SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLGY

(A to B) Technical Assistant – Tissue Culture Laboratory 30.08.2017

All questions are to be answered. Each correct answer carries one mark.

Part A

1. The efficiency of laminar flow hoods depend on a _____ pressure drop across the filter.

   A. Minimum.
   B. Moderate.
   C. Maximum.
   D. Higher

2. Commonly used indicator during media preparation is

   A. Bicarbonate
   B. Phenol red
   C. Neutral red
   D. Trypan blue

3. The device fitted to the laminar flow hood to monitor pressure drop is known as _____.

   A. Anemometer
   B. Tachometer
   C. Manometer
   D. Barometer

4. Cultured cells can be viewed without dehydration & coating using

   A. Environmental Scanning electron Microscope
   B. Scanning electron microscope
   C. Scanning Tunelling microscope
   D. Transmission electron microscope

5. The execution of tissue culture procedures without introducing contaminating microorganisms from the environment is known as _____.

   A. Sterilization technique
   B. Aseptic technique
   C. Decontamination technique
   D. Septic technique

6. Glutaraldehyde is used as a fixative for cells and tissues in

   A. Transmission and scanning electron microscopy
   B. Transmitted light microscopy
   C. Fluoroscence microscopy
   D. Inverted light microscopy

7. The relative humidity inside the CO2 incubator is usually set at _____

   A. 60 – 70 %
   B. 70 – 80 %
   C. 80 – 90 %
   D. > 90%

8. Ideal method to cryopreserve cells is to store in

   A. Liquid Nitrogen
   B. -85°C deep freezer
   C. -20°C deep freezer
   D. Refrigerator

9. Buffer system routinely employed in mammalian cell culture is

   A. Phosphate
   B. Bicaronate
   C. Citrate
   D. Acetate

10. Cells that are surgically or enzymatically removed from an organism and placed in suitable culture environment are called as _____

    A. Secondary culture
    B. Tertiary culture
    C. Cell lines
    D. Primary culture

11. Routinely used disposable tissue culture dishes are made of

    A. PTFE
    B. Polystyrene
    C. Thermanox
    D. Nylon

12. Which among the following can be considered as a disadvantage of in vitro cell culture systems _____

    A. Extremely sensitive
    B. Many variables and replicates
    C. Physiological environment controllable
    D. Short lifespan

13. Half life of glutamine in medium at 37°C is

A. One month
B. Two weeks
C. One week
D. One year

14. For efficient subculturing using trypsin, which of the following statement is mandatory?

A. Chelation of Ca^{2+}
B. Degradation of extra cellular matrix
C. Degradation of extra cellular domain of cell adhesion molecules
D. All of the above

15. Depth of Neubauer haemocytometer chamber is

A. 0.1 mm
B. 1 mm
C. 1 nm
D. 10 mm

16. Inverted Microscope over upright microscope has

A. Long working distance
B. High quality optics
C. Imaging capability
D. Short working distance

17. Major serum protein involved in cell attachment is

A. Collagen
B. Fibronectin
C. Thrombin
D. Vinculin

18. Given are the constituents of commercially available culture medium. Select the medium that can be sterilized by autoclaving _____?

A. MEM with Earle's salts, without L-glutamine and sodium bicarbonate.
B. MEM with Earle's salts and sodium bicarbonate, with L-glutamine
C. MEM with L-glutamine and without sodium bicarbonate
D. None of the above

19. The subculture is performed at _____ phase of cell growth

A. Lag
B. Log
C. Stationary
D. Plateau

20. The concentration of Trypsin generally used for subculture of cell monolayer is

A. 0.25 %
B. 0.25 M
C. 0.25 mg/ml
D. 0.25 g/ml

21. You are given a monolayer to subculture. After adding trypsin, you noticed rapid rounding up of cells which you do not prefer. Select the most appropriate method to avoid premature rounding of cells from the options given below

A. Immediately remove trypsin.
B. Add trypsin kept at 4 °C and follow normal procedure.
C. Add serum containing medium.
D. Avoid EDTA and use trypsin alone

22. Before adding trypsin solution to cell monolayer, it is advisable to rinse cells with PBS or serum free culture medium. This is to ----------

A. Remove traces of serum
B. Nourish the cells before subculture
C. Stimulate cells to round up
D. No significant reason

23. What is the depth of medium recommended for a monolayer culture

A. 1-5 mm
B. 5-10 mm
C. 10 – 15 mm
D. 2 cm

24. You are maintaining slow growing primary cells and rapidly proliferating cell line. You are given single booking slot for using laminar flow bench. Among the following which order would you prefer to handle both the cells?

A. Cell line first and then primary cells.
B. Primary cells first and then cell line.
C. Both cells together.
D. Handle one cell and wait for next booking slot.

25. A cell suspension obtained after trypsinization contained 1 x 10^6 cells per ml. What is the volume of cell suspension required to transfer 50000 cells to a fresh culture dish.

A. 50 ul
B. 100 ul
C. 150 ul
D. 500 ul

Part B

26. ISO standard used for cytotoxicity testing is

A. ISO10993- 1
B. ISO10993- 4
C. ISO10993 -6
D. ISO10993- 5

27. Ideal shape of surface of test material for Direct contact cytotoxicity test is

A. Irregular
B. Thin
C. Flat
D. Powder

28. The technique by which a primary culture obtained by outgrowth of cells from a piece of tissue is called.

A. Mechanical disaggregation technique
B. Explant culture technique
C. Enzymatic disaggregation technique
D. None of the above

29. Corrective & Preventive Action can be initiated by

A. Technical M
B. QM
C. SIC
D. All authorized staff

30. Specific cytotoxicity of ophthalmic implants can be studied using

A. L-929 cells
B. SIRC cells
C. HOS cells
D. MG-63 cells

31. General cytotoxicity can be assessed by

A. L929
B. SIRC
C. HOS
D. HCE

32. Laminar flow hood/ Biosafety cabinet for cell culture as per ASTM should maintain

A. Class 1000
B. Class 10000
C. Class 100
D. Class 10

33. Mycoplasma contamination can be detected early by

A. Microscopic examination
B. Turbidity of media
C. pH change of media
D. Staining with Hoechst

34. USP stands for

A. Universal Standard Protocol
B. United States Pharmacopeia
C. Universal Standards of Pharmacopeia
D. United States Protocol

35. Which among the following are used for viability staining

A. Trypan blue
B. Fluorescein Di Acetate
C. Neutral Red
D. All of the above

36. Gas cylinders should be kept

A. Upright
B. Clamped
C. A & B
D. Tied

37. The latest ISO 10993-5 was released in the year _____.

A. 1999
B. 2003
C. 2012
D. 2009

38. Expand ASTM –

_____

39. Write full form of GLP -

_____

40. What does 'CI' means as per quality manual of BMT Wing

_____

41. Expand the abbreviation "TR" with respect to quality system –

_____

42. The factors affecting antibody binding in immunostaining is/are

A. Protein denaturation
B. pH change
C. Destruction of antigenic site
D. All of the above

43. The specific site on a complex antigenic molecule that binds to specific membrane receptors on lymphocytes or to antibodies is known as _____.

A. Hapten
B. Epitope
C. Active site
D. Non specific site

44. Fixative used for H&E staining of cultured cells is

A. 25% glutraldehyde
B. 40% formaldehyde
C. 10% buffered formalin
D. Normal saline

45. Give an example of a Negative Reference Material that is used in cytotoxicity evaluation of materials

_____

46. Isolation of cells from tissue is envisaged by treatment with trypsin, collagenase and EDTA. Why such treatment does not kill cells

A. Damage occurs to plasma membrane only
B. Damage occurs to extracellular component
C. Damage occurs to intracellular componets
D. Damage occurs to metabolic activity

47. Cell counting using hemocytometer is done under _____ objective of microscope

A. 10X
B. 20X
C. 40X
D. 100X

48. Select the pH that is inhibitory to cell growth.

A. 7.0 – 7.2
B. 6.8 – 7.0
C. < 7.0
D. < 6.8

49. Which buffer system among the following is suitable for open cultures without CO_2 incubator _____

A. Earle's
B. Hanks
C. HEPES
D. Lactate

50. Alamar blue can be used for

A. Cell proliferation
B. Metabolic activity
C. Repetitive assay
D. All of the above

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Part A

1. A
2. A
3. C
4. A
5. B
6. A
7. D
8. A
9. B
10. D
11. B
12. D
13. C
14. D
15. A
16. A
17. A
18. A
19. B
20. A
21. B
22. A
23. A
24. B
25. B

Part B

26. D
27. C
28. B
29. D
30. B
31. A
32. C
33. D
34. B
35. D
36. C
37. C
38. American Society for Testing and Materials
39. Good Laboratory Practice
40. Critical Item
41. Test Report
42. D
43. B
44. C
45. UHMWPE, HDPE, PE
46. B
47. A
48. D
49. C
50. D