Question Paper

Exam Date & Time: 30-Jun-2023 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M. Sc. (BIOINFORMATICS/SYSTEMS BIOLOGY) DEGREE EXAMINATION - JUNE/JULY 2023
SUBJECT: MBI 506 - MOLECULAR MODELLING AND SIMULATION
MSB 502 - STRUCTURAL BIOINFORMATICS
(OBE - 2021 REGULATION)

Marks: 70 **Duration: 180 mins.**

Answer all the questions.

Illustrate where necessary.

1A)	Add a note QSAR approach.	(3.5)
1B)	Protein structure is more conserved than the sequence. Justify the statement.	(3.5)
1C)	Explain the Ramachandran plot and its importance.	(3.5)
1D)	Add a note on *in silico* estimation of ADMET properties and its significance.	(3.5)
2A)	Explain the various structural file formats for small chemical molecules.	(7)
2B)	Explain the X-ray crystallography method to determine molecular structures.	(7)
2C)	Write the features of the Protein Data Bank and its file format.	(7)
2D)	Briefly explain the Bioinformatics resources to study the impact of an amino acid substitution on the protein structure and function.	(7)
3A)	Explain the computational approaches for drug design.	(14)
3B)	With example, explain different types of protein structural symmetries.	(14)

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Question Paper

Exam Date & Time: 05-Jul-2023 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M. Sc. GENOME ENGINEERING/ M. Sc. SYSTEMS BIOLOGY/ M. Sc. MOLECULAR BIOLOGY AND HUMAN GENETICS/ M. Sc. TISSUE ENGINEERING DEGREE EXAMINATION - JUNE/JULY 2023
SUBJECT: MGE 510/ MSB 510/ MBH 508/ MTE 508 - CANCER BIOLOGY
(OBE - 2021 REGULATION)

Answer ALL questions.
Illustrate where necessary

Marks: 70 **Duration: 180 mins.**

1)	Write an essay on immune cell-based cancer therapy	(14)
2)	Explain the multistep processes of metastasis.	(14)

3) **Explain the following briefly:**

3A)	Write an essay on the molecular aetiology of breast cancer.	(7)
3B)	Elaborate on apoptosis pathway	(7)
4A)	Discuss the properties of cancer cell.	(7)
4B)	Write a note on molecular diagnosis of various cancers.	(7)

5) **Write short notes on the following:**

5A)	Cancer vaccines	(3.5)
5B)	Suicide gene therapy	(3.5)
5C)	Hereditary cancer syndromes.	(3.5)
5D)	APC gene	(3.5)

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