

**PSG COLLEGE OF ARTS & SCIENCE**  
(AUTONOMOUS)  
**BSc DEGREE EXAMINATION MAY 2019**  
(Second Semester)

**Branch - BIOTECHNOLOGY**

**FUNDAMENTALS OF MICROBIOLOGY**

Time : Three Hours

Maximum : 75 Marks

**SECTION-A (10 Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks (10 x 1 = 10)

- 1 Degree of scattering in transmission electron microscope is a function of
  - i) wavelength of electron beam used
  - ii) number of atoms that lie in the electron path
  - iii) number and mass of atoms that lie in the electron path
  - iv) mass of atoms that lie in the electron path
- 2 Negative staining is used for examining
  - i) Virus particles ii) Protein molecules iii) Bacterial flagella
  - iv) Virus particles, protein molecules and bacterial flagella
- 3 Which among the following acts as a transport protein for protons in flagellar motion?
  - i) fli protein ii) cGMP iii) atp iv) mot protein
- 4 Prosthecae helps in
  - i) Motility ii) nutrient absorption and attachment to surfaces
  - iii) Human infection iv) Protection from environment
- 5 “Red extreme halophiles” are members of the archaebacterial which cannot grow with less than 12 to 15 percent NaCl.
  - i) True ii) False
- 6 Which of the following is a characteristic of beef extract?
  - i) product resulting from the digestion of proteinaceous materials
  - ii) aqueous extract of lean beef tissue iii) aqueous extract of yeast cells
  - iv) complex carbohydrate obtained from certain marine algae
- 7 The correct order of taxonomic groups from higher to lower rank is?
  - i) Kingdom - Order -Class- Family
  - ii) Order -Class-Division-Family-Genus- Species
  - iii) Kingdom-Order-Division-Family- Class-Genus- Species
  - iv) Kingdom-Division-Class-Order-Family-Genus-Species
- 8 Acycloguanosine is a nucleoside analog which is active against
  - i) Influenza A virus ii) HIV virus iii) Herpes virus iv) Influenza B virus
- 9 Bacterial cell grown on hydrocarbon wastes from the petroleum industry are a source of
  - i) Carbohydrates ii) Proteins iii) Vitamins iv) fats
- 10 Agrobacterium is involved in which of the following processes?
  - i) Ammonification ii) Nitrification
  - iii) Reduction of nitrate to ammonia iv) Denitrification

**Cont...**

**SECTION - B (25 Marks)**Answer **ALL** Questions**ALL** Questions Carry **EQUAL** Marks (5 x 5 = 25)

Explain in brief the principle and applications of phase contrast microscopy  
OR

Narrate the techniques of pasteurization and how it is used for the sterilization of milk?

Outline the structure and composition of a bacterial cell membrane in neat.  
OR

State the structural features and unique features of Cyanobacteria in short.

Classify the microorganisms based on their nutritional types.

OR

Compare and contrast between enrichment and selective media.

Summarise the Whittaker's Five kingdom Concept.

OR

Describe in short about the agar plate method of evaluating the antimicrobial agents.

Outline the applications of mycorrhizae as biofertilizers.

OR

Bring out the applications of prebiotics and probiotics.

**SECTION - C (40 Marks)**

Answer all Questions

**ALL** Questions Carry **EQUAL** Marks (5 x 8 = 40)

a) Outline the history, Scope and developments in Microbiology in detail.

OR

b) Discuss in detail about the various chemical methods of sterilization.

a) Elucidate the mechanism of bacterial motility stating the structure and arrangements of flagella.

OR

b) Illustrate the morphology of a protozoan with a suitable example.

a) Enumerate the growth of microorganisms in detail.

OR

b) Discuss in detail about the various factors affecting microbial growth.

a) Highlight the classification of microorganisms based on their molecular characteristics in detail.

OR

b) Discuss in detail about bacterial multidrug resistance.

a) Outline the transformation of hydrocarbon into oil spills.

OR

b) Highlight the applications of baculoviruses as biopesticides.

Z-Z-Z

END