Roll No. ..... Total Printed Pages -11

F- 1060

M.Sc. (Fourth Semester)

EXAMINATION, May - June, 2022

BIOTECHNOLOGY

Paper Third

(Animal Biotechnology)

Time : Three Hours] *[Maximum. Marks:80*

Note: Attempt all sections as directed.

Section - A

(Objective/Multiple Type Questions)

(1 mark each)

Note: Attempt all questions. Choose the correct answer:

1. Osmometer being used in cell culture is work by-

   (A) Depressing the freezing point of medium

   (B) Elevating its vapour pressure

   (C) By both (A) and (B)

   (D) None of the above

2. The instrument used in cell culture which presenting the image in one focal plane and avoiding the interference caused by adjuscent cells not in the same focal plane, is

   (A) Inverted Microscope

   (B) Fluorescent Microscope

   (C) Confocal Microscope

   (D) Freezing microscope

3. A Non adhesive substrate for cell culture may constitutes

   (A) Agar

   (B) Agarose

   (C) Methocel

   (D) All above

4. For culture of mammary epithelium which media is more suitable -

   (A) MCDB 170

   (B) WAJC 404

   (C) Iscove's

   (D) LHC - 9

5. Fibroblastic overgrowth can be inhibited in brest and skin cell culture by using -

   (A) PDGF

   (B) ACL - 3

   (C) MCDB 170

   (D) WAJC 404

6. For tissue disaggregation in cold trypsin, the most suitable temperature and duration is:

   (A) 2^0C for 12 hours

   (B) 4^0C for 6 - 18 hours

   (C) 8^0C for 4 hours

   (D) 37^0C for 2 hours

7. In a cultured cell glutamine is utilized as a carbon source by -

   (A) Oxidation to glutamate by glutaminase

   (B) Oxidation to glutamate by transaminase

   (C) Oxidation to glutamate to 2 - oxoglutarate

   (D) None of the above

8. The fibroblast growth factor (FGFs) is a

   (A) Tumerogenic growth factor

   (B) Immortilizng growth factor

   (C) Invasive growth factor

   (D) Mitogenic growth factor

9. In cell culture process DMSO is a chemical toxicant becuase -

   (A) Skin penetrant

   (B) Cell growth inhibitor

   (C) Induces neoplasia

   (D) Induces immortilization

10. In scaling up of cell culture maximum suitable stirring rate for suspension culture is -

    (A) 10 - 50 rpm

    (B) 50 - 100 rpm

    (C) 100 - 150 rpm

    (D) 150 - 200 rpm

11. Growth of many animal cell lines has been found to be optimal at a dissolved oxygen level below the maximum solubility and corresponding to.....of air saturation.

(A) 20 - 50%

(B) 40 - 60%

(C) 60 - 80%

(D) 80 - 100%

12. In cell culture process, the population doubling time (PDs) may be calculated by -

(A) PD = log 10 (number cell seeded) - log 10 (number cell harrested) / log 10^2

(B) PD = log 10 (number cell seeded) - log 1 (number cell harvested) / log 10^2

(C) PD = log 10^2 (number cell harrested) - log 10 (number cell seeded) / log 10^2

(D) PD = log 10 (number cell harvested) - log 10 (number cell seeded) / log 10^2

13. In cell culture process senescent cell may be demonstrated by using -

(A) Senescence associated glactosidase

(B) Senescence associated dimethylformamide

(C) Senescence associated calcein

(D) Senescence associated caspase

14. In cell culture based vaccine production which adjuvants are commonly used.

(A) Aluminium compound & M59

(B) Silver compound & M69

(C) Chromium compound & M79

(D) Zinc compound & M 89

15. The recombinant DNA technology based vaccine for foot and mouth disease was targeted to capsid polypeptide of virus for-

(A) VP_4

(B) VP_3

(C) VP_2

(D) VP_1

16. The example of application of tissue engineering is:

    (A) Development of islet of lungerharis

    (B) Development of eye corneal cell

    (C) Development of re- constitution of skin

    (D) Development of hepatocyte cell

17. The interferon Half - β was produced by process of 'Superinduction' by using

    (A) Monkey kidney cell

    (B) Human foreskin fibroblask

    (C) Human myoepithelial cell

    (D) Monkey astroglial cell

18. The viral genes that have been used to immortalize cultured cell are-

    (A) Adenovirus E1a

    (B) Human Papilloma Virus (HPV) E6 and E7

    (C) Epstein - Barr virus (EBr)

    (D) All the above

19. Which factors are being released by tumor cell which induces neovascularization.

    (A) VEGF

    (B) Erythropoieten

    (C) CAM

    (D) PA

20. The cells which can form any cell types is known as -

    (A) Totipotent

    (B) Pluripotent

    (C) Multi-potent

    (D) None of the above

Section - B

(Very Short Answer Type Questions)

(2 marks each)

Note: Give your answer in 2-3 sentences. Each question carry 2 marks.

1. What is cytoskeleton?

2. What are functions of aspiration pump in cell culture.
3. What is cell signaling?
4. What do you mean by scale-up of cultured cell?
5. What is pleuripotent cell?
6. What is meaning of provenance for a cell culture?
7. What type of membrane alterations taking place in apoptotic cell.
8. What are transgenic animals?

Section - C

(Short Answer Type Questions)

(3 marks each)

Note: Attempt all questions. Each question carries 3 marks. Write your answer in 75 words.

1. What is difference between primary and established cell line, give suitable example.
2. What are method to handle sterile liquid in cell culture process.

3. Describe process of control of cell proliferation in a cell culture.
4. Describe process of cell synchronization.
5. Describe technology being used to develop vaccine for malaria by using cell culture process.
6. Comment of somatic cell genetics.
7. Write about Retrovirus - mediated gene transfer technology being used in transgenic animal development.
8. Comment on flow cytometry techniques for detection of Apoptosis.

Section - D

(Long Answer Type Questions)

(5 marks each)

Note: Attempt all questions. Each question carries 5 marks. Write your answer in 150 words.

1. Write about application of cell culture.

[11]

2. Describe cell transformation during cell culture.

3. Describe protocol for embryonic stem cell culture.

4. Describe techniques to detect Apoptosis.