

KATHMANDU UNIVERSITY  
End Semester Examination  
July/August, 2024

Level : B.Sc.

Year : III

Time : 2 hrs. 30mins.

Course : BIOT 311

Semester : I

F. M. : 55

09 AUG 2024

SECTION "C"

[3 Q. × 8 = 24 marks]

*Attempt ANY THREE questions.*

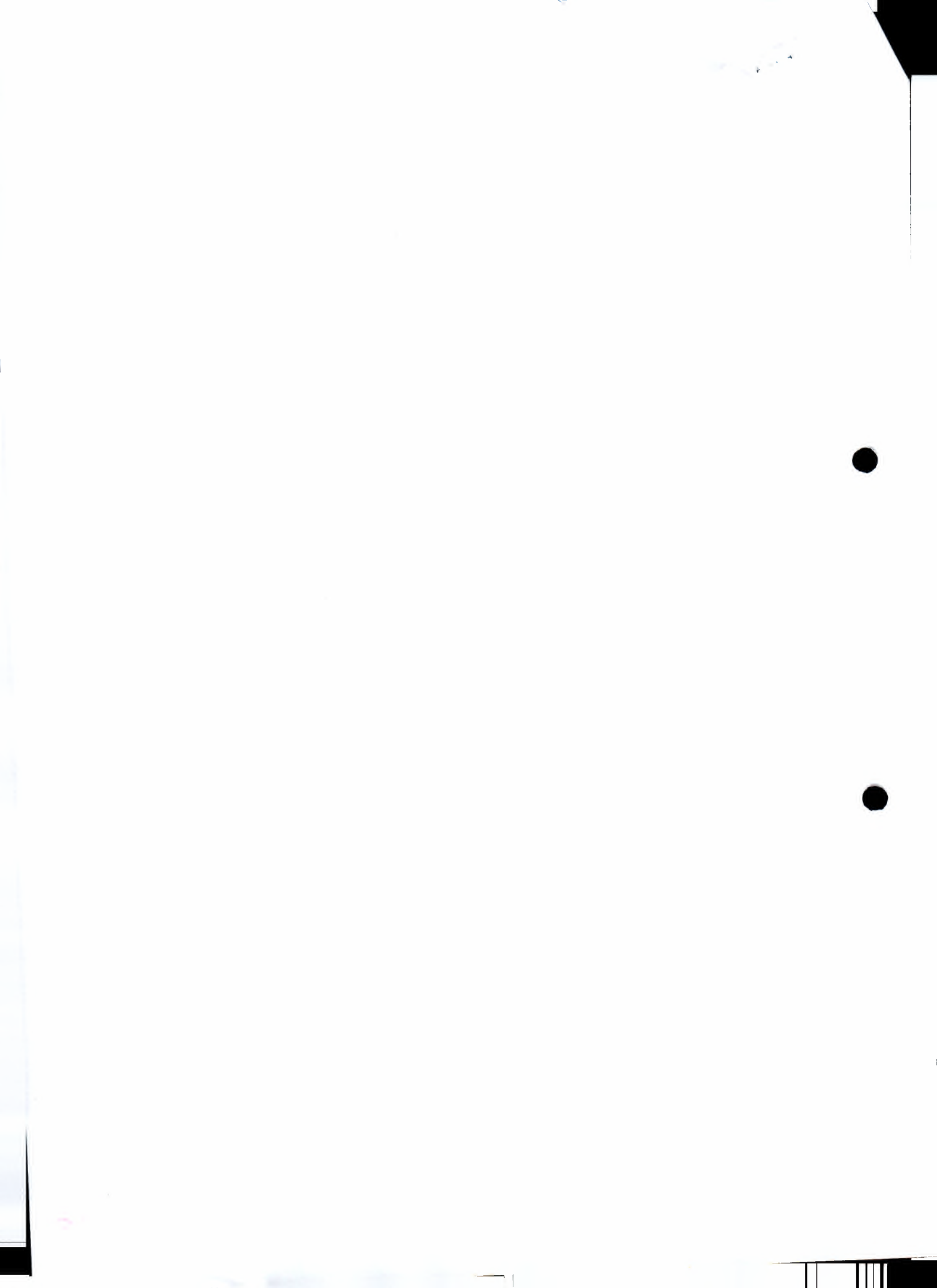
1. Why is subculture necessary? Write detailed protocol for sub culture of cells? [2+6]
2. Why is study of cytotoxicity important? List different assays used for cytotoxicity measurement. Describe metabolic assay with example. [2+2+4]
3. Discuss the biology of cell lines in culture? [8]
4. What are the advantages of using serum in cell culture laboratory? [8]

SECTION "D"

[31 marks]

*Attempt ANY SIX questions. (Q.N. 7 is compulsory)*

5. Explain the basic principles of cryopreservation? What is the concentration of DMSO used in freezing of cells? [4+1]
6. Describe the different physiochemical properties of medium used in cell culture? [5]
7. What are the different factors you consider when designing a cell culture laboratory? [6]
8. What is a feeder layer? How can you make a feeder layer for culture of cells? [1+4]
9. Explain in brief different techniques used in cell characterization? [5]
10. Discuss how dilution cloning is done to separate cells. [5]
11. Write short notes on any **TWO**
  - a. CO<sub>2</sub> incubator
  - b. Serum free media
  - c. Centifuge[2.5 × 2 = 5]







23. \_\_\_\_\_ cell line will be ready for transfer in 3 days when inoculated at  $3 \times 10^5$  cells.
24. The protein Rb can repress transcription by binding transcription factor \_\_\_\_\_ and blocking their ability to activate transcription
25. \_\_\_\_\_ is determined by counting the fraction of cell in mitosis state.
26. While performing dilution cloning, the three things that needs to be considered are microtitration plates, feeding and \_\_\_\_\_.
27. Isozyme analysis kit allows easy screening of up to six cell lines per gel for \_\_\_\_\_ genetic markers.
28. \_\_\_\_\_ type assay used to detect inflammation response.
29. At pH 7.8, the colour of cell culture medium change to \_\_\_\_\_.
30. Substitution of glutamine with a glutamyl dipeptide such as \_\_\_\_\_ will enhance shelf life and stability in culture.

