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**4 SEM TDC BIOTCH G 1**

**2016**

**( 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 is the smallest immunoglobulin?

(i) IgA

(ii) IgG

(iii) IgM

(iv) IgD

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- (b) Which of the following does not protect body surfaces?
- (i) Skin
  - (ii) Mucus
  - (iii) Gut microflora
  - (iv) Salivary amylase
- (c) The genetic material of viruses consists of
- (i) DNA
  - (ii) RNA
  - (iii) DNA or RNA
  - (iv) ssDNA or ssRNA
- (d) Gram staining is an example of
- (i) acid fast stain
  - (ii) acid stain
  - (iii) differential stain
  - (iv) None of the above
2. Write briefly about the following :  $4 \times 3 = 12$
- (a) Cell-mediated immunity
  - (b) Role of microbes in nitrogen fixation
  - (c) PPLO

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3. Answer any two questions of the following :  $10 \times 2 = 20$
- (a) What is transformation? Write briefly on various gene transfer techniques in bacteria with suitable illustrations.  $2+8=10$
  - (b) What is fermentation? Explain the basic structure of a fermenter with a suitable diagram.  $2+8=10$
  - (c) What are monoclonal antibodies? Explain the role of hybridoma technology in the production of insulin.  $2+8=10$
  - (d) Write elaborately on various techniques of sterilization. 10
4. Write short notes on any two of the following :  $6 \times 2 = 12$
- (a) Serial dilution method for the isolation and enumeration of microorganisms
  - (b) Role of *Lactobacillus* sp. in dairy industries
  - (c) Immunoglobulins
  - (d) Replica-plating technique

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