



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

THIRD SEMESTER – APRIL 2017

BT 3822- ANIMAL BIOTECHNOLOGY

Date: 06-05-2017
01:00-04:00

Dept. No.

Max. : 100 Marks

PART – A

Answer ALL the Questions

I. Choose the correct answer

(5x1=5 Marks)

- _____ is an essential amino acid required for most mammalian cell culture.
a) L-Glutamine b) alanine c) aspartic acid d) proline
- _____ is an example of a physiological inducer.
a) DMSO b) hormones c) sodium butyrate d) protein kinase C
- Imaging cells within 3D constructs can be done using
a) stereomicroscope b) compound microscope c) MRI d) SEM
- Oxitec have engineered *Aedes aegypti* carrying a lethal gene that causes premature death of their offspring to control the spread of
a) influenza b) cholera c) tuberculosis d) dengue and zika
- Bovine superovulation is typically done using
a) gonadotropins b) oestrogen c) progesterone d) relaxin

II. State whether the following are true or false

(5x1=5 Marks)

- HEPES is an example of a Good's buffer.
- Propidium iodide stains non-viable cells.
- Polycarbonate filter well inserts are commonly used for an organ culture.
- GloFish is a transgenic pet fish that appears fluorescent under ultraviolet light
- Assisted reproductive technology is used to treat infertility challenges only in women.

III. Complete the following

(5 x 1= 5 Marks)

- _____ uses chick embryo heart fragments co-cultured with tumour cells as a model for invasion.
- Cryofreezers typically contain _____ to maintain cells at -196° C.
- The process of genetically modifying animals for the production of pharmaceutically important products is termed as _____.
- Snuppy is considered to be the world's first cloned _____.
- The procedure of deliberate injection of semen into a female farm animal for the purpose of achieving pregnancy is termed as _____.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

16. Comment on HeLa cells.
17. Give an example of a cryoprotectant and state its function.
18. Define multipotent stem cells.
19. Differentiate between transfection and transformation.
20. Define DNA barcoding.

PART – B

Answer the following, each within 500 words. Draw diagrams wherever necessary. (5 × 8 = 40 Marks)

21. (a) Explain the process of establishing a primary cell culture.
OR
(b) Discuss the advantages and disadvantages of serum supplementation.
22. (a) *The contamination of animal cell cultures by mycoplasma is a major problem in cell culture.*
Discuss how can mycoplasma contamination be detected and controlled.
OR
(b) Explain the importance and methodology of cryopreservation.
23. (a) Outline the basic methodology of culturing animal stem cells.
OR
(b) Write a note on three-dimensional animal cell culture.
24. (a) Explain the process of cloning Dolly.
OR
(b) What are transgenic animals? How are transgenic mice produced?
25. (a) *Molecular techniques have played a key role in species conservation.* Justify.
OR
(b) Describe any three molecular techniques employed for genetic improvement of livestock.

PART – C

Answer any TWO of the following, each within 1500 words; Draw diagrams wherever necessary. (2 × 20 = 40 Marks)

26. What are culture vessels? Describe vessels that are used for laboratory scale and large scale animal cell cultures.
27. Describe any four methods to assess cell viability of animal cell cultures.
28. Discuss any two current medical research using induced pluripotent cells. Add a note on the ethics of stem cell research.
29. Explain the steps involved in IVF. Comment on the risks and ethical concerns of the technique.

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