

School: Program/s: Year: 4th

School of Science Biomedical Science Semester: VII

Examination:

End Semester Examination

Examination year:

December - 2022

Course Code: BM409

Course Name: Stem cell and Tissue culture

Date: 2/12/2022

Time: 08:30 am to 10:30 am

Total Marks: 40

Total Pages: 2

Instructions:

→ Draw labelled diagrams where ever necessary

→ * COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping

| Q. No. | Details | Marks | COs' | BTL# |
|--------|---|----------|------|-------------|
| Q.1 | Objective Type Questions (11 x 1 mark = 11 marks) 1. Which of the following statements are CORRECT about the function of fetal bovine serum in animal cell culture? A. It stimulates cell growth | Marks 11 | COs* | BT1, |
| | b. Perfused cells, Packed-bed d. Lamellae coated cells, Trickle-bed 4. Myeloid stem cells are a. Pleuripotent b. Unipotent c. Oligopotent d. Multipotent 5. Which of the following cell is made deficient of hypoxanthine guanyl phosphoribosyl transferase (HGPRT) enzyme a. B cells b. hybrid cells c. myeloma cells d. none of these 6. Haploid plants are produced in large numbers by a. Anther culture c. Ovary culture | | CO2 | BT3, BT4 |
| | b. Both a and b d. Embryo culture | | | |

| 7. Genotoxicity can be checked by which of the following assays P. MTT assay Q. Chromosome aberration test R. Clonogenic assay S. Anchorage independence assay T. Comet assay | | | |
|---|--|---|--|
| a. P, Q and T b. P, R and T c. Q, S and T d. Q and T | | | |
| 8. A researcher would like to observe the effects of a drug as anticancer agent, which category of cells he will go about? a. Transformed c. Immortalized b. Primary culture d. Secondary cell line | | | |
| 9. What does "T" refers to in T25 tissue culture flask? a. Total volume of the flask b. Total surface area of the flask c. Total weight of the flask d. Total mass of the flask | | | |
| 10. Which of these is an example of antifoam used in cell cultures? a. Sodium alginate c. Pluronic F68 b. Polylactic acid d. Gelatin | | | |
| 11 and are two groups of plant growth regulators apart from the principal 5 hormones. | | | |
| Answer in brief (5 x 2 marks = 10 marks) | | | |
| How does co-culture increase the complexity of culturing in terms of time scale and data acquisition? Which are the two methods of obtaining a primary culture? Differentiate between continuous and finite cell cultures How is sub-culturing performed for suspension culture? What is meant by undefined composition of serum? Does that enhance the growth of cells in culture? | 10 | CO1, CO2 | BT1, BT3, BT4 |
| Answer in detail (Any Three) (3 x 3 marks = 9 marks) | | | |
| What are the different methods for co-culture cell culture? What are the major molecular participants in cell-cell and cell-substrate interactions? Describe any cytotoxicity and survival assay. How are MTT results analyzed? Which are the different sources of stem cells in the human body? | 9 | CO1, CO2 | BT1, BT3, BT4 |
| Answer in detail (Any Two) (2 x 5 marks = 10 marks) | | | |
| Discuss any four approaches used for scale up of adherent cultures. Write a note on iPSCs. With the help of a labelled diagram, explain: a) Dedifferentiation b) Direct transdifferentiation | 10 | CO1, CO2 | BT1, BT3, BT4 |
| | P. MTT assay S. Anchorage independence assay a. P, Q and T b. P, R and T c. Q. S and T d. Q and T 8. A researcher would like to observe the effects of a drug as anticancer agent, which category of cells he will go about? a. Transformed c. Immortalized b. Primary culture d. Secondary cell line 9. What does "T" refers to in T25 tissue culture flask? a. Total volume of the flask c. Total weight of the flask b. Total surface area of the flask d. Total mass of the flask c. Pluronic F68 b. Polylactic acid d. Gelatin 10. Which of these is an example of antifoam used in cell cultures? a. Sodium alginate c. Pluronic F68 b. Polylactic acid d. Gelatin 11 and are two groups of plant growth regulators apart from the principal 5 hormones. Answer in brief (5 x 2 marks = 10 marks) 1. How does co-culture increase the complexity of culturing in terms of time scale and data acquisition? 2. Which are the two methods of obtaining a primary culture? 3. Differentiate between continuous and finite cell cultures 4. How is sub-culturing performed for suspension culture? 5. What is meant by undefined composition of serum? Does that enhance the growth of cells in culture? Answer in detail (Any Three) (3 x 3 marks = 9 marks) 1. What are the different methods for co-culture cell culture? 2. What are the major molecular participants in cell-cell and cell-substrate interactions? 3. Describe any cytotoxicity and survival assay. 4. How are MTT results analyzed? 5. Which are the different sources of stem cells in the human body? Answer in detail (Any Two) (2 x 5 marks = 10 marks) 1. Discuss any four approaches used for scale up of adherent cultures. 2. Write a note on iPSCs. 3. With the help of a labelled diagram, explain: a) Dedifferentiation | P. MTT assay S. Anchorage independence assay a. P, Q and T b. P, R and T c. Q, S and T d. Q and T 8. A researcher would like to observe the effects of a drug as anticancer agent, which category of cells he will go about? a. Transformed c. Immortalized b. Primary culture d. Secondary cell line 9. What does "T" refers to in T25 tissue culture flask? a. Total volume of the flask c. Total weight of the flask b. Total surface area of the flask d. Total mass of the flask b. Total surface area of the flask d. Total mass of the flask b. Polylactic acid d. Gelatin 10. Which of these is an example of antifoam used in cell cultures? a. Sodium alginate c. Pluronic F68 b. Polylactic acid d. Gelatin 11 | P. MTT assay S. Anchorage independence assay a. P. Q and T b. P. R and T c. Q. S and T d. Q and T 8. A researcher would like to observe the effects of a drug as anticancer agent, which category of cells he will go about? a. Transformed c. Immortalized b. Primary culture d. Secondary cell line 9. What does "T" refers to in T25 tissue culture flask? a. Total volume of the flask c. Total weight of the flask b. Total surface area of the flask d. Total mass of the flask b. Total surface area of the flask d. Gelatin 10. Which of these is an example of antifoam used in cell cultures? a. Sodium alginate c. Pluronic F68 b. Polylactic acid d. Gelatin 11 and are two groups of plant growth regulators apart from the principal 5 hormones. Answer in brief (5 x 2 marks = 10 marks) 1. How does co-culture increase the complexity of culturing in terms of time scale and data acquisition? 2. Which are the two methods of obtaining a primary culture? 3. Differentiate between continuous and finite cell cultures 4. How is sub-culturing performed for suspension culture? 5. What is meant by undefined composition of serum? Does that enhance the growth of cells in culture? Answer in detail (Any Three) (3 x 3 marks = 9 marks) 1. What are the different methods for co-culture cell culture? 2. What are the major molecular participants in cell-cell and cell-substrate interactions? 3. Describe any cytotoxicity and survival assay. 4. How are MTT results analyzed? 5. Which are the different sources of stem cells in the human body? Answer in detail (Any Two) (2 x 5 marks = 10 marks) 1. Discuss any four approaches used for scale up of adherent cultures. 2. Write a note on iPSCs. 3. With the help of a labelled diagram, explain: a) Dedifferentiation b) Direct transdifferentiation 10. CO1, CO2 |