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GIET UNIVERSITY, GUNUPUR - 765022
M. Sc (Second Semester) Examinations, July - 2023
22BTPC205 - Molecular Diagnostics
(Biotechnology)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**

Q.1. Answer <i>ALL</i> questions	CO #	Blooms Level
a. What is the role of DNA in inheritance?	CO1	1
b. What is DNA polymorphism?	CO1	1
c. What is FISH in the PCR technique?	CO2	1
d. What is the main advantage of SAGE over traditional microarray analysis?	CO2	2
e. What are the applications of nucleic acid sequencing in molecular diagnosis?	CO2	1
f. What do you mean by metabolomics?	CO3	1
g. What are the common molecular techniques used in pathogen diagnosis?	CO4	2
h. What are the clinical implications of identifying VHL gene mutations in asymptomatic carriers?	CO5	2
i. What role do molecular biomarkers play in cancer diagnosis and treatment?	CO6	2
j. What is the significance of adhering to regulatory guidelines in molecular diagnostics?	CO7	1

PART – B**(10 x 5 = 50 Marks)**

<u>Answer <i>ANY FIVE</i> questions</u>	Marks	CO #	Blooms Level
2. a. Diagrammatically show the structure of different types of chromosomes in human cells. How is it helpful for making karyotyping?	4	1	3
b. Describe different types of mutations.	6	1	2
3.a. What is DNA polymorphism? Describe different types of DNA polymorphism.	5	1	1
b. Write an essay on how can polymorphic DNA be used for human identity, clinical variability and genetically determined adverse reactions to drugs.	5	1	2
4. a. What is PCR?	2	2	1
b. Write the working principles and applications of ARMS and Multiplex techniques in PCR.	8	2	2
5.a. What are microarray chips? What are its applications in the molecular diagnosis of diseases?	4	2	2

b.	Write the working principle and the techniques of its data normalization and analysis.	6	2	2
6. a.	What do you mean by proteomics?	2	2	1
b.	Describe the working principles, instrumentation and applications of SELDI-TOF-MS.	8	2	2
7.a.	What is the classical detection and identification of microbial diseases?	3	4	1
b.	Describe different molecular diagnostic techniques for detecting and identifying microorganisms causing human diseases. How do these techniques are advantageous over the classical methods of identification?	7	4	2
8. a.	What sorts of molecular changes occur during the transformation of a normal cell to a cancerous cell?	3	6	1
b.	Describe the type and application of biomarkers for the molecular diagnosis of different types of cancers in human.	7	6	2

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