

Time 2:30 hrs.

Marks:75

1. All questions are compulsory.
2. Figures to right indicate marks.
3. Draw neat labeled diagrams/structures wherever necessary.

Q.1 Do as directed (ANY 15)

(15)

1. Name one method for the isolation of single cell from plant organ in plant tissue culture.
2. _____ is the cell characteristics in which the potential for forming all the cell types in an adult plant is retained.
3. Give one example of plant tissue culture medium.
4. Give the significance of antibiotic used in PTC medium.
5. Name the German scientist who developed the concept of *invitro* cell cultures of the plant tissue.
6. Define—Callus.
7. What does MLMH stands for in plant tissue culture medium?
8. Define:Feeding of cells.
9. Define: Passage in animal cell culture.
10. State true or false: Tumor cells give rise to continuous cell lines
11. State true or false: Cells from normal tissues show density dependency and contact inhibition at confluency.
12. Give one example of intracellular activity in animal cell.
13. Fill in the blank:
Tissue culture was first developed by _____.
14. Fill in the blank:
_____ tissue was first used as first source for cell culture.
15. Power point presentation is used for writing the research report.(State True or False)
16. Explain the term plagiarism.
17. Language is one of the physiological barrier of communication. (State true or false)
18. Enlist any two examples of verbal communication.
19. _____ is a type of communication that employs gestures and body language.
20. Communication is _____ way process.

Q.2 A) Explain in detail the organization and role of culture room and transfer area in plant tissue culture laboratory. (08)

Q.2 B) Discuss the importance of totipotency in plant science. (07)

OR

Q.2C)What are macronutrients? Discuss the role of macronutrients and any two plant growth hormone in plant tissue culture medium. (08)

Q.2 D) Discuss the protocol for callus culture of the carrot root in detail. (07)

Q.3 A) Define primary culture? Explain how to obtain a primary cell culture. (08)

Q.3 B) Give methods of sterilization of animal tissue culture media. (07)

OR

Q.3 C) Write a note on any eight applications of animal tissue culture. (08)

Q.3 D) Draw a neat labeled diagram of carbon dioxide incubator and explain its use in animal cell culturing. (07)

Q.4 A) Explain the process of communication in brief. (08)

Q.4 B) Enlist the components of research paper and elaborate any two components. (07)

OR

Q.4 C) Read the following abstract and answer the following questions. (08)

Abstract: A wide range of medicinal and aromatic plants (MAPs) have been explored for their essential oils in the past few decades. Essential oils are complex volatile compounds, synthesized naturally in different plant parts during the process of secondary metabolism. The goals of the study were to determine and compare the phytochemical screening, antioxidant and antimicrobial activities of the essential oils of *Azadirachta indica* and *Vitex negundo*. The phytochemical screening of the two plants showed presence of alkaloids, carbohydrates, glycosides, phenolic and tannin compounds, flavonoids, saponins, lipids and terpenoids. About the antioxidant potential, *Azadirachta indica* showed a higher ability to scavenge free radicals as compared to *Vitex negundo*, which was investigated by (DPPH) radical scavenging assay. Regarding the antimicrobial activity, *Vitex negundo* showed a better ability to inhibit the growth of pathogenic micro-organisms as compared to *Azadirachta indica*, which was investigated by the Agar diffusion method.

i. Suggest a suitable title to the research work.

ii. What is the goal of the study?

iii. Which among the two plant exhibited better antioxidant activity?

iv. Give four key words for the research work based on the abstract.

Q.4 D) Explain the important differentiating points of verbal and non-verbal communication. (07)

Q.5 Write short notes on: (Any three) (15)

1. Use of rotary shakers in PTC lab.
2. Importance of callus culture.
3. Inverted microscope.
4. Importance of effective communication.
5. Growth factors.
