

Write the following information in the first page of Answer Script before starting answer

ODD SEMESTER EXAMINATION: 2020-21

Exam ID Number _____

Course _____ Semester _____

Paper Code _____ Paper Title _____

Type of Exam: _____ (Regular/Back/Improvement)

Important Instruction for students:

1. Student should write objective and descriptive answer on plain white paper.
2. Give page number in each page starting from 1st page.
3. After completion of examination, Scan all pages, convert into a single PDF and upload to the Google classroom as attachment.
4. Exam timing from 10am – 1pm (for morning shift).
5. Question Paper will be uploaded before 10 mins from the schedule time.
6. Additional 20 mins time will be given for scanning and uploading the single PDF file.
7. Student will be marked as ABSENT if failed to upload the PDF answer script due to any reason.

B. Sc BIOTECHNOLOGY
FIRST SEMESTER
BIOTECHNOLOGY & HUMAN WELFARE
BBT - 104

Duration : 3 hrs.

Full Marks : 70

(PART-A: Objective)

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1×20=20

1. Which enzyme is involved in PHB biosynthesis?
 - a. NADPH dependent acetoacetyl-CoA reductase
 - b. β -ketoacyl-CoA amylase
 - c. P(3HB) depolymerase
 - d. All of the above
2. Proteases are widely used in
 - a. Textile industry
 - b. Detergent industry
 - c. Food packaging industry
 - d. Cosmetic industry
3. Hartig net is formed by
 - a. Ectomycorrhiza
 - b. Endomycorrhiza
 - c. Plants
 - d. Bacteria
4. Which of these serves as a sample for DNA fingerprinting?
 - a. Blood
 - b. Saliva
 - c. Hair follicle
 - d. All of the above
5. 1st gene therapy was done to _
 - a. Correct ADA gene
 - b. Cure cystic fibrosis
 - c. Modify adenosine deaminase enzyme
 - d. Both 1 and 3
6. Addition of gasoline to fuel
 - a. Increases the fuel's cost
 - b. Increases the fuel's harmful emissions
 - c. Increases the fuel's octane rating
 - d. None
7. Biolistics is also known as
 - a. Microparticle carrier
 - b. Gene gun
 - c. Particle bombardment
 - d. All of the above
8. Hybridoma cell follow which pathway for selection
 - a. De novo pathway
 - b. Salvage pathway
 - c. Both 1 and 2
 - d. None
9. Which vectors are used for large scale genome projects?
 - a. Phage vectors
 - b. BAC
 - c. YAC
 - d. Both 2 and 3

10. Which of these pollutants cannot be treated by bioremediation and can harm food chain?
- a. Mercury
 - b. Carbon
 - c. Zinc
 - d. Nitrogen
11. Random mutagenesis helps in
- a. Creating a variety of mutants
 - b. Directed evolution
 - c. Protein evolution
 - d. All of the above
12. Hepatitis vaccine, a _ vaccine, is produced by cloning _ gene in yeast cells
- a. Recombinant; HbS
 - b. Subunit; HbS
 - c. Subunit; HbSAg
 - d. Attenuated, HbSAg
13. Which of this is an HCB?
- a. *Escherichia coli*
 - b. *Clostridium botulini*
 - c. *Alcanivorax borkumensis*
 - d. *Listeria monocytogens*
14. Rhizosphere effect is
- a. Enhancement of the growth of a soil microorganism
 - b. Increase in plant root growth in soil
 - c. Increase in fungal growth in soil
 - d. None
15. Which of these is solved by DNA fingerprinting?
- a. Crime bases
 - b. Paternity disputes
 - c. Immigration issues
 - d. All
16. Diabetes can be cured by gene therapy
- a. True
 - b. False
 - c. Maybe
 - d. Can't say
17. Which chromosome has the least no. of genes?
- a. Chromosome X
 - b. Chromosome 1
 - c. Chromosome Y
 - d. Chromosome 11
18. Antibiotic penicillin is produced by
- a. Aerobic method
 - b. Anaerobic method
 - c. Bacteria
 - d. Algae
19. Arbuscular fungi are also known as
- a. Ectomycorrhiza
 - b. Endomycorrhiza
 - c. Hartig net
 - d. Epiphytes
20. PHB is a thermoplastic polymer
- a. True
 - b. False
 - c. Maybe
 - d. Can't say

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(PART-B : Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

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|---|-------------|
| 1. Give 5 important properties of ethanol? Describe the process of ethanol production in industry with suitable diagrams and reactions. | 2+8=10 |
| 2. Differentiate between | 5 |
| a. Monoclonal and polyclonal antibodies | |
| b. Somatic cell gene therapy and germ line gene therapy | 5 |
| 3. Write short notes on | 5 |
| a. DNA fingerprinting | |
| b. Human genome project | 5 |
| 4. a. Describe the process of production of insect resistant transgenic plant (BT plant). | 4 |
| b. How does plant-microbe interaction help in nitrogen fixation? Describe in detail | 6 |
| 5. a. What is PHB. Write about its important properties and applications. | 1+3+2
=6 |
| b. Describe the process of PHB production. Use suitable enzymatic reactions. | 4 |
| 6. a. Describe the production and selection of hybridoma cells. | 2+2=4 |
| b. Diagrammatically explain the production of cholera vaccine. | 4+2=6 |
| 7. a. What is medicinal chemistry? What does it involve? | 1+2=3 |
| b. What is bioisosterism? What are its effects? Explain the discovery of Librium drug. | 1+2+4
=7 |
| 8. a. What is chlorination? Why do we chlorinate water? Briefly explain chlorine demand with diagram? | 1+1+4
=6 |
| b. What is biodegradation and bioremediation? | 2+2=4 |

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