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( February )

BIOTECHNOLOGY

( Honours )

( Microbiology and Environmental Biotechnology )

Marks : 56

Time : 3 hours

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

Answer Question No. **1** which is compulsory  
and *any four* from the rest

1. Write briefly on the following :  $2 \times 6 = 12$

- (a) Biopesticides
- (b) Swan-necked bottle experiment
- (c) Pathogens
- (d) PPLOs
- (e) Pure culture
- (f) Biofertilizers

2. What is germ theory? Describe Robert Koch's experiment which established microbe-disease relationship. Mention Koch's postulates.  $2+4+5=11$

3. Define symbiosis. Discuss the role of N-fixing microbes in host plant's growth and development.  $2+9=11$

4. Write short notes on any *two* of the following :  $5\frac{1}{2} \times 2 = 11$

- (a) Microbial growth curve
- (b) Genetic recombination by conjugation in microbes
- (c) Psychrophilic microorganisms

5. Write short notes on the role of microbes in the following processes :  $5\frac{1}{2} + 5\frac{1}{2} = 11$

- (a) Treatment of municipal wastes
- (b) Degradation of pesticides

6. What are modern biofuels? Briefly describe the biofuels and their production by microbial processes. Discuss the environmental impact of biofuels.  $2+6+3=11$

( 3 )

7. Elaborate on any *two* of the following :

5½×2=11

(a) Cause and consequence of greenhouse effect

(b) Cause and consequence of soil pollution

(c) Impact of GEMs in the environment

8. How is environmental quality bioassessed?

Explain how biotechnology can be used to abate environmental problems.

3+8=11

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