Register Number:……..

KUMARAGURU
college of technology
character is life

B.TECH. DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Fourth Semester

BIOTECHNOLOGY

U18BTI4204: Cell and Molecular Biology

COURSE OUTCOMES

CO1: Critically evaluate and comprehend the fundamental concepts of cell and cell membrane structure and functions.
CO2: Imbibe the concept of membrane transport and signal transduction in cells
CO3: Critique the concepts of genome organization and replication of prokaryotes and eukaryotes.
CO4: Comprehend the process involved in transcription and translation and interpret the consequences of mutation
CO5: Apply the concept of gene activity regulation and DNA repair mechanisms in prokaryotes.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Identify the factors that affect the membrane fluidity.	CO1	[K_3]
2.	Differentiate between prokaryotic cells and eukaryotic cells with suitable examples.	CO1	[K3]
3.	Compare different modes of transport across the cell membrane.	CO2	[K_4]
4.	Draw the structure of G- protein coupled receptors.	CO2	[K2]
5.	Interpret the role of a promoter in transcription.	CO3	[K4]
6.	State the significance of telomerase.	CO3	[K4]
7.	Explain missense and nonsense mutations.	CO4	[K2]
8.	Define Wobble hypothesis.	CO4	[K_1]
9.	Distinguish between constitutive and inducible expressed genes.	CO5	[K_4]
10.	Illustrate inhibitors of transcription and their importance.	CO5	[K3]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Draw a neat diagram of an animal cell and discuss the functions of any three organelles.	CO1	[K2]
	b)	Explain cell cycle regulation in eukaryotic cells and add a note on cell cycle checkpoints.	CO1	[K_3]
12.	a)	Elaborate the various stages of replication in eukaryotic chromosomes and mention the significance of telomeres.	CO3	[K_4]
	b)	Write briefly on A) Griffith experiment model, B) Jumping genes.	CO3	[K_2]
13.	a)	Discuss various steps and proteins involved in transcription in prokaryotes.	CO3	[K3]
	b)	Summarize RNA splicing methods in eukaryotes and add a note on alternate splicing.	CO3	[K4]
14.	a)	Elaborate the process of protein synthesis in eukaryotes and mention the significance translation inhibitors.	CO4	[K5]
	b)	Distinguish between prokaryotic promoters and eukaryotic promoters with respect to their structure and function.	CO4	[K5]
15.	a)	Classify the types of mutations and discuss any two methods of inducing mutations with suitable examples.	CO5	[K_4]
	b)	Discuss in detail about codon-anticodon interactions between mRNA and tRNA during translation process.	CO5	[K_2]
16.	a)	Draw and label all the genetic elements in lac operon. How is lac operon regulated at high glucose concentration and in the presence of lactose.	CO5	[K_5]
	b)	Elaborate various DNA repair mechanisms in prokaryotes with suitable illustrations.	CO5	[K_4]

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