**Ph.D. COMMON ENTRANCE**

**SUBJECT: MICROBIOLOGY**

**Roll No:**

**PART B**

**Duration: 60 minutes Maximum Marks: 50**

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| **Instructions:**   1. **This entrance test question paper is not to be taken out of the examination hall** 2. **Question paper consists of Section A and Section B** 3. **Section A consists of 30 MCQs carrying 1 Mark each. Write the Alphabet of the correct answer in the space given.** 4. **Section B consists of Descriptive questions carrying 5 marks each. Restrict your answer to 500 words. Additional plain sheets have been attached to the question paper to answer Section B** |

**SECTION – A**

**Answer the following questions by writing the Alphabet of the correct answer in the Box given: 30 X 1 = 30**

1. The nitrogenous bases in DNA are

a. Arginine, Tyrosine, Glycine, Cysteine

b. ATP, ADP, AMP

c. Adenine, Guanine, Cytosine, Thymine

d. Argentum, Thorium, Gallium, Cesium

2. Conjugation was discovered by

a. Watson and Crick

b. Meselson and Stahl

c. Lederberg and Tatum

d. Charles Babbage

3. Pilus is formed due to the presence of

a. F plasmid

b. R plasmid

c. λ phage

d. Col plasmid

4. Genetic transfer in transduction is facilitated by

a. Paramecium

b. Bacteria

c. Corona virus

d. Bacteriophage

5. In the laboratory, cells can be rendered \_\_\_\_ by the use of cold calcium chloride or electroporation.

a. Transducible

b. Transposable

c. Conjugated

d. Competent

1. Which of the following dye is colourless at acidic pH and becomes red at basic pH?
2. Methyl red
3. Thymol blue
4. Phenolphthalein
5. Phenol red

7. Agar agar is obtained from

a. Bacteria

b. Algae

c. Fungi

d. Actinomycetes

8. *Trichoderma reesei* the model organism in genetic engineering is a

a. protozoa

b. fungus

c. bacteria

d. algae

9. Time required for microbes to double is called

a. growth curve

b. mean time

c. generation time

d. growth rate

10. Bacterial lipopolysaccharide (LPS) is also known as

a. exotoxin

b. endotoxin

c. botulinum

d. toxin

11. Secondary metabolites are produced in

a. lag phase

b. stationary phase

c. death phase

d. log phase

12. In pour-plate method, the medium should be maintained at what temperature?

a. 37℃

b. 67℃

c. 45℃

d. 0℃

13. Which of the following are not performed in lyophilization?

a. agar slant is covered with mineral oil

b. cell suspension is frozen at -60℃ to -78 ℃

c. vials are connected to high-vacuum line

d. bacterial sample is dehydrated

14. Which of the following is/are used in dried culture preservation?

a. Sand

b. Soil

c. Both a and b

d. Silt

15. During the preservation of microbial cell culture \_\_\_\_\_\_

a. metabolism stops

b. metabolism continues

c. metabolism changes

d. physiology changes

16. Pathogens with this structure in LPS evade the immune system, which is the one

a. B-antigen

b. Y-antigen

c. N-antigen

d. O-antigen

17. The most common form of DNA seen is

a. A

b. B

c. C

d. D

18. Germ theory was proposed by

a. Louis Pasteur

b. Robert Koch

c. Joseph Lister

d. Alexander Fleming

19. Bacteria causing anthrax and tuberculosis was discovered by

a. Louis Pasteur

b. Robert Koch

c. Joseph Lister

d. Alexander Fleming

20. Gram’s staining is a type of

a. Negative staining

b. Acidic staining

c. Simple staining

d. Differential staining

21. Molecular identification of bacteria involves

a. 18S rDNA

b. 70S rDNA

c. 16S rDNA

d. 23S rDNA

22. Nucleoside is short of a

a. SO4-2

b. PO4-3

c. Cl-1

d. CO3-2

23. Microscope best suited for bacterial surface study is

a. SEM

b. TEM

c. Bright field microscope

d. Phase-contrast microscope

24. Microscope suited for bacterial ultrastructure study

a. SEM

b. Bright field microscope

c. TEM

d. Dark field microscope

25. Which of the following is NOT a domain in Woese and Fox’s phylogenetic tree?

a. Archaea

b. Eukarya

c. Bacteria

d. Plantae

26. Which of the following is the standard resource for identifying bacteria?

a. Systema Naturae

b. Bergey’s Manual of Determinative Bacteriology

c. Woese and Fox’s phylogenetic tree

d. Haeckel’s General Morphology of Organisms

27. Who was the first to describe “cells” in dead cork tissue?

a. Hans Janssen

b. Zaccharias Janssen

c. Antonie van Leeuwenhoek

d. Robert Hooke

28. The term prokaryotes refers to which of the following?

a. very small organisms

b. unicellular organisms that have no nucleus

c. multicellular organisms

d. cells that resemble animal cells more than plant cells

29. Which of the following describes Proteobacteria in domain Bacteria?

a. phylum

b. class

c. species

d. genus

30. EMB agar is an example of which of the following?

a. selective medium only

b. differential medium only

c. neither selective medium nor differential medium

d. both selective medium and a differential medium

**Section - B**

**Answer any four questions (Each question carry 5 marks 4\*5 = 20**

1. Discuss the different sterilization techniques.
2. Write a note on structure of cell wall in bacteria.
3. What are the various gene transfer mechanism in bacteria? Explain in detail.
4. Discuss in detail working construction and working principles of fluorescent microscope.
5. Elaborate on Gram’s staining of bacteria.
6. Write a note on different types of media used in Microbiology.