



Date: 25-10-2018

Dept. No.

Max. : 100 Marks

Time: 09:00-12:00

**PART – A**

**Answer ALL the Questions**

**I. Choose the correct answer**

**(5 x 1 = 5 Marks)**

- \_\_\_\_\_ are specialized vesicles within cells that digest large molecules with hydrolytic enzymes.  
a) *Lysosomes*      b) Peroxisomes      c) Ribosomes      d) Golgi bodies
- In MTT assay, yellow tetrazolium is reduced to \_\_\_\_\_ in living cells.  
a) propidium      b) formazan      c) formaldehyde      d) metformin
- Embryonic stem cells are typically harvested from \_\_\_\_\_.  
a) 24 hour embryo      b) 2 cell stage      c) ICM of blastocyst      d) blastocoel
- The first transgenic cow named *Rosie* was created with the human \_\_\_\_\_ gene.  
a) *GLUT4*      b) thrombin      c)  $\alpha$ -lactalbumin      d) prothrombin
- \_\_\_\_\_ is known as the father of IVF.  
a) Robert Edwards      b) Robert Brown      c) Harrison      d) Gey

**II. State whether the following are true or false.**

**(5x1=5 Marks)**

- The GPS dish is designed for embryo handling and *culture*.
- Complete growth media typically has 50% serum.
- Small intestinal submucosa is used as a biological scaffold for tissue engineered urinary bladder.
- The first knockout mouse was created by Capecchi, Evans and Smithies.
- Mitochondrial gene *BOI* is used for barcoding animals.

**III. Complete the following**

**(5 x 1= 5 Marks)**

- \_\_\_\_\_ is an indicator used in animal culture media.
- Live cells incorporate neutral red into their \_\_\_\_\_.
- Over-expression of \_\_\_\_\_ factors can induce pluripotency in adult human somatic cells.
- \_\_\_\_\_ is a lytic virus, primarily pathogenic for insects and is used as a *vector* system to obtain a high level of expression of a desired protein.
- \_\_\_\_\_ is a method of whole organism cloning where an 8-16-cell stage fertilized embryo is divided by micromanipulation.

**IV. Answer the following within 50 words**

**(5 x 1 = 5 Marks)**

- Define finite cell line.
- Comment on application of trypsin in animal cell culture.
- List the three categories of skin substitutes.

19. Comment on SV-40.  
20. What is laser assisted hatching?

**PART B**

**Answer the following each within 500 words.**

**(5 x 8 = 40 marks)**

**Draw diagrams wherever necessary**

21. (a) Comment on the function of organelles present in a typical animal cell.  
OR  
(b) Describe the roller bottle culture method.
22. (a) Outline the principle and methodology of cryopreservation.  
OR  
(b) Briefly describe the Organoid Confrontation assay and comment on its application.
23. (a) Write a short note on induced pluripotency.  
OR  
(b) Outline the method of constructing a tissue engineered bladder.
24. (a) Give an account on the John Moore case.  
OR  
(b) Comment on the ethical concerns of gene therapy.
25. (a) Briefly outline the major steps involved in DNA barcoding of animals.  
OR  
(b) Describe RAPD as a technique for livestock improvement.

**PART – C**

**Answer any TWO of the following, each within 1500 words.**

**(2 x 20 = 40 Marks)**

**Draw diagrams wherever necessary.**

26. Write an essay on organotypic culture.
27. Discuss microbial contamination of animal cell culture and the methods of detection and prevention.
28. How has animal cell culture impacted pharmaceutical research? Explain with examples in support of the discussion.
29. Describe in detail *In vitro* fertilisation and add a note on the risks.

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