**THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY**

**[BPHARM0422] APRIL 2022 Sub. Code: 2084**
**(SEPTEMBER 2021 SESSION)**

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)**
**PCI Regulation 2017 SEMESTER VIII**
**PAPER VIII – CELL AND MOLECULAR BIOLOGY**
***Q.P. Code: 562084***

**Time: Three hours** **Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions.** **(2 x 10 = 20)**

1. What is gene transfer? Discuss various methods for gene transfer in animal.
2. Define Receptor? Explain in detail about molecular pathway of GPCR.
3. Explain in detail about Protein synthesis in eukaryotes.

**II.Write notes on: Answer any SEVEN questions.** **(7 x 5 = 35)**

1. Write in detail about structure and function of mitochondria.
2. Write short note on ribosomal RNA and micro RNA.
3. Explain in detail about replication DNA.
4. Write the functions of the following a. Centromere b. Cell wall.
5. JAK-STAT pathways.
6. Write a note on Kinase enzyme linked receptor.
7. Write short note on Autosomes and Sex chromosome.
8. Write the difference between eukaryotes and prokaryotes.
9. Give short note on different phases of cell cycle and Check points.

**III. Short answers on: Answer ALL questions.** **(10 x 2 = 20)**

1. Monoclonal antibodies.
2. Meiosis.
3. Amino acid.
4. Types of cell signals.
5. Gel electrophoresis.
6. Tyrosine kinase receptor.
7. Telophase.
8. Cyclic AMP and GMP.
9. Plasmid.
10. Endoplasmic reticulum.

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**THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY**

**[B.PHARM 0323] MARCH 2023 Sub. Code: 2084**
**(SEPTEMBER 2022 EXAM SESSION)**

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)**
**PCI Regulation 2017 - SEMESTER VIII**
**PAPER V – CELL AND MOLECULAR BIOLOGY**

***Q.P. Code: 562084***

**Time: Three hours** **Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Write in detail about the cellular process of translation and transcription.
2. Write in detail about the technology and tools used for Genomic analysis.
3. Explain in detail about Signal transduction mechanism.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Write in detail about structure and function of DNA.
2. Write principles involved in Flow cytometry.
3. Explain in detail about the intra cellular signaling pathways.
4. Write the structure and functions of Cell wall.
5. Ras pathway cell signaling.
6. Write a note on Ion Channel Receptor.
7. Write short note on Nucleus.
8. Give short note on significance of protein synthesis.
9. Misregulation of signaling pathway.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. Recombinant DNA technology.
2. Metaphase.
3. Functions of Protein.
4. Types of RNA.
5. Phosphatidyl-inositol 3-phosphates (IP3).
6. Protein-kinase receptor.
7. Transgenic animals.
8. DNA Ligase.
9. Vector.
10. Mutation.

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**THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY**

**[B.PHARM 0823] AUGUST 2023 Sub. Code: 2084**
**(MARCH 2023 EXAM SESSION)**

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)**
**PCI Regulation 2017 - SEMESTER VIII**
**PAPER V – CELL AND MOLECULAR BIOLOGY**

***Q.P. Code: 562084***

**Time: Three hours** **Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Write in detail about the eukaryotic somatic cell cycle and its regulation through checkpoints.
2. Explain the transcription and translation process of protein synthesis.
3. What is a Protein? Write in detail about the structural organization of Proteins.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Classify amino acids with examples on the basis of nutritional requirements.
2. Explain the post-translational modification of polypeptide chain.
3. Differentiate prokaryotic and eukaryotic cells.
4. Explain different types of RNA.
5. Write in detail about the Mitosis.
6. Define Transgenics. Explain the steps involved in the Transgenics process.
7. Explain the functions of cell surface receptors in the cell signaling pathways.
8. With the neat diagram explain cAMP pathway mediated signal transduction.
9. What are protein-kinases? Explain its functions with examples.

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. What are the three types of Meiosis?
2. Why Carbon (C) is the most important atom in biological molecules?
3. What are the functions of Cytosol?
4. What is 3’ -5’ phosphodiester linkage?
5. Differentiate monocistronic and polycistronic mRNA.
6. Briefly explain the energy requirements in protein synthesis.
7. What is metabolism?
8. Draw the structure of a cell membrane.
9. Name gene transfer methods.
10. What is JAK / STAT pathway?

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**THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY**

**[B.PHARM 1223] DECEMBER 2023 Sub. Code: 2084**
**(SEPTEMBER 2023 EXAM SESSION)**

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)**
**PCI Regulation 2017 - SEMESTER VIII**
**PAPER V – CELL AND MOLECULAR BIOLOGY**

***Q.P. Code: 562084***

**Time: Three hours** **Maximum: 75 Marks**

**I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)**

1. Write in detail about the Cell membrane and membrane proteins with neat diagram. Explain the applications of cell membrane.
2. What is DNA? Write in detail about the primary structure of a polynucleotide chain.
3. What is positive control of Transcriptional regulation? Explain its significance in protein synthesis.

**II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)**

1. Explain the general properties of Proteins.
2. How ATP links anabolic and catabolic reactions?
3. Differentiate Mitosis and Meiosis.
4. Explain the transcription process of protein synthesis.
5. What are the basic principles of rDNA technology?
6. Explain the 4 phases of cell cycle.
7. Explain about the cell surface receptor that transduces the cell signals.
8. Explain the following signaling mechanism with suitable example.
    a. Paracrine signaling b. Autocrine signaling
9. What are the steps involved in the cell signaling mechanism?

**III. Short answers on: Answer ALL questions. (10 x 2 = 20)**

1. What are the functions of Nucleus?
2. Explain the importance of Cellular reproduction.
3. What are the trace elements present in the human body?
4. What is cloverleaf model of transfer RNA?
5. What are the enzymes involved in DNA synthesis?
6. What are the three regions of transcription unit?
7. State with example the amphoteric nature of amino acids.
8. Give some examples for non-viral vectors in gene transfer.
9. Differentiate homozygote and heterozygote.
10. How Nitric oxide (NO) acts as secondary messenger?

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