KATHMANDU UNIVERSITY
End Semester Examination
September 2024

Marks Scored:

Level : B.Tech..
Year : I

Course : BIOT 101
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date : 13 SEP 2024

SECTION "A"
[10Q. × 0.5 = 5 marks]

Choose and mark [X] the most appropriate answer. Symbols have their usual meanings.

1. Essential fatty acid in the diet of experimental animal is
[ ] *Linolic acid* [ ] *Stearic acid* [ ] *Palmitic acid* [ ] Oleic acid

2. Vitamin B_2 is used in coenzyme
[ ] NAD [ ] FMN
[ ] *TPP* [ ] Pyridoxal phosphate

3. Which of the following hormones owes its discovery to tissue culture technique?
[ ] Auxin [ ] Abscisic acid [ ] Gibberellin [ ] Cytokinin

4. During protein synthesis, the RNA that picks up specific amino acid from amino acid pool in the cytoplasm to ribosome, that RNA is said to be
[ ] mRNA [ ] Rrna [ ] RNA itself [ ] tRNA

5. Wine and beer are produced directly by fermentation, Brandy and whisky require both fermentation and distillation because
[ ] Fermentation is inhibited at an alcoholic level of 10-18%
[ ] Distillation prolongs storage
[ ] Distillation improves quality
[ ] Distillation purifies the beverages

6. *Bruise resistant tomatoes have been developed by the expression of antisense RNA against*
[ ] Polygalacturonase [ ] ACC deaminase
[ ] Sucrose phosphate synthase gene [ ] Glycerol 1 phosphate acyl transferase

7. Which of the following bacterium is widely used as biopesticides?
[ ] *Bacillus subtilis* [ ] *Bacillus thuringiensis*
[ ] *Streptococcus lactis* [ ] *Lactobacillus acidophilus*

8. CRISPR is being used to treat-
[ ] HIV/AIDS [ ] Corona virus
[ ] Cancer [ ] Pulmonary infection

9. Which reserve a starving man first consumes?
[ ] Glycogen [ ] Fat [ ] Vitamin [ ] Protein

10. *Abnormal gene is replaced by normal gene through gene therapy,* the gene defects are cured in a child or
[ ] Adult [ ] Embryo [ ] Old [ ] Teenage

SECTION "B"

[5Q. × 1 = 5 marks]

Fill in the blanks.

11. NHGRI _____

12. Horizontal gene transfer is _____

13. Cloning vector is _____

14. Second Generation Biofuels are _____

15. _____ is first company who first developed the vaccine for the novel Coronavirus, COVID-19

SECTION "C"

[10Q. × 1 = 10 marks]

Define in *one* sentence.

16. Microbial fuel cells (MFCs)

17. Holoenzyme

18. Cryopreservation

19. Cry protein

20. MAS

21. Bioethics

22. Ex-situ conservation

23. Suspension Culture

24. Tay-Sachs disease

25. Cyclosporin

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Level : B.Tech.
Year : I
Time : 2 hrs. 30 mins.

13 SEP 2024

Course : BIOT 101
Semester : II
F. M. : 55

SECTION "D"
[3Q. × 7 = 21 marks]

Attempt *ALL* questions.

1. What do you mean by androgenic haploid plants? How can farmers benefit from plant tissues culture and also mention the steps of tissues culture.

2. Give a comprehensive account of the importance and functions of lipids.

3. What do you understand by antisense technology? Why is this technique relatively advantageous than other genetic transformation techniques?

OR

Give examples of mild and severe consequences of immune dysfunction. What is the most common cause of immune-deficiency throughout the world today? Also mention the major types of Immunoglobulin.

SECTION "E"

4. Write short notes on. [6Q. × 4 = 24 marks]
   a. Hybridoma technology
   b. Biopesticides
   c. Principle of fermentation
   d. Plant based vaccines
   e. Genetic counselling
   f. Chemical nature of DNA

5. Give **TWO** major differences between. [2Q. × 2 = 4 Marks]
   a. Current and future challenges of tissues engineering
   b. Medical molecular farming and non-medical molecular farming

6. Explain **WHY/HOW** for the following. [3Q. × 2= 6 Marks]
   a. Microorganisms play a crucial role in the treatment of wastewater
   b. GMO food solves the hunger problems.
   c. Human insulin consists of two polypeptide chains