

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7881

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Unique Paper Code : 2493010018

Name of the Paper : Biotechnology (DSE)

Name of the Course : **B.SC. (HONS.) BIOCHEMISTRY (NEP)**

Semester : VIII

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt 4 questions in all.
3. **Question no. 1** is compulsory

1A State the statements whether true or false and justify your statement:

- i) Adenovirus based gene transfer in mammalian cells is used to achieve stable transfection.
- ii) *Pseudomonas putida* is used for bioremediation of oil spills in the oceans.
- iii) Recombinant vaccines are ineffective in immunocompromised individuals.
- iv) Recombinant insulin expressed in *E. coli* must undergo post-translational modifications identical to human insulin.
- v) All genetically modified plants are considered completely safe for human consumption without testing.
- vi) Recombinant enzymes cannot withstand extreme pH or temperature conditions in industries.

B. Write the name of the disease(s) associated with the deficiency of following proteins:

- i) Factor VIII
- ii) Somatotrophin
- iii) Erythropoietin

(12, 3)

2A. Write different physical methods for transfer of a foreign gene into mammalian cells.

B. Explain the steps involved in producing recombinant human insulin using *E. coli* as host system.

C. Explain the steps involved in the preparation of cheese.

(5, 5, 5)

P.T.O.

- 3A. Describe the different stages involved in sewage water treatment and explain the function of each stage.
- B. What is *bt* cotton, and how does its genetic modification help in pest resistance?
- C. Explain gene therapy. Describe its application in treating inherited disease using gene therapy. (5, 5, 5)
- 4A. Define single cell protein. Discuss the advantages and limitations of using SCP as an alternative protein source for humans and animals.
- B. Describe the process of Somatic Cell Nuclear Transfer (SCNT) taking a appropriate example.
- C. Describe the role and applications of antisense RNA in plant gene regulation. (5, 5, 5)
- 5A. Explain the steps involved in the preparation of beer.
- B. Define 'Molecular Pharming'. Explain how recombinant proteins are produced using transgenic plants.
- C. Discuss how animal biotechnology techniques contribute to improving livestock productivity. (5, 5, 5)
6. Write short notes on the following:
- a) Bioreactor
 - b) Recombinant Vaccines
 - c) Bioremediation
 - d) Plantibodies
 - e) Ethical issues related to genetic modified organisms
- (3x5)