

KATHMANDU UNIVERSITY
End Semester Examination
March/April, 2017

Marks scored:

Level : B. Tech.
Year : III

Course : BIOT 304
Semester : I

Exam. Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date APR 09 2017

SECTION "A"

[20 Q × 0.5 = 10 marks]

Mark "X" in the most appropriate box.

1. When combining enzymes for disaggregation, DNase should be added after removal of _____?
 Pronase Trypsin RNase All of the above
2. Mitotic index of cells can be carried out by staining the cells with which antibody?
 P53 PH3 P21 P16
3. Cells with a _____ oxygen requirement do better in a shallow medium (2mm).
 Low No High Non of the above
4. Before trypsinization of cells, a PBS washing step is necessary because
 It removes dead cells It removes serum
 It does sterilization All of the above
5. The lab space for ACC lab should have culture operation; washup, preparation, sterilization; storage and incubation area in the ratio of
 4:2:1:1 4:4:2:1 2:1:1:4 4:1:1:2
6. _____ will cause riboflavin, tryptophan, and tyrosine in medium to deteriorate into toxic byproducts.
 Incandescent lighting Glutamine
 Fluorescent lighting Acid
7. Integrins, mediate cell-matrix adhesion via a specific motif usually containing the
 GDR motif RGD motif RDG motif All of the above
8. During cloning, if you add cells at concentration of _____ cells per ml, in a 96 well plate, we get the probability of less than 1 cell per well.
 100 10 1 <1
9. Which of the radioactive nucleotide is used for measurement of DNA synthesis
 1H thymidin 2H thymidin 3H thymidin Non of the above.
10. In cell culture which of the following cell signaling occurs.
 Autocrine and homocrine Paracrine and homocrine
 Autocrine and Paracrine Non of the above

11. MTT is a yellow water-soluble tetrazolium dye that is reduced by _____, cells to a purple formazan product that is insoluble in aqueous solutions
 Dead Live Normal Cancerous
12. Who introduced proteolytic enzyme trypsin for the subculture of cells.
 William Roux Alexis Carrel
 Carrel and Baker Rous and Jones
13. Hayflick effect refers to
 Unlimited replication capacity of cells Limited replication capacity of cells
 Transformed status of cells Non of the above
14. _____ jacketed incubators distribute heat evenly around and hold their temperature longer
 Air Water Steam All of the above
15. Use of which salt would imply the use of sealed flasks with a gas phase of air?
 Eagles Earls Hanks All of the above
16. Which of the technique help avoid the risk of carrying any cells over from the conditioning medium to the cloned cells
 Centrifugation Freezing Thawing Non 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. _____ method is utilized to purify murine ascites tumor cells with reasonable viability.
 Countercurrent distribution Affinity Chromatography
 Centrifugal elutriation Electrophoresis
19. Hepatocytes in primary culture are often maintained in which medium that does not require a CO₂ atmosphere.
 DMEM Leibovitz L-15 MEM RPMI
20. Quantitation of cells for metastasis can be done by _____ assay.
 Labelling Index Cell Migration
 Plating efficiency Division Index

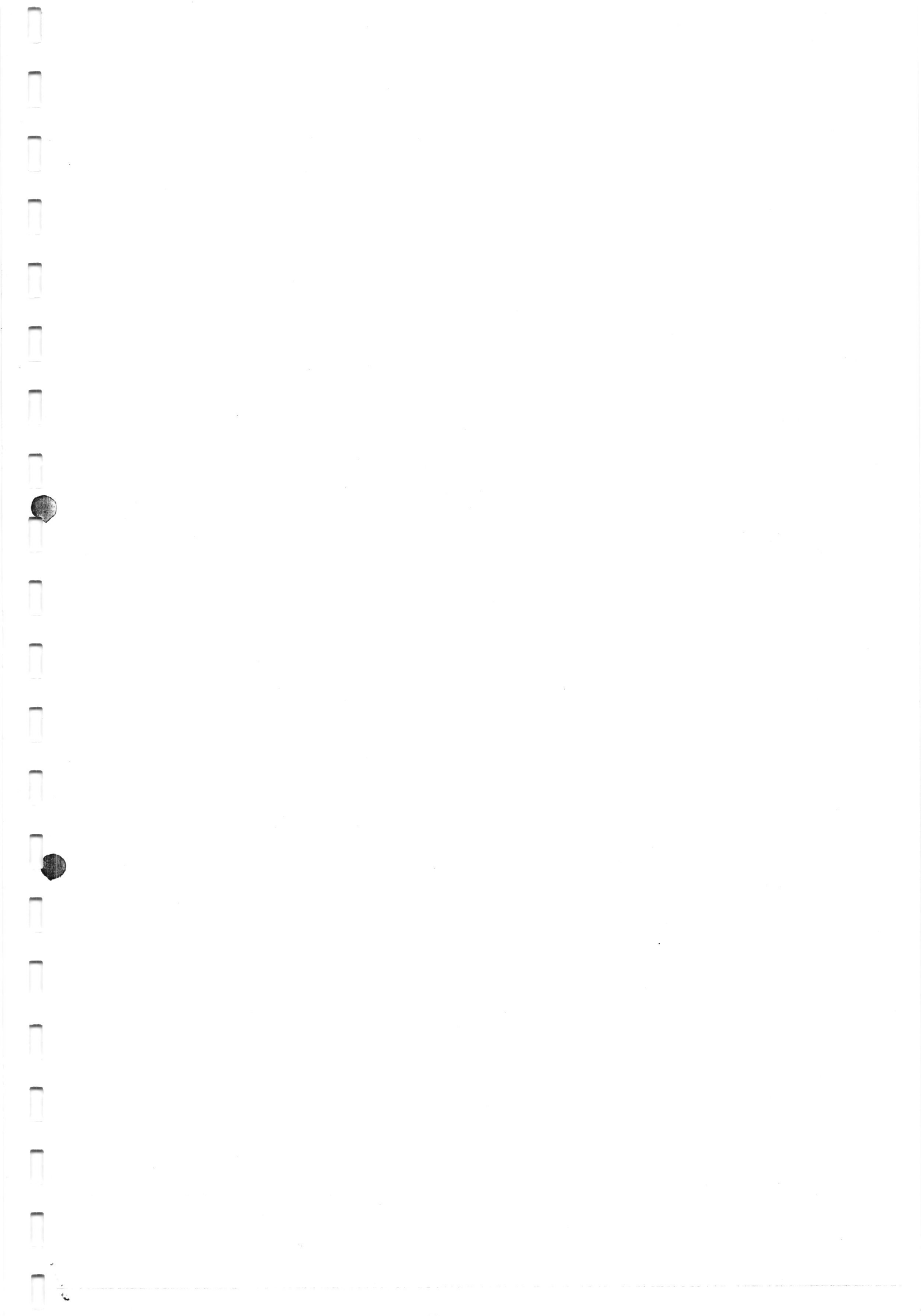
SECTION "B"

[10Q × 1= 10 marks]

Fill in the blanks.

21. Cell lines derived from the _____ may contain more stem cells and precursor cells and be capable of greater self-renewal than cultures from adults.
22. In electric counter, if the counter is set to take 0.5 mL of a 1:50 dilution, the final count on the readout should be multiplied by _____ to give the concentration in cells/mL.

23. During transfer of chopped tissues to another flask, attachment of tissues to the walls of the pipette can be prevented by _____ of the pipette.
24. CMC stands for _____.
25. DNA content can be measured by measuring the absorbance at 260nm, where 50 $\mu\text{g/ml}$ has an Optical density of _____.
26. A technique which allows for the delivery of specific experimental compounds to be regulated in concentration, duration of exposure and metabolic state is known as _____.
27. _____ established the first widely used chemically defined medium.
28. In negative-pressure filtration systems, some dissolved CO_2 may be lost during filtration, and the pH may _____.
29. Most culture media contain _____ mM glucose, which is used mainly as a carbon source for glycolysis.
30. Cloning is difficult in normal tissue because of their limited _____.



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SECTION "C"

[3Q × 8 = 24 marks]

Attempt *ANY THREE* questions.

1. Discuss in detail the history of Animal Cell Culture? [8]
2. What is the principal of cryopreservation? Write protocol for freezing and thawing of cells? [3+5=8]
3. What are the advantages of using serum in cell culture media? [8]
4. What are the essential instruments in an animal cell culture laboratory? Discuss about CO₂ incubator and biosafety cabinet? [2+6=8]

SECTION "D"

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

5. Discuss about the cell adhesion phenomenon of cells in culture? [5]
6. Explain the advantages of animal cell culture? [5]
7. What is subculture? Write protocol for subculture of cells? [1+5=6]
8. Enlist the different techniques used in cell separation? Discuss the antibody based technique? [1+4=5]
9. Why is cloning of cells necessary. How is dilution cloning done? [1+4=5]
10. Discuss the metabolic assay used to measure cell cytotoxicity. [5]
11. Write short notes on (ANY TWO) [2.5 × 2 = 5]
 - a. Haemocytometer
 - b. Types of tissue culture
 - c. Centrifuge

