

## U.G./P.G. ENTRANCE EXAMINATION, APRIL 2021

## BIOTECHNOLOGY (NATIONAL STREAM)

Time : One Hour and a Half

Maximum : 100 Marks

**General Instruction to the candidates :**

1. *Questions are Multiple Choices Type.*
2. *Answer all questions.*
3. *Each question carries 2 marks.*
4. *There are no negative marks for wrong answer.*

1. Probiotics are :

- |                                |                                    |
|--------------------------------|------------------------------------|
| a) Cancer-inducing microbes.   | b) Safe antibiotics.               |
| c) New kind of food allergens. | d) Live microbial food supplement. |

2. Which among the following is an aromatic amino acid ?

- |             |                |
|-------------|----------------|
| a) Glycine. | b) Tryptophan. |
| c) Alanine. | d) Valine.     |

3. 2020 Nobel Prize was awarded to Harvey J. Alter, Michael Houghston and Charles M. Rice for the work related to :

- a) Molecular response of genes for varying levels of oxygen.
- b) Discovery of Hepatitis C virus.
- c) Molecular mechanisms controlling the circadian rhythm.
- d) Mechanisms for cell autophagy.

4. All are membrane bound organelle of a cell, except :

- |                     |              |
|---------------------|--------------|
| a) Lysosome.        | b) Ribosome. |
| c) Golgi apparatus. | d) Nucleus.  |

5. Hardy-Weinberg equilibrium is related to :

- |                         |                        |
|-------------------------|------------------------|
| a) Mendelian genetics.  | b) Bacterial Genetics. |
| c) Population Genetics. | d) Molecular Genetics. |

**Turn over**

6. Bowman's capsule is a part of :
- a) Neuron.
  - b) Fungal fruiting body.
  - c) Nephron.
  - d) Golgi complex.
7. Helix pitch and diameter of B-DNA is :
- a) 34 Å and 20 Å.
  - b) 20 Å and 34 Å.
  - c) 3.4 Å and 10 Å.
  - d) 10 Å and 3.4 Å.
8. Gout is a disease associated with \_\_\_\_\_.
- a) Purine metabolism.
  - b) Protein metabolism.
  - c) Glycogen metabolism.
  - d) All of the above.
9. Sex linked characters were first explained by :
- a) T H Morgan.
  - b) William Bateson.
  - c) R C Punnet.
  - d) Bovery.
10. Live cell imaging is possible by :
- a) Electron microscopy.
  - b) Light microscope.
  - c) Atomic force microscope.
  - d) Confocal microscope.
11. Nucleoside is made up of :
- a) Sugar and nitrogen base.
  - b) Phosphate and sugar.
  - c) Nitrogen base and phosphate.
  - d) Phosphate, sugar and nitrogen base.
12. \_\_\_\_\_ is not a PCR based technique.
- a) RFLP.
  - b) AFLP.
  - c) RAPD.
  - d) None of the above.
13. Down's syndrome is a disease associated with :
- a) Virus infection.
  - b) Chromosomal aberration.
  - c) Mutation of gene.
  - d) Sex linkage.
14. Who invented Polymerase Chain Reaction ?
- a) Robert Mullis.
  - b) Herbert Boyer.
  - c) Kary Mullis.
  - d) Daniel Nathans.

15. Dideoxy method of DNA sequencing is also known as :
- a) Pyrosequencing.
  - b) Edman degradation.
  - c) Chain termination method.
  - d) None of the above.
16. Which among the following is a symbiotic nitrogen fixing organism ?
- a) Clostridium.
  - b) Azotobacter.
  - c) Azolla.
  - d) Rhizobium.
17. Mass spectrometric analysis is based on the principle of :
- a) Mass.
  - b) Molecular weight.
  - c) Charge.
  - d) Mass to charge ratio.
18. Klenow fragment of DNA polymerase *does not* show :
- a) Proof reading activity.
  - b) 5' to 3' exonuclease activity.
  - c) 3' to 5' exonuclease activity.
  - d) 5' to 3' polymerase activity.
19. Rb gene is a :
- a) Oncogene.
  - b) Part of Gal operons.
  - c) Tumor suppressor gene.
  - d) All the above.
20. Ramachandran plot is for determination of protein \_\_\_\_\_.
- a) Primary structure.
  - b) Secondary structure.
  - c) Amino acid composition.
  - d) protein to protein interactions.
21. \_\_\_\_\_ is a basic dye.
- a) Eosin.
  - b) Methylene blue.
  - c) Giemsa.
  - d) Nigrosin.
22. RecA and LexA genes are involved in which type of DNA repair system :
- a) Photolyase.
  - b) SOS repair.
  - c) Mismatch repair.
  - d) Nucleotide excision repair.
23. Down Syndrome is :
- a) Trisomy 21.
  - b) trisomy 12.
  - c) Gene duplication.
  - d) 12 to 21 translocation.

Turn over

24. Purity of an enzyme preparations can be determined by \_\_\_\_\_.
- a) Specific activity.
  - b) Enzyme activity.
  - c) Specificity.
  - d) Turnover of enzyme.
25. Benzene is having \_\_\_\_\_ hybridization.
- a) SP.
  - b) SP<sup>2</sup>.
  - c) SP<sup>3</sup>.
  - d) SP<sup>4</sup>.
26. Substituent to an aromatic ring can be achieved by :
- a) Grignard synthesis.
  - b) Friedel-Crafts reaction.
  - c) Reimer Tiemann reaction.
  - d) Lewis Bronsted reaction.
27. SARS disease is caused by :
- a) Coronavirus.
  - b) Rabies viruses.
  - c) Bacterial influenza.
  - d) Bacterial streptococcal infection.
28. Immunoglobulin that can transfer through placenta :
- a) IgM.
  - b) IgG.
  - c) IgE.
  - d) IgD.
29. \_\_\_\_\_ is an inhibitory plant hormone.
- a) Gibberellins.
  - b) Cytokinins.
  - c) Abscisic acid.
  - d) Auxins.
30. Glucagon is produced by :
- a) Pancreas.
  - b) Thyroid.
  - c) Gonads.
  - d) Epinephrine.
31. Benedict's test is used for :
- a) Protein estimation.
  - b) Determination of sugar.
  - c) Lipid estimation.
  - d) Nucleic acid estimation.
32. Analogous organs are having :
- a) Same function different origin.
  - b) Same origin same function.
  - c) Different function same origin.
  - d) Different origin different function.

33. Isotonic solution of NaCl is :
- a) 0.9 M.
  - b) 9 M.
  - c) 0.9%.
  - d) 9%.
34. Oral Polio vaccine is :
- a) Heat inactivated vaccine.
  - b) Chemically inactivated viruses.
  - c) Recombinant viral vector vaccine.
  - d) Live attenuated vaccine.
35. Region of brain associated with memory :
- a) Hippocampus.
  - b) Medulla oblongata.
  - c) Hypothalamus.
  - d) Optic chiasma.
36. Indian born scientist who received Nobel prize for ribosome studies :
- a) Venkataraman Ramakrishnan.
  - b) C V Raman.
  - c) Khorana.
  - d) R Ramachandran.
37. Which of the following statement regarding endotoxin is correct ?
- a) Are found in both gram positive and gram negative bacterial cell wall.
  - b) Are heat stable proteins.
  - c) Are part of the cell wall of gram positive bacteria only.
  - d) None of the above statement is correct.
38. Ring worm is a disease caused by :
- a) Bacteria.
  - b) Fungus.
  - c) Tape worm.
  - d) Round worm.
39. A typical growth curve consists of 4 phases. Which is the correct sequence ?
- a) Exponential, lag, stationary, death.
  - b) Lag, exponential, stationary, death.
  - c) Stationary, exponential, lag, death.
  - d) Lag, stationary, exponential, death.

Turn over

40. To which of the following kingdom do viruses belong to :
- a) Monera.
  - b) Protista.
  - c) Fungi.
  - d) None of the above.
41. Mycorrhiza is a :
- a) Symbiotic association of a fungus with an algae.
  - b) Symbiotic association of a fungus with a root system.
  - c) Parasitic association of a fungus with a root system.
  - d) Parasitic association of an algae with a shoot system.
42. Which of the following bacterium is called as the superbug that could clean oil spills ?
- a) *Bacillus subtilis*.
  - b) *Pseudomonas putida*.
  - c) *Pseudomonas dentrificans*.
  - d) *Bacillus dentrificans*.
43. Ehrlich and Hata discovered \_\_\_\_\_ that was used to treat \_\_\_\_\_.
- a) Salvarsan ; syphilis.
  - b) Penicillin ; surgical wounds.
  - c) Salvarsan ; malaria.
  - d) Prontosil ; malaria.
44. *Thermus aquaticus* is the source of :
- a) Vent polymerase.
  - b) Taq polymerase.
  - c) Both a) and b).
  - d) Primase.
45. The third amino acid in the peptidoglycan crosslinking chain is either diaminopimilic acid or lysine because this amino acid must :
- a) Be positively charged for a salt bridge to form.
  - b) Be hydrophilic.
  - c) Have a free amino group for peptide bond formation.
  - d) Have a large R-side chain to fill space in the cell wall.
46. Peripatus is a connecting link between :
- a) Ctenophora and Platyhelminthes.
  - b) Mollusca and Echinodermata.
  - c) Annelida and Arthropoda.
  - d) Coelenterata and Porifera.

47. Find the odd one out :
- a) Puffer fish.
  - b) Silver fish.
  - c) Cuttle fish.
  - d) Flying fish.
48. Which of the following is not a gaseous biogeochemical cycle in ecosystem ?
- a) Sulphur cycle.
  - b) Phosphorus cycle.
  - c) Nitrogen cycle.
  - d) Carbon cycle.
49. Chitin is :
- a) Sulphur containing polysaccharide.
  - b) Simple polysaccharide.
  - c) Nitrogen containing polysaccharide.
  - d) Phosphorous containing polysaccharide.
50. Enzymes are chemically :
- a) Proteins.
  - b) Proteins and rarely nucleic acids both DNA and RNA.
  - c) Proteins and rarely ribonucleic acids.
  - d) Proteins and rarely carbohydrates.