which is characterized by the presence of the hydroxyl group with an aromatic ring?
(a) Glycosides (b) Phenolics (c) Alkaloids (d) Terpenes
- Synthetic seeds are produced by the encapsulation of somatic embryos with _____.
(a) Sodium acetate (b) Sodium nitrate
(c) Sodium chloride (d) Sodium alginate
- A low auxin: cytokinin ratio leads to
(a) Shoot formation (b) Root formation
(c) fruit formation (d) All of these
- Hairy root cultures are produced by using
(a) *Agrobacterium tumefaciens* (b) *Agrobacterium rhizogens*
(c) *Agrobacterium vitis* (d) All of these
- Name the technique which is used to enhance the life of a tomato.
(a) Antisense technology (b) In vitro gene transfer
(c) Ex vivo gene transfer (d) Molecular farming

10. Which gene is incorporated into transgenic plants for improving the nutrition of potato?
 (a) Asp1 gene (b) **AMA1 gene**
 (c) F1 gene (d) None of these
11. Klenow fragment is derived from
 (a) DNA ligase (b) **DNA polymerase I**
 (c) DNA polymerase II (d) Reverse Transcriptase
12. Urea and formamide can
 (a) Increase Tm of DNA (b) **Decrease the Tm of DNA**
 (c) helps faster re-annealing of DNA (d) Does not effect denaturation of DNA
13. Which is the final product of the RNaseH method?
 (a) **blunt ended dsDNA** (b) staggered dsDNA at bond ends
 (c) staggered dsDNA at 3' end (d) staggered dsDNA at 5' end
14. What is the second primer in case of 5'RACE?
 (a) Internal Primer (b) Oligo-dA sequence
 (c) **Adaptor-oligo-dT primer** (d) Oligo-dT adaptor molecule
15. Taq polymerase is used in PCR because of its
 (a) low thermal stability (b) high fidelity
 (c) high speed (d) **high thermal stability**
16. If a canning procedure is not properly followed, which type of microbe is most likely to grow in the canned food?
 (a) Obligate Aerobe (b) Acidophile
 (c) Mesophile (d) **Obligate anaerobe**
17. The antiHIV drug patentiflorin A is obtained from _____
 (a) *Coleus* (b) ***Justicia*** (c) *Ocimum* (d) *Neem*
18. When the National Environmental Policy Act was signed into law?
 (a) **January 1, 1970** (b) January 2, 1970
 (c) January 1, 1971 (d) January 1, 1972
19. Sound becomes hazardous noise pollution at decibels:
 (a) **Above 80** (b) Above 30
 (c) Above 100 (d) Above 120
20. The percentage of oxygen and carbon dioxide in the atmosphere is _____
 (a) **20.95% and 0.04%** (b) 20.0% and 0.40%
 (c) 20.95% and 0.004% (d) 20.0% and 0.44%
21. Which of the bacteria is considered for leach metals out of rock ores?
 (a) *Peseudomonas* (b) *E. coli* (c) ***Thiobacillus*** (d) *Zoogloea*
22. Which of the following is a trait of X-linked recessive?
 (a) Albinism (b) **Haemophilia** (c) Huntington's disease (d) None of these

23. If the father in a family has a disease while the mother is normal, the daughters only are inherited by this disease and not the sons. Name this type of disease?
- (a) Autosomal recessive (b) Autosomal dominant
(c) Sex-linked recessive (d) **Sex-linked dominant**
24. Arrange the following sequences of tumor development in the correct order?
[(i) Metastasis ii) Progression iii) Promotion iv) Initiation]
- (a) ii, iii, iv, i (b) **iv, iii, ii, i** (c) i, ii, iii, iv (d) i, iii, iv, ii
25. Embryonic stem cell are derived from the _____ cell masses of normal blastocysts
- (a) **Inner** (b) Outer (c) Peripheral (d) Anterior
26. Sodium bicarbonate is added to cell culture media for the following reason
- (a) To help keep cells stuck to the plastic
(b) To promote the uptake of CO₂ into animal cells
(c) It helps keep iron soluble
(d) **To help maintain the correct pH when CO₂ is present**
27. Optimum pH required for the growth of mammalian cells is _____
- (a) 5.3 – 7.0 (b) 6.5-7.0 (c) **7.2-7.4** (d) 8.1-8.9
28. Western blotting technique is used for the detection of _____ in a sample
- (a) Specific DNA (b) specific RNA (c) **specific protein** (d) specific glycolipid
29. ELISA is
- (a) Using radiolabelled second antibody
(b) Usage of RBCs
(c) Using complement mediated cell lysis
(d) **Addition of substrate that is converted into a coloured end product**
30. Immunoelectrophoresis technique are designed to separate the mixture components from each other by using electrophoresis
- (a) **prior to reaction with antibody** (b) prior to reaction with antigen
(c) after reaction with antibody (d) after reaction with antigen
31. Which of the following fungus used in the industrial production of citric acid?
- (a) *Rhizopus oryzae* (b) *Fusarium moniliformae*
(c) *Rhizopus nigricans* (d) ***Aspergillus nigricans***
32. Industrially important Antibiotic producing organisms shall be isolated by _____
- (a) Disk plate method (b) Direct plate method
(c) Serial dilution method (d) **Crowded plate method**
33. The vaccine prepared through recombinant DNA technology is
- (a) **3rd generation vaccine** (b) 1st generation vaccine
(c) 2nd generation vaccine (d) All of these
34. The first clinical application of gene therapy over a 4 year old girl was for
- (a) **Adenosine deaminase deficiency** (b) Adenosine deficiency
(c) Growth deficiency (d) Adenine deficiency
35. The bond involved in antigen-antibody interactions are
- (a) **Weak hydrogen bonds and Vander walls** (b) strong covalent bonds
(c) strong di-sulphide bonds (d) All of these
36. The transfer of tissue between individuals of different species is called
- (a) Autograft (b) **Xenograft** (c) Allograft (d) Syngenic graft

37. MHC class II is a cell surface molecule present in
 (a) B-cells (b) All nucleated cell (c) APCs (d) T-cells
38. Hybridoma Technology was developed by
 (a) Kohler and Milstein (b) Khorana and Nirenberg
 (c) Khorana and Koreinberg (d) Beedle and Tautum
39. Cyclosporine is an immunosuppressive drug given to avoid transplant rejection which acts by
 (a) Inhibition of T Cells (b) Inhibition of B cells
 (c) Inhibition of Immune System (d) Inhibition of Complement system
40. The SWIS PORT protein sequence database has begun in _____ year?
 (a) 1988 (b) 1987 (c) 1986 (d) 1998
41. Which of the following is an example of homology and similarity tool?
 (a) BLAST (b) Rasmol (c) EMBOSS (d) PROSPECT
42. Which of the following tool is used for the identification of motifs?
 (a) BLAST (b) COPIA (c) PROSPECT (d) pattern hunter
43. The method that consists of collection of data through observation and experimentation, formulation and testing the hypothesis is called
 (a) Empirical method (b) Scientific method
 (c) Scientific information (d) Practical knowledge
44. Action research means
 (a) A longitudinal research
 (b) An analytical Research
 (c) A research initiated to solve an immediate problem
 (d) A research with socioeconomic objective
45. One time research is applicable in case of
 (a) Environmental studies (b) Diagnostic studies
 (c) Historical studies (d) Experimental studies
46. A null hypothesis is
 (a) When there is no difference between the variables
 (b) The same as research hypothesis
 (c) Subjective in nature
 (d) When there is difference between the variables
47. Cumulative frequency curve is also known as
 (a) Histogram (b) Frequency polygon
 (c) Grouped frequency (d) Ogive
48. Which one of the following is called as positioned central tendency?
 (a) Arithmetic mean (b) Geometric mean
 (c) Harmonic mean (d) Median
49. The value of correlation coefficient will vary from
 (a) 0 to 1 (b) -1 to +1 (c) -0 to +0 (d) -1 to 0
50. In regression analysis, independent variable is also known as
 (a) Regressor (b) predictor (c) Explanatory variable (d) All of these