

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

THIRD SEMESTER – NOVEMBER 2019

18PBT3MC01 – ANIMAL BIOTECHNOLOGY

Date: 29-10-2019

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)

- Roller cell culture is used in the scale up of what type of cultures?
a) adherent b) suspension c) primary d) none of the above
- The amount by which a culture is diluted before reseeding is the
a) Confluent ratio b) Passage number c) Split ratio d) Hayflick limit
- Inner mass cells within a blastocyst is
a) Totipotent b) Pluripotent c) Multipotent d) Unipotent
- Cloning of Dolly was done using which of the following method ?
a) IVF b) ICIS c) SCNT d) Embryo transfer
- Which of the following will lead to regression of corpus luteum?
a) FSH b) Prostaglandin c) hCG d) Oxytocin

II. State whether the following are true or false.

(5x1=5 Marks)

- Carrell is credited for designing the tissue culture flask.
- Bacterial contamination usually results in an increase in pH of the culture.
- Capecci, Evans and Smithies were awarded the Nobel Prize for discoveries of principles for introducing specific gene modifications in mice by the use of embryonic stem cells.
- Gene therapy is successful with a single dosage of targeted gene delivery.
- Mechanism of action if siRNA and miRNA is the same.

III. Complete the following

(5 x 1= 5 Marks)

- _____ organize the assembly of microtubules during cell division.
- _____ are referred to as “crabgrass” of cell cultures.
- A _____ is a material intended to interface with biological systems to evaluate or treat or replace any tissue or organs or function in the body.
- _____ is the chemical used for induction of Diabetes in animals
- _____ is used to cause superovulation in animals.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

16. Mention a disadvantage of multi-surface propagators.
17. Give an example of a cryoprotectant.
18. Define Yamnaka factors.
19. Mention the advantage of using retrovirus in gene delivery.
20. What is embryo splitting?

PART B

Answer the following, each within 500 words.

(5 x 8 = 40 marks)

Draw diagrams wherever necessary

21. (a) Briefly describe the structure and function of an animal cell.

OR

- (b) Outline the enzymatic method to set up a primary cell culture.

22. (a) Explain the MTT assay.

OR

- (b) Determine the concentration of viable cells and the percentage viability of the cell suspension given that of a total of 400 cells that were counted in 4 large squares of a haemocytometer, 80 cells stained with Naphthalene black. (Note: 80 μ L of Naphthalene black was added to 20 μ L of cell suspension.) State the type and the principle of the assay.

23. (a) Describe the method of culturing embryonic stem cells.

OR

- (b) Apply the principles of biotechnology to construct tissue engineered skin.

24. (a) Write about Baculovirus system for development of transgenic animals.

OR

- (b) Discuss about the viral vectors used for gene therapy.

25. (a) Mention any four social and ethical concerns for GM crops in India.

OR

- (b) Distinguish between the different molecular markers used in animal research.

PART – C

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

(2 x 20 = 40 Marks)

Draw diagrams wherever necessary.

26. Explain how mycoplasma and viral contamination could be detected in animal cell cultures using key techniques in biotechnology?
27. *Induced pluripotent stem cells have impacted medical research.* Justify with examples.
28. Write an essay on organotypic cultures.
29. Summarize the steps in Somatic cell nuclear transfer.
