BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.PHARM **SEMESTER : I**
BRANCH: PHARMACY **SESSION : MO/19**

SUBJECT: MPL104T CELLULAR AND MOLECULAR PHARMACOLOGY

TIME:3:00 HOURS **FULL MARKS: 75**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 15 marks and total 105 marks.
2. Candidates may attempt any 5 questions maximum of 75 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data handbook/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Write a note on working Principles of Flowcytometry? Analyses the results of a flowcytometric data with at-least one examples? What are the biomedical uses of flowcytometry?	[7]
Q.1(b)	What is gene-therapy? What are the types of gene-therapy? Describe the types of gene-therapy with working principles of each? Write some process of gene-therapy?	[8]
Q.2(a)	Describe the families of G-Protein Coupled Receptors with a detailed note on the structures of the GPCRs?	[7]
Q.2(b)	Discuss the following (i)Enzyme regulation through cAMP pathway (ii) MAPK signaling pathway?	[8]
Q.3(a)	Analyze and discuss about Janus Kinase/ signal transducer and activator of transcription signaling pathway in detail?	[7]
Q.3(b)	What are the types of cell culture? Describe with examples ? Discuss the process of isolation of cell lines for in-vitro culture? How to passage the cells?	[8]
Q.4(a)	Define Pharmacogenomics? Describe the Single Nucleotide Polymorphism (SNP)? Discuss what are the Genetic variation is involved with G protein coupled receptors?	[7]
Q.4(b)	Discuss about the types of immunity with examples of cells involved in each? Describe the T-cell response signaling mentioning the cytokine driven CD4+ T-cells? Write the classification of immunotherapy in cancer?	[8]
Q.5(a)	Illustrate the principles and methods for q-PCR and RT-PCR? Discuss various factors for optimal PCR reactions?	[7]
Q.5(b)	Discuss the geneology of pBR322 vectors? Illustrate the approaches to create cloning vectors based on λ (lamda) DNA?	[8]
Q.6(a)	Describe the process of SDS-PAGE technique?	[7]
Q.6(b)	Describe the structure and functions of Nucleus and Mitochondria?	[8]
Q.7(a)	Explain Gene Sequencing. Describe the Maxim-Gilbert method of gene sequencing?	[7]
Q.7(b)	Describe cell cycle and explain the role of cyclins and kinases in regulation of cell cycle?	[8]

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