BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH **SEMESTER: I**
BRANCH: SER **SESSION: MO/2024**

SUBJECT: SR514 ROCKET AND MISSILE STRUCTURE

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**

			CO	BL
Q.1(a)	What is the main difference between a strategic and tactical missile?	[2]	CO1	L2
Q.1(b)	Explain in brief what are the main parts of a propulsion system that are used in a missile system?	[4]	CO1	L3
Q.1(c)	Explain in brief about the working of a beam rider guidance? Also write its advantages and disadvantages.	[4]	CO1	L4
Q.2(a)	What is the main function of a missile control system? Write in brief the main features of it.	[5]	CO2	L3
Q.2(b)	What are the main design criteria considered in designing a wing? Also explain how the wings utilized in missile is different from that used in an aircraft.	[5]	CO2	L3
Q.3(a)	Demonstrate the various methods used for the manufacture of composite materials? What would be the best method for the manufacture of components with low part count and complex design and why?	[5]	CO3	L3
Q.3(b)	What are the various types of fibers used in composite manufacturing? Which Fibre would be the best suited for application in which strength and stiffness are the major design criteria?	[5]	CO3	L3
Q.4(a)	What are the components of the missile subsystem that have the maximum impact on the flight performance? Explain in detail.	[5]	CO4	L3
Q.4(b)	What are the various modes of failure of composites used as airframe materials? What alternate material can be used to counter these problems? Explain	[5]	CO4	L4
Q.5(a)	What are the important factors that are considered during the material selection for the missile applications?	[2]	CO5	L2
Q.5(b)	What is the function of a fuze? Explain the working of any two types of fuze that are used in the missile application.	[4]	CO5	L3
Q.5(c)	What are the various approaches for the engine or missile design? Also explain in brief the various process or procedure through which design process goes before its complete development.	[4]	CO5	L3

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