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M.Sc. Sem III Examination(New Course)
Biotechnology
JULY-SEP-2021
BT-CC-304
Applied Techniques in Animal Cell and Tissue Culture (Animal biotechnology)

કુલ સમય :– ૬૦ મીનીટ કુલ પ્રશ્નો : ૫૦ વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

1. What is animal tissue culture?
a) Growth and maintenance of animal cells b) Growth and selling of animal cells
c) Only maintenance of animal cells d) All
2.Culture freshly prepared from isolated tissue is known as _____
a) Organ culture b) Primary culture c) Cell line d) Histotypic culture
3.Recombination of different types of cells to form more defined tissue or organ is known as _____
a) Organotypic culture b) Primary culture c) Secondary culture d) Cell line
4. _____is the primary equipment required for animal tissue culture laboratories
a) Glasswares b) Laminar flow c) Sterilizers d) All
5. The material used in culture techniques is important because the surface of the vessel serves as a substrate for cells to grow.
a) True b) False
6. The following are methods of sterilization EXCEPT:
a) Dry heat sterilization b) Autoclaving
c) Sterilization by filters d) Laminar airflow
7. The following are the routes of contamination in tissue culture laboratories EXCEPT:
a) Incubators b) Refrigerators c) Laminar flow hood d) Autoclave
8. _____is the advantage of animal tissue culture
a) It is cost-effective b) No skilled personnel is required
c)Tissue cultures can be stored for a long time d) Maintenance of environmental conditions is easy
9. _____is one of the limitation of animal tissue culture
a) Disposal of biohazards is not easy b) Cultured cells are not easy to store c) Both d) None
10.Exposure to carcinogens is a contributing factor for _____
a) Chemical risk b) Biohazards c) Physical risk d) Personnel risk
11. For culturing, plasma from the adult chicken is preferred to mammalian plasma because
a) it forms a clear and solid coagulum even after dilution b) it is too opaque
c) it doesn't produce solid clots d) it forms a semi solid coagulum
12. Toxicity due to accumulation of ammonia can be overcome
a) by substituting glutamine by glutamate b) by controlled addition of glutamine at low level
c) by removal of ammonia or ammonium from culture medium d) all of the above
13. Disaggregating of cells can be achieved by
a) physical disruption b) enzymatic digestion
c) treating with chelating agents d)all of the above
14. Accumulation of lactate leads to
a)increase in Ph b)no change in pH
c)reduction in the pH of culture hence loss of cell viability d)no loss of cell viability
15. When dissolved oxygen is lower than the critical concentration, viable cell concentration declines because of
a) incomplete glutamine oxidation b) increase in specific lactate production from glucose
c) both (a) and (b) d) accumulation of ammonia
16. According to Eagle, the growth of L-strain and Hela-strain cultures require to have mandatory presence of
a) 6 amino acids b) 8 amino acids c) 10 amino acids d) 12 amino acids
17. Excess CO_2 suppress cell growth and productivity by
a) inhibiting respiration b) altering intracellular pH by diffusing across cell membrane
c) both (a) and (b) d) altering pH of the medium
18. Which of the following is incorrect?
a) Established cell lines (ECL) have short doubling time b) ECL are invariably aneuploid
c) ECL grow in higher density d) ECL do not show much evidence of spatial orientation
19. What is the effect of excess accumulation of metabolite products (lactate and ammonium) on cells?
a) They act as growth promoters b) They act as growth inhibitors
c) Have no effect on cells d) Lactate helps in the growth while ammonium inhibits the growth
20. What is the concentration of CO2 required for culturing animal cells?
a) 2-5% b) 1-10% c) 10-15% d) 15-20%
21. pH of culture medium is initially controlled by
a) presence of CO2 b) presence of bicarbonate buffer
c) addition of bases d) none of these
22. In animal cell culture, particularly mammalian cell culture, transformation means
a) uptake of new genetic material b) phenotypic modifications of cells in culture
c) both (a) and (b) d) release of genetic information
23. Cells which have undergone transformation frequently become
a) anchorage independent b) anchorage dependent c) stable d) unstable

24. An established cell line can be called where it has been subcultured at least
a) 70 times at an interval of 3 days between subcultures
b) 40 times at an interval of 3 days between subcultures
c) 70 times at an interval of 1 day between subcultures
d) 50 times at an interval of 3 days between subcultures
25. Which of the following is the technique used for the embryo culture?
a) Organ cultures on plasma clots b)Organ cultures on agar
c)Whole embryo cultures d)All of these
26. The major problem associated with the isolation of free cells and cell aggregates from organs is that of
a) releasing the cells from their supporting matrix b) inhibiting the cells from their supporting matrix
c) disintegrating the cells from their supporting matrix d) none of the above
27. Which of the following is easy and rapid method to interpret viability of cells in culture system
(a) Trypan blue dye exclusion (b) Neutral red assay
(c) Fluorescein dye assay (d) All of the following
28. Optimum pH required for the growth of mammalian cells is
(a) 5.3-7.0 (b) 6.5-7.0 (c) 7.2-7.4 (d) 8.1-8.9
29. What is a stem cell?
A A cell that can make copies of itself AND make more specialized types of cell
B A cell that helps to fight against infections
C A cell that is specialized D A cell that can produce all the cell types of the body
30. Where can scientists obtain stem cells?
A Only from an embryo B Only from tissues in the body
C Only from the brain D From an embryo or tissues in the body
31. Embryonic stem cells can differentiate into which types of cell?
A Only brain stem cells and specialized brain cells B All types of specialized cells in the body
C Only cells that can produce insulin D Only cells that can produce artificial skin
32. What are the roles of stem cells in our bodies?
A We are not sure what roles stem cells play in the body
B They produce new specialized cells to replace cells that die or are used up
C They fight against infections
D They perform specialized roles in the body (e.g. produce insulin, transmit signals in the nervous system, …)
33. Primary cell cultures are obtained from
a. Tissues or organs of life forms b. From continuous cell lines
c. From cancer cell lines d. From transformed cells
34. Adherent cell lines usually form
a. Monolayers b. Stratified layers c. Necrotic cores d. Aggregates
35. The colour of phenol red at the pH 7.4 is
a. Pink b. Yellow c. White d. Red
36. A strong buffering of liquid cell culture medium can be obtained by the supplementation of
a. Bicarbonate b. HEPES c. CO2 d. NaOH
37. The function of serum for cell culture does not include
a. Promotion of cell proliferation b. Antitrypsin activity
c. To increase osmolarity d. For providing adhesion factors
38. “Hybridoma” refers to
a. Hybrid melanoma b. Hybrid myeloma c. Murine antibodies d. Monoclonal antibodies
39. Stem cells are
a. Differentiated b. Undifferentiated c. Specialized d. Only embryonic
40. A source of autologous adult stem cells is
a. Bone marrow b. Cord blood c. Inner cell mass d. Mesoderm
41. The properties of stem cells do not include
a. Self-renewal b. Potency c. Differentiation d. Meiosis
42. Pluripotent stem cells can generate
a. All types of cells b. Nearly all types of cells
c. About 3 different types of cells of a lineage d. Single type of differentiated cells
43. Adult stem cells are usually
a. Pluripotent b. Multipotent c. Omnipotent d. Non self-renewable
44. The type of tissue that embryonic stem cells cannot differentiate into is
a. Endoderm b. Mesoderm c. Placenta d. Ectoderm
45. The first chemically defined medium that was first developed in 1955 was
a. Eagle’s Basal Medium b. Eagle’s Minimum Essential Medium
c. Dulbecco’s Modified Eagle’s Mediumd. Ham’s F12 Medium
46. Explant cultures are a type of
a. Primary cells b. Secondary cells c. Transformed cells d. Continuous cell lines
47. Contact inhibition property is typical of
a. Finite cell lines b. Continuous cell lines c. Suspension cell lines d. 3D aggregates
48. Subculturing of cells in cultures is also known as
a. Typsinization b. Passaging c. Acclimatization d. Conditioning
49. Secondary cell cultures are obtained from
a. Stem cells b. Source tissues or organs c. Primary cultures d. 3D aggregates
50. Non-adherent cells typically form
a. Single cell cultures b. Suspension cultures c. Aggregates d. Monolayers