U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

January 2024 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Aerospace Engineering **Duration: 3 hrs.**
Course Code: 21AE7BSBFE **Max Marks: 100**
Course: Biology for Engineers

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	*CO*	*PO*	Marks
1	a)		Present the different levels of organization.	CO1	*PO1*	**6**
	b)		At its core, life on earth is driven by chemical processes. Several compounds serve as the building blocks upon which life is formed. Give an overview of the same.	*CO1*	*PO1*	**7**
	c)		Elucidate how bulk transport of substances take place across the cell membrane.	*CO1*	*PO1*	**7**
			OR			
2	a)		Protein synthesis is the process by which cells build proteins based on the information encoded in DNA. Give an overview of the major steps of the same.	*CO1*	*PO2*	**8**
	b)		Present the different stages of mitosis with diagram.	*CO1*	*PO1*	**7**
	c)		Enlist the structural features of a eukaryotic cell.	*CO1*	*PO1*	**5**
			UNIT - II			
3	a)		Present the major classification of bones.	*CO2*	*PO1*	**6**
	b)		Active muscle produces energy in the form of work and heat, which are derived from chemical reactions. Highlight and elaborate on the major sources of energy.	*CO2*	*PO2*	**8**
	c)		Write the structural organization of skeletal muscle with diagram.	*CO2*	*PO1*	**6**

			UNIT - III			
	4	a)	The nervous system is a complex network of cells that coordinate and control the activities of the body. Elaborate on the two major parts of the same.	*CO3*	*PO1*	**8**
		b)	Write the Principle of electromyogram.	*CO3*	*PO2*	**6**
		c)	Present the structure of a neuron.	*CO3*	*PO1*	**6**
			UNIT - IV			
	5	a)	Write an overview on the epochs of exobiology.	*CO3*	*PO1*	**8**
		b)	Write the principle of bio mimicry in the design of micro air vehicles.	*CO3*	*PO2*	**7**
		c)	Elaborate on the importance of exobiology in aerospace.	*CO3*	*PO2*	**5**
			OR			
	6	a)	Briefly explain importance of exobiology in NASA space biology programs in different fields.	*CO3*	*PO3*	**6**
		b)	Elucidate the key areas of morphing which helps in the design of the aircraft.	*CO3*	*PO3*	**6**
		c)	Elaborate on the Albatross ONE project of Airbus.	*CO3*	*PO3*	8
			UNIT -V			
	7	a)	Where does the fello'fly project of Airbus inspired from? Elaborate on the project.	*CO3*	*PO3*	8
		b)	Elucidate the concept of biomimetics in bullet train and shark skin.	*CO3*	*PO3*	8
		c)	Enlist the examples of biomimicry inspirations form nature in the design of aircraft.	*CO3*	*PO3*	**4**

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