

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022  
(Second Semester)

Branch - BIOTECHNOLOGY

FUNDAMENTALS OF MICROBIOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 If the eyepiece magnification of light microscope is x10 and the objective is x40, what is the overall magnification?  
(i) x10 (ii) x40  
(iii) x400 (iv) x4
- 2 The major component of bacterial cell wall is \_\_\_\_\_  
(i) Chitin (ii) Cellulose  
(iii) Dextran (iv) Peptidoglycan
- 3 The principle involve in streak plate method is \_\_\_\_\_  
(i) Separation (ii) Dilution  
(iii) Isolation (iv) Streaking
- 4 Which of the following gene deduced the evolutionary relationship between the taxonomic groups?  
(i) 16S rRNA (ii) 23S rRNA  
(iii) 5S rRNA (iv) 18S rRNA
- 5 Which of the following microorganisms are used as bio-fertilizer?  
(i) Actinobacteria (ii) Cyanobacteria  
(iii) Methanobacteria (iv) Sulfer bacteria

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Differentiate Bright field and Dark field microscope  
OR  
b Explain the principle and reagents of gram staining.
- 7 a Bring out the structure and function of bacterial flagella.  
OR  
b Discuss about algal pigments and its significance.
- 8 a Outline the methods of isolation of pure culture.  
OR  
b Summarize the factors that influence the growth of microorganisms.
- 9 a Analyse the five kingdom classification system proposed by Whittaker.  
OR  
b Describe the mechanism of drug resistance in bacteria.

Cont...

10 a Analyse the role of microbial pesticides in pest and disease management.

OR

b Distinguish between probiotic and prebiotic.

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11 a Outline the contributions of Louis Pasteur and Robert Koch to microbiology.

OR

b Discuss in detail the physical method of sterilization.

12 a Illustrate the size, shape and arrangement of bacterial cells.

OR

b Elucidate the structure and symmetry of viruses.

13 a Classify bacteria based on their nutritional requirements.

OR

b Highlight the different phases of growth curve.

14 a Elucidate the major characteristics used in bacterial taxonomy.

OR

b Evaluate the effectiveness of antimicrobial agents using phenol coefficient method.

15 a Summarize the types, advantages and applications of biofertilizers.

OR

b Discuss in detail the different types of microbial interactions.

Z-Z-Z

END