LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **BIOTECHNOLOGY**

THIRD SEMESTER – **NOVEMBER 2024**

PBT3MC02 – ANIMAL BIOTECHNOLOGY

Date: 09-11-2024 Dept. No. Max. : 100 Marks

Time: 01:00 pm-04:00 pm

	SECTION A – K1 (CO1)
	Answer ALL the questions **(5 x 1 = 5)**
1	**Choose the best option**
a)	Which of the following are more functionally relevant cell lines? i) Finite cell lines ii) Contiuous cell lines iii) Transformed cell lines iv) All the above
b)	DNA fluorochrome staining using Hoechst 33258 is commonly used to detect i) Viral contamination ii) Bacterial contamination iii) Cross contamination iv) Mycoplasma contamination
c)	Cells of the inner cell mass are i) Totipotent ii) Pluripotent iii) Multipotent iv) Unipotent
d)	Genetic material delivered to target cells that remain inside a person's body is called i) *In vivo* ii) *In vitro* iii) *Ex vivo* iv) *Ex vitro*
e)	Optimal embryo culture requires maintaining specific concentrations of i) 5% oxygen and 6% carbon dioxide ii) 50% oxygen and 50% carbon dioxide iii) 5% oxygen and 95% carbon dioxide iv) 95% oxygen and 5% carbon dioxide
	SECTION A – K2 (CO1)
	Answer ALL the questions **(5 x 1 = 5)**
2	**Answer in one or two sentences**
a)	List the key findings of Ross Harrison's experiment.
b)	State the principle of dye-uptake assay.
c)	List the Yamanaka factors.

d)	Define pharming.
e)	Comment on GPS culture dish.
	SECTION B – K3 (CO2)
	Answer any THREE of the following **(3 x 10 = 30)**
3	Construct a flow chart to sub-culture an adherent cell line.
4	Illustrate the cloning of Dolly and outline the process.
5	Explain the generation of iPSCs.
6	Compare *in vivo* and *ex vivo* approaches to gene delivery.
7	Write a note on application of RNAi in medicine.
	SECTION C – K4 (CO3)
	Answer any TWO of the following **(2 x 12.5 = 25)**
8	Highlight the differences between finite and continuous cell lines
9	Estimate the viability and concentration of a cell culture given that 280 cells were counted in 4 large squares, 20 cells stained with Naphthalene black. Add a note on its advantages and limitations
10	Classify stem cells based on potency and origin.
11	Analyse the genetic disorders detected by amniocentesis.
	SECTION D – K5 (CO4)
	Answer any ONE of the following **(1 x 15 = 15)**
12	Recommend a method to scale-up an adherent cell culture.
13	Compile the main steps of embryo transfer technology and highlight its significance
	SECTION E – K6 (CO5)
	Answer any ONE of the following **(1 x 20 = 20)**
14	Discuss the John Moore case study and highlight the ethical concerns of the case.
15	Give an account on *in vitro* fertilization. Add a note on its challenges.

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