

2 ½ Hours

Total Marks: 75

1. Attempt all questions.
2. All questions carry equal marks.
3. Draw neat labeled diagrams wherever necessary.
4. Use of log tables and non-programmable calculator is allowed.
5. For Q.2, Q.3 and Q.4 attempt A and B OR C and D.

Q. 1 Do as directed (Any fifteen)

1. Define organogenesis.
2. State the optimum pH of Plant Tissue Culture media.
3. Name the filter in Laminar air flow unit.
4. State the use of microtome in Plant Tissue Culture.
5. Define the term 'totipotency'.
6. State true or false: Callus can be used for somatic embryogenesis.
7. What is 'habituation of callus culture'?
8. What is an explant?
9. Explain the term subculture.
10. Name any one equipment used in Animal Tissue Culture laboratory.
11. Name any one protein present in serum.
12. Which buffer system is used in Animal Tissue Culture.
13. Give one example of enzymes used in disaggregation of animal cells?
14. Who is Heinreitta Lacks?
15. A _____ presents the previously published facts and theories in a particular field but is more than a mere catalogue of previous literature. (Review paper, Research paper, News-paper).
16. What is plagiarism?
17. Give an example of a non-verbal communication.
18. Give an example of physiological barrier of communication.
19. State true or false:- Bibliography is the material and method of a report.
20. State true or false:- Microsoft PowerPoint is used to prepare oral presentations.

Q. 2 A With a neat labelled diagram, explain the protocol for callus culture. **08**

Q. 2 B How would you sterilize the following in plant tissue culture? **07**

- i. MS medium
- ii. Explants
- iii. Vitamins
- iv. LAF hood
- v. Metal instruments
- vi. Culture vessels
- vii. Phytohormones

OR

Q. 2 C Explain the importance of macro and micronutrients in plant tissue culture media. **08**

Q. 2 D Elaborate on the callus characteristics: texture and colour. **07**

Q. 3 A Diagrammatically represent the growth kinetics of a typical cell culture. **08**

Q. 3 B Discuss laminar flow hood. **07**

OR

Q. 3 C Discuss the components of a complete medium. **08**

Q. 3 D Explain with examples adherent and non-adherent cultures. **07**

Q. 4 A Schematically explain the process of communication. **08**

Q. 4 B Discuss the Heads of a research paper with a suitable example. **07**

OR

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

Abstract: Essential oils are complex volatile compounds, synthesized naturally in different plant parts during the process of secondary metabolism. Essential oils have a great potential to destroy several bacterial, fungal, and viral pathogens. The presence of different types of aldehydes, phenolics, terpenes, and other antimicrobial compounds means that the essential oils are effective against a diverse range of pathogens. The reactivity of essential oil depends upon the nature, composition, and orientation of its functional groups. The aim of this research article was to test the antimicrobial potential of essential oils secreted from 10 plants

and their possible mechanisms of action against human pathogens. The 6 plant extracts showed antimicrobial action against both gram positive and gram negative bacteria. The extracts of mentha and clove showed maximum inhibition zone thus showing potent antimicrobial activity. The method used for study was Agar cup assay

- i. Suggest a suitable title to the research work.
- ii. What are essential oils and which are the active compounds present?
- iii. What is the method used for study? What was the result of the study?
- iv. Give four key words for the research work based on the abstract.

Q. 4 D Compare and contrast Verbal and Non Verbal communication. **07**

Q 5 Write Short notes on any three of the following **15**

- a. Cell theory.
- b. Role of cytokinins in plant tissue culture media.
- c. Applications of animal cell culture.
- d. Inverted microscope.
- e. Principles of effective communication.