

2 ½ HOURS

TOTAL MARKS: 75

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

**Q1 Select the appropriate option for the following questions.**

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1. Which of the following was a prediction of the Haberlandt experiment on plant cells?  
a) Plant cells could not grow  
b) Plant cells could not divide  
c) The cultured plant cells could grow, divide and develop into embryos further in the whole plant.  
d) Plant cells could behave like an animal cell.
2. A plant organ or piece of tissue used to initiate a culture is known as \_\_\_\_\_.  
a) Organ  
b) Tissue  
c) Explant  
d) Callus
3. \_\_\_\_\_ is used to wash the glassware and to prepare the media in the PTC laboratory.  
a) Media preparation room  
b) Dissection room  
c) Sterilization room  
d) Culture room
4. The glassware and some of the plasticware can be sterilized using \_\_\_\_\_.  
a) An autoclave  
b) A hot air oven  
c) An incubator  
d) Bacteria proof filter
5. The velocity of sterile air circulating through laminar air flow is \_\_\_\_\_.  
a)  $30 \pm 3$  m/min  
b)  $50 \pm 3$  m/min  
c)  $100 \pm 3$  m/min  
d)  $27 \pm 3$  m/min
6. Gelrite is isolated from \_\_\_\_\_.  
a) *Gelidium* Spp  
b) *Pseudomonas* Spp  
c) *Staphylococcus* Spp  
d) *Micrococcus* Spp
7. Energy metabolism in vivo occurs largely by \_\_\_\_\_.  
a) ETC  
b) Glycolysis  
c) EMP pathway  
d) Citric acid cycle
8. Which of the following is NOT a limitation of ATC?  
a) in vitro Modeling  
b) origin of cells  
c) Quantity  
d) Instability
9. \_\_\_\_\_ is used to check the osmolality of the ATC media.  
a) Osmotic Monitor  
b) Air pump  
c) Conductivity meter  
d) Osmometer
10. The variation in the optimum temperature can be within \_\_\_\_\_ °C.  
a)  $\pm 1$  °C  
b)  $\pm 0.2$  °C  
c)  $\pm 0.8$  °C  
d)  $\pm 0.5$  °C
11. \_\_\_\_\_ ions are responsible for regulating cell membrane potential.  
a)  $\text{Na}^+$  and  $\text{K}^+$   
b)  $\text{Ca}^{2+}$  and  $\text{K}^+$   
c)  $\text{Na}^+$  and  $\text{SO}_4^{2-}$   
d)  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$
12. \_\_\_\_\_ can encourage poor aseptic technique.

13. a) Organic supplements  
b) Balanced salts  
c) Antibiotics  
d) Glucose  
\_\_\_\_\_ protein is responsible for inhibiting the action of trypsin.
14. a) Fetuin  
b) Transferrin  
c) Albumin  
d) Fibronectin  
\_\_\_\_\_ is NOT an example of a biotechnological tool.
15. a) PCR  
b) AGE  
c) Gravimetric analysis  
d) PAGE  
\_\_\_\_\_ should allow a researcher to reproduce the results/data
16. a) Acknowledgements  
b) Materials and methods  
c) Introduction  
d) Bibliography  
\_\_\_\_\_ is quoting the work of other researchers.
17. a) Plagiarism  
b) Acknowledgements  
c) Referencing  
d) Abstract  
References are NOT cited in \_\_\_\_\_ part of a scientific research article.
18. a) Abstract  
b) Introduction  
c) Discussion  
d) Materials and methods  
An example of extra personal communication is \_\_\_\_\_.
19. a) Prayers  
b) Meditation  
c) Communication with animals  
d) Cinema  
\_\_\_\_\_ software can be used for a verbal presentation.
20. a) MS Word  
b) MS Project  
c) MS Excel  
d) MS PowerPoint  
\_\_\_\_\_ is an example of a Non-verbal communication.
- a) Signature  
b) Oral presentation  
c) Noise  
d) Cultural difference

**Q. 2 A** Describe in detail about the washing area and sterilization room as a part of PTC laboratory. 07

**Q. 2 B** What are micronutrients? Enlist them and mention their physiological role in PTC media preparation. 04

OR

**Q. 2 C** Define plant growth regulators. Explain about the organic supplements added in PTC media. 07

**Q. 2 D** Describe the growth pattern seen in case of plant cells when grown on a medium. 04

**Q. 3 A** Give a brief account of disadvantages of Serum media 07

**Q. 3 B** What is the role of Growth factors in an animal tissue culture media? 04

OR