KATHMANDU UNIVERSITY
End Semester Examination
August, 2019

Marks scored:

Level : B.Tech.
Year : I

Course : BIOT 101
Semester: II

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date AUG 16 2019

SECTION "A"
[10Q × 0.5 = 5 marks]

Choose and tick [√] the most appropriate answer.

1. Which of the following enzyme is used to join DNA fragments?
[ ] Nuclease [ ] Restriction Enzymes
[ ] Ligase [ ] Lyases

2. Which amino acid can form disuphide bonds?
[ ] Glycine [ ] Cysteine [ ] Proline [ ] Glutamate

3. The most abundant carbohydrate in the nature is
[ ] cellulose [ ] glycogen [ ] lignin [ ] chitin

4. Correctly matched pair is
[ ] Okazaki fragments- splicing
[ ] RNA polymerase- RNA primer
[ ] Restriction endonuclease- genetic engineering
[ ] Central dogma-codon

5. Shoot elongation is stimulated by
[ ] 2,4-D [ ] Potato extract [ ] Cytokinin [ ] NAA

6. In prokaryotes, the synthesis and breakdown of mRNA occurs from
[ ] 5' to 3' end'
[ ] 5' to 3' and 3' to 5' end, respectively
[ ] 3' to 5' end
[ ] 3' to 5' and 5' to 3' end, respectively

7. Microorganism responsible for yoghurt production is
[ ] *Lactobacillus* [ ] *Streptomyces*
[ ] *Aspergillus* [ ] *Saccharomyces*

8. Any DNA molecule that has the ability to replicate in an appropriate host cell, to which the desired gene are integrated for cloning is called
[ ] vector [ ] plasmid [ ] linker [ ] adapter

9. Certification mark can be registered in
[ ] Trademark Registry [ ] Certification Board
[ ] Quality Control Board [ ] MHRD

10. Which of the following bacterium is called as the superbug that could clean up oil spills
[ ] *Bacillus subtilis* [ ] *Pseudomonas putida*
[ ] *Pseudomonas denitrificans* [ ] *Bacillus denitrificans*

SECTION "B"

[5Q. × 1 = 5 marks]

Fill in the blanks.

11. The first engineered plasmid vector is.....

12. Serum in animal cell culture media provides.....

13. Crop plants offer a cost-effective bioreactor to express antigens which can be used as.....

14. Genetic material of Tobacco Mosaic Virus is.....

15. Fermentation is decomposition of organic matter by.....enzyme produced by yeast.

SECTION "C"

[10Q. × 1 = 10 marks]

Define in *ONE* sentence.

16. Bioremediation

17. Stillages

18. Tissue Engineering

19. EcoR1

20. Thermocycler

21. Molecular farming

22. Hybridoma Technology

23. Primosome complex

24. Non-catalytic functional proteins

25. Intellectual Property Right

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SECTION "D"

(Long answer questions)
[3Q. × 7 = 21 marks]

Attempt *ALL* questions.

1. Define transgenic crops? What is the common strategy to produce transgenic crops with delayed ripening and longer shelf life of fruits?

2. Define renewable energy? Explain briefly the biofuel production from plant system.

3. What are stem cells? Describe the application of embryonic stem cell technology.

SECTION "E"

(Short answer questions)

4. Write short notes on: [6 × 4 = 24]
   a. Bioleaching
   b. Gene therapy
   c. Biosafety
   d. Ex-situ conservation
   e. Microbial fermentation for dairy and health
   f. DNA as genetic material

5. Give TWO major differences between: [2 × 2 = 4]
   a. Blunt and sticky ends
   b. Batch and Fed batch culture

6. Explain why/how for the following: [3 × 2 = 6]
   a. CO_2 incubators required for animal cell culture.
   b. Lyophilized cultures of microbes remain viable for several year
   c. *Agrobacterium* described as 'natural genetic engineer' of plants.