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**4 SEM TDC BIOTCH G 1**

**2017**

**( 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 not true for a fermentation  
process?**

- (i) Fermentation process is an  
oxidation-reduction process**
- (ii) Fermentation process releases heat**
- (iii) Fermentation process is reversible**
- (iv) Fermentation process is irreversible**

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- (b) Nigrosine staining is an example of
- (i) differential stain
  - (ii) negative stain
  - (iii) acid-fast stain
  - (iv) None of the above
- (c) The conversion of nitrogen to ammonia or nitrogenous compounds is called
- (i) nitrogen assimilation
  - (ii) nitrogen fixation
  - (iii) denitrification
  - (iv) nitrification
- (d) Vaccination is an example of
- |       |                       |                  |
|-------|-----------------------|------------------|
| (i)   | artificially acquired | active immunity  |
| (ii)  | naturally acquired    | active immunity  |
| (iii) | naturally acquired    | passive immunity |
| (iv)  | artificially acquired | passive immunity |

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2. Write briefly about the following :  $4 \times 3 = 12$
- (a) Antigen-antibody reaction with a suitable experiment
  - (b) CFU count and its significance
  - (c) Bacterial classification based on their shape
3. Answer any *two* of the following :  $10 \times 2 = 20$
- (a) What is competency? Explain conjugation in bacteria mentioning its significance with suitable diagram.  $2+4+2+2=10$
  - (b) What are auxotrophic mutants? Explain replica plating method mentioning its significance with a suitable diagram.  $2+4+2+2=10$
  - (c) What are vaccines and monoclonal antibodies? Explain hybridoma technology with a suitable labelled diagram.  $2+2+6=10$
  - (d) Explain an experimental method for the isolation and enumeration of microorganisms from water with suitable illustrations. 10

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

- (a) Cell mediated immunity
- (b) Role of microorganisms in biological nitrogen fixation
- (c) Classification of microorganisms based on their mode of nutrition
- (d) Antigenicity and immunogenicity

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