

Seat No.	
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M.Phil./Ph.D. Entrance Examination, July - 2022**MICROBIOLOGY****Day and Date : Saturday, 16- 07 - 2022****Total Marks : 100****Time : 2.00 p.m. to 4.00 p.m.**

- Instructions :**
- 1) All questions are compulsory.
 - 2) Each question carries 2 marks.
 - 3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
 - 4) Use black ball point pen only for marking the circle. Do not make any stray mark on the OMR Answer Sheet.
 - 5) Follow the instructions given on OMR Sheet.
 - 6) Rough work shall be done on the sheet provided at the end of question paper.
 - 7) Only non-programmable calculators are allowed.

Tick mark the appropriate option from given below each statement.

- 1) Research is _____
 - A) Working in a scientific way to search for truth of any problem
 - B) Evaluate the finding of a study
 - C) Study of existing literature in a field
 - D) Generate new principles and theories
- 2) What is a research design?
 - A) The choice between using qualitative and quantitative methods
 - B) The study in which you present research findings
 - C) A framework for every stage of collection and analysis of data
 - D) A way of conducting research that is not grounded in theory
- 3) A careful investigation or enquiry specially through search for new facts in any branch of knowledge is called _____
 - A) Qualitative Research
 - B) Empirical Research
 - C) Research
 - D) None of the above

P.T.O.

- 4) _____ is way to systematically solve the research problems.
 - A) Scientific method
 - B) Research process
 - C) Research aptitude
 - D) Research methodology
- 5) How to judge the depth of any research?
 - A) By research title
 - B) By research duration
 - C) By research objectives
 - D) By total expenditure on research
- 6) In order to augment the accuracy of the study a researcher
 - A) Should be honest and unbiased
 - B) Should increase the size of the sample
 - C) Should keep the variance high
 - D) A,B, and C
- 7) Facts, figures and other relevant materials serving as bases for a study is called_____
 - A) sample
 - B) method
 - C) data
 - D) theory
- 8) A Hypothesis contributes to the development of _____
 - A) Theory
 - B) Generalization
 - C) Evolution
 - D) Concept
- 9) $[a_1, a_2, a_3]$ is called a _____
 - A) row matrix
 - B) column matrix
 - C) determinant
 - D) None of the above
- 10) Why do you need to review the existing literature?
 - A) To make sure you have a long list of references
 - B) Because without it, you could never reach the required word-count
 - C) To find out what is already known about your area of interest
 - D) To help in your general studying

- 11) The core ingredients of a dissertation are:
- A) Introduction; Data collection; Data analysis; Conclusions and recommendations.
 - B) Executive summary; Literature review; Data gathered; Conclusions; Bibliography
 - C) Introduction; Literature review; Research methods; Results; Discussion; Conclusion
 - D) Research plan; Research data; Analysis; References
- 12) Among following which one is a publisher?
- A) NDB
 - B) Tailor & Francis
 - C) PDB
 - D) PIR
- 13) _____ is a bibliographic database?
- A) MMDB
 - B) PubMed
 - C) PROSITE
 - D) GenBank
- 14) Various tests, such as chi square test, t-test and f-test are developed by statisticians for the purpose of _____.
- A) Data interpretation
 - B) Data analysis
 - C) Hypothesis building
 - D) Hypothesis testing
- 15) Failure to acknowledge the borrowed material is called (Take and use of others as one's own)
- A) Foot note
 - B) Plagiarism
 - C) Acknowledgement
 - D) Index
- 16) A hypothesis from which no generalization can be made is _____
- A) Analytical hypothesis
 - B) Barren hypothesis
 - C) Null Hypothesis
 - D) Descriptive Hypothesis
- 17) Which of the following is a high-level language of computer?
- A) FORTRAN
 - B) C-language
 - C) COBAL
 - D) All of the above
- 18) Identification of bacteria is carried out by _____
- A) 16S rRNA sequencing
 - B) 18S rDNA sequencing
 - C) 23S rDNA sequencing
 - D) Dabsyl chloride

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- 19) _____ technique is used to separate proteins based upon differences in their mass.
- A) SDS-gel electrophoresis B) Dialysis
C) Isoelectric focusing D) Western blotting
- 20) Among following which method is used to determine the primary structure of proteins.
- A) Electrophoresis B) Chromatography
C) Ninhydrin D) Edman degradation
- 21) In gel chromatography the particles are separated on basis of _____
- A) surface binding property B) charge
C) size of particle D) affinity of particle
- 22) _____ technique is not used in isolation of bacteria.
- A) hanging drop B) enrichment culture
C) crowded plate D) Agar overlay
- 23) There is no accumulation of filter cake in _____ filtration.
- A) tangential flow B) batch
C) Rotary vacuum D) plate & frame
- 24) Agar overlay technique using test organism is used in primary screening of _____ producers.
- A) Enzymes B) Antibiotic
C) Vitamin D) Organic acid
- 25) _____ is an example of semisynthetic penicillin.
- A) amoxicillin B) tetracycline
C) penicillin g D) penicillin v
- 26) _____ is known as sewage fungus.
- A) Cephalosporium B) Penicillium
C) Leptomitous D) Rhizobium
- 27) *Rhizopus nigricans* produces _____ product.
- A) Citric acid B) Fumaric acid
C) Lactic Acid D) Gibberellic acid

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- 28) Which ion has role in reduction of nitrogen in nitrogen fixation?
 - A) Zn
 - B) Mo
 - C) Cu
 - D) Co
- 29) By which microorganism fermentation of rice is carried?
 - A) Bacteria
 - B) Yeast
 - C) Molds
 - D) Porotzoa
- 30) Which is not true with regards to Colostrum?
 - A) It contains more amount of gammaglobulin
 - B) It contain more total protein than whole milk
 - C) It contain more fat than whole milk
 - D) it gives laxative effect
- 31) Fecal and Non-Fecal coliforms are differentiated by _____test.
 - A) IMViC
 - B) Presumptive test
 - C) MPN
 - D) completed test
- 32) The lipids present in cell membrane are_____in nature.
 - A) Polar
 - B) Non-polar
 - C) Charged
 - D) Ampipathic
- 33) Which type of proteins secondary structure is present in the transmembrane domain of a protein?
 - A) Alpha-helix
 - B) Beta-sheet
 - C) Triple beta-sheet
 - D) None of the mentioned
- 34) Which of the following food crops has recently been engineered to obtain edible vaccine to develop immunity against hepatitis B?
 - A) Banana
 - B) Maize
 - C) Potato
 - D) Tomato
- 35) Viral replication within the cells is inhibited by_____
 - A) IL-1
 - B) IL-4
 - C) TFN- α
 - D) IFN- α

- 36) Where do B-lymphocytes acquire immune competence?
 - A) Thymus
 - B) Spleen
 - C) Lymph nodes
 - D) Bone marrow
- 37) Which is the cleavage site of chymotrypsin?
 - A) Carboxyl end of Tyr
 - B) Carboxyl end of Trp
 - C) Amino terminal end of Arg
 - D) Both A and B
- 38) Thermostable DNA polymerases used in PCR are_____
 - A) obtained by heating the bacteria manually over high temperatures
 - B) isolated from extremely stable thermophilic bacteria which are often found growing in oceanic vents
 - C) found everywhere in nature
 - D) obtained by genetically modifying the E. coli bacteria with thermal stability property
- 39) During DNA replication, one strand that is synthesized continuously is called _____ and the other that is synthesized discontinuously is called _____
 - A) Lagging and Lagging
 - B) Leading and Leading
 - C) Lagging and leading
 - D) Leading and lagging
- 40) Self-replicating, circular, double stranded, extrachromosomal DNA in prokaryote is called as_____.
 - A) Vector
 - B) Bacteriophage
 - C) Plasmid
 - D) Cosmid
- 41) Which of the following virus possess a single -stranded, linear genome?
 - A) TMV
 - B) Poxvirus
 - C) Baculovirus
 - D) Reovirus
- 42) Human Papillomavirus causes the cancer of_____
 - A) liver
 - B) lymphoid tissue
 - C) cervix
 - D) mouth
- 43) Which gas does not contribute to global warming through its greenhouse effects?
 - A) Nitrous oxide
 - B) Methane
 - C) Carbon dioxide
 - D) Nitric oxide

- 44) Homeostasis is_____
- A) Tendency of biological systems to resist change
 - B) Tendency of biological systems to change with change in environment
 - C) Disturbance of self-regulatory system and natural controls
 - D) Biotic material used in homeopathic medicines
- 45) In $H\Psi=E\Psi$ equation; Ψ stands for_____
- A) Wave function
 - B) Heisenberg
 - C) Hamiltonian
 - D) None of the above
- 46) Rhizomorph is seen in_____
- A) Phycomycetes
 - B) Basidiomycetes
 - C) Ascomycetes
 - D) Rhizomycetes
- 47) _____ play a key role in the transformation of rock to soil.
- A) Pectin decomposing bacteria
 - B) Lichen
 - C) Nitrifying bacteria
 - D) De-nitrifying bacteria
- 48) Peptide bonds are rigid and planar in nature because of partial double bond characteristics. The torsion angle between $C\alpha$ -Cof peptide bond is known as _____
- A) Phi
 - B) Psi
 - C) Theta
 - D) Alpha
- 49) Name the scientist who proposed the phylogenetic tree for living things.
- A) Carlo Urbani
 - B) Louis Pasteur
 - C) Robert Koch
 - D) Carl Woese
- 50) The correct order of taxonomic groups from higher to lower rank is?
- A) Kingdom–Order–Class–Family
 - B) Kingdom–Division–Class–order–Family–Genus–Species
 - C) Kingdom–Order–Division–Family–Class–Genus–Species
 - D) Order–Class–Division–Family–Genus–Species



Rough Work