

11. Which of the radioactive nucleotide is used for measurement of DNA synthesis
 ^1H thymidin ^2H thymidin ^3H thymidin Non of the above.
12. Who introduced proteolytic enzyme trypsin for the subculture of cells.
 Rous and Jones Alexis Carrel Carrel and Baker Earl
13. Integrins, mediate cell–matrix adhesion via a specific motif usually containing the
 GDR motif RGD motif RDG motif All of the above
14. Routine serial passage at relatively low cell densities would promote
 Cell proliferation Differentiation Deadaptation Selection
15. Sterility testing of culture medium can be carried out by
 Autoclaving Membrane filtration
 Incubation All of the above
16. _____ jacketed incubators distribute heat evenly around and hold their temperature longer
 Air Water Steam All of the above
17. If the split ratio is maintained at 1:8, the generation number after every passage increases by
 2 3 4 8
18. Cells with a _____ oxygen requirement do better in a shallow medium (2mm)
 Low No High Non of the above
19. Quantitation of cells for metastasis can be done by _____ assay.
 Labelling Index Cell Migration
 Plating efficiency Division Index
20. If the cell concentration is high and only the five diagonal squares within the central 1 mm² is counted (i.e., 1/5 of the total), then cells per ml is
 $n \times 5 \times 10^4$ $n \times 10^4 / 5$
 $2 \times n \times 5 \times 10^4$ $2 \times n \times 10^4 / 5$

SECTION "B"

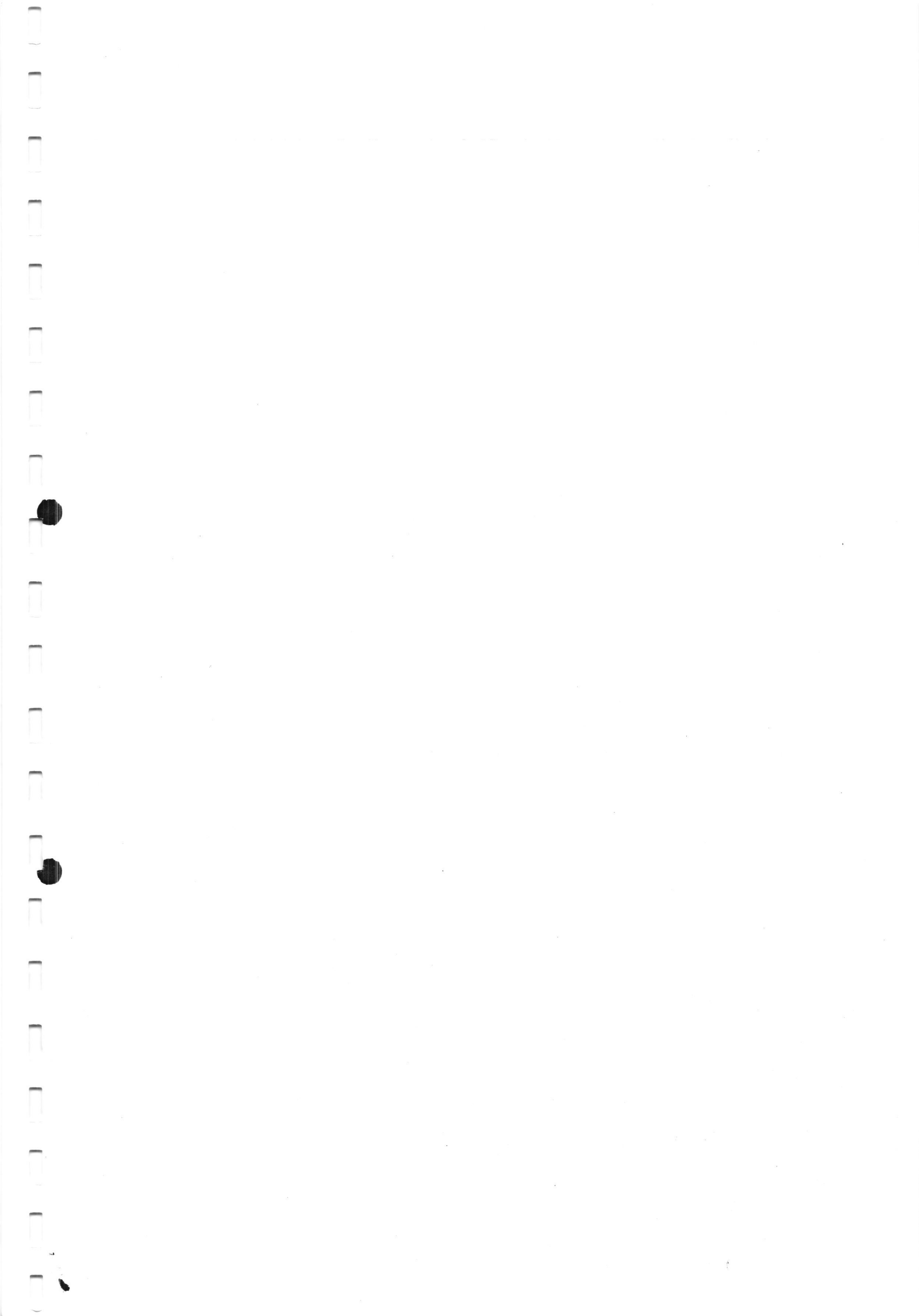
[10Q × 1 = 10 marks]

Fill in the blanks.

11. Human _____ is the first recombinant protein to be licensed as a therapeutic agent.
12. During transfer of chopped tissues to another flask, attachment of tissues to the walls of the pipette can be prevented by _____ of the pipette.
13. In negative-pressure filtration systems, some dissolved CO₂ may be lost during filtration, and the pH may _____.

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14. One way to maintain cell at clonogenic density but at the same time to mimic high cell density is to clone the cells onto a growth arrested _____.
15. _____ is determined by counting the fraction of cell in mitosis state.
16. In 2006 Nobel Prize in Medicine was given to Fire and Mello for the discovery of _____.
17. DNA content can be measured by measuring the absorbance at 260nm, where 50 $\mu\text{g/ml}$ has an Optical density of _____.
18. _____ type assay used to detect inflammation response.
19. FACS stands for _____.
20. Substitution of glutamine with a glutamyl dipeptide such as _____ will enhance shelf life and stability in culture.



KATHMANDU UNIVERSITY
End Semester Examination [C]
July, 2017

JUL 12 2017

Level : B. Tech.
Year : III
Time : 2 hrs. 30 mins.

Course : BIOT 304
Semester : I
F. M. : 55

SECTION "C"

[3Q × 8 = 24 marks]

Attempt *ANY THREE* questions.

1. What is serum? Discuss the advantages of serum? [1+7]
2. Why is study of cytotoxicity important? List different assays used for cytotoxicity measurement. Describe metabolic assay with example. [2+2+4]
3. Describe the different physiochemical properties of medium used in cell culture? [8]
4. What are the factors you consider when designing a cell culture laboratory? Name any four essential equipments in cell culture lab. [6+2]

SECTION "D"

Attempt *ANY SIX* questions. (Question 7 is compulsory)

5. Explain the basic principles of cryopreservation? [5]
6. What is dilution cloning? Explain how monolayer clones are isolated with diagram. [1+4]
7. What is subculture? Write protocol for subculture of cells? [1+5]
8. Explain the importance of bicarbonate buffer system in cell culture? [5]
9. Explain different techniques used in cell separation? [5]
10. How does the environment influence the biology of cultured cells? Write in brief about cell adhesion in animal cell culture. [3+2]
11. Write short notes on (*ANY TWO*) [2.5 × 2 = 5]
 - a) Haemocytometer
 - b) Serum free media
 - c) CO₂ incubator

