

Total No. of Printed Pages—4

4 SEM TDC BIOTCH G 1

2 0 1 8

(May)

BIOTECHNOLOGY

(General)

Course : 401

(Microbiology and Immunology)

Full Marks : 48

Pass Marks : 19/14

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Choose the correct answer : 1×4=4

**(a) Which of the following statement(s)
is/are true for gram-positive bacteria?**

**(i) Cell wall as a thick peptidoglycan
layer**

(ii) Cell wall lipid content is very low

(iii) Lipopolysaccharide layer is absent

(iv) All of the above

8P/463

(Turn Over)

(2)

- (b) In gram staining, iodine is used as
- (i) fixative
 - (ii) mordant
 - (iii) solubilizer
 - (iv) stain
- (c) Name the first organic acid produced by microbial fermentation.
- (i) Citric acid
 - (ii) Acetic acid
 - (iii) Lactic acid
 - (iv) Both (ii) and (iii)
- (d) The antibodies are
- (i) proteins
 - (ii) carbohydrates
 - (iii) lipids
 - (iv) None of the above

8P/463

(Continued)

(3)

2. Write briefly about the following : $4 \times 3 = 12$
- (a) Structure of PPLO with a labelled diagram
 - (b) Ultrastructure of flagella with a labelled diagram
 - (c) Symbiosis and antibiosis with suitable examples
3. Answer any two of the following : $10 \times 2 = 20$
- (a) Explain the principle and practice of serial dilution of water samples for microbial analysis with a suitable diagram. What are auxotrophic mutants? $6 + 2 + 2 = 10$
 - (b) Define monocistronic genes. Explain the following :
 - (i) $F^+ \times F^-$ conjugation
 - (ii) $Hfr \times F^-$ conjugation
 - (iii) $F^+ \times F'$ conjugation $1 + (3 \times 3) = 10$
 - (c) Calculate the *cfu* for 25 bacterial colonies obtained by plating 0.5 ml of 10^{-6} dilution sample. Explain various methods of sterilization with suitable examples. $4 + 6 = 10$
 - (d) Explain different types of immunoglobulins with their structure and functions. 10

8P/463

(Turn Over)

4. Write short notes on any two of the following : 6×2=12

- (a) Various waterborne diseases and their causative agents
- (b) Antigen-antibody reaction and significance
- (c) Hybridoma and myeloma technology and applications
- (d) Transformation and transduction
