CBCS SCHEME

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BAE515B

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Rockets and Missiles

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain different types of military missiles and their functions.	10	L1	CO1
	b.	Explain essential parts of basic missile guidance and control system and requirements.	10	L2	CO1
		OR			
Q.2	a.	A rocket projectile has the following characteristics : Initial mass = 200 kg Mass after rocket operation = 130 kg Payload, non propulsive structure etc. = 110 kg Rocket operating duration = 3 seconds Specific impulse of propellants = 240 seconds Determine the vehicle mass ratio, propellant mass fraction, propellant flow rate, thrust, total impulse mass ratio of rocket system, acceleration of vehicles.	16	L4	CO1
	b.	Describe different types of launch vehicles.	4	L2	CO1
		Module – 2			
Q.3	a.	Explain the grain configuration for solid propellants.	10	L3	CO2
	b.	Explain different types of Nozzle used in solid propellant rocket motors.	10	L2	CO2
		OR			
Q.4	a.	List out the steps to be followed during the start and stop of liquid propellant engines.	10	L3	CO2
	b.	Explain typical tank arrangement for large turbo pump fed liquid bi propellant rocket engines.	10	L2	CO2
		Module – 3			
Q.5	a.	Illustrate different types of Aerodynamic forces acting on a missile while passing through the atmosphere.	10	L3	CO1
	b.	Explain with a neat sketch, the airframe components of rocket and missiles.	10	L2	CO1
		OR			
Q.6	a.	Define rocket dispersion? Explain different sources and methods of estimating the rocket dispersion.	10	L2	CO1

	b.	Explain body up wash and down wash in missiles.	10	L1	CO1
Module – 4					
Q.7	a.	Derive the Tsiolkovsky rocket equation.	10	L3	CO3
	b.	Explain range in absence of gravity in case of rocket propulsion.	10	L2	CO3
OR					
Q.8	a.	Explain different categories of thrust vector control and its types.	10	L2	CO3
	b.	Explain the thrust magnitude control, with a neat diagram.	10	L2	CO3
Module – 5					
Q.9	a.	Briefly explain the different types of Tests Performed on rockets.	10	L2	CO3
	b.	Describe the major systems (or) components of test facilities.	10	L2	CO3
OR					
Q.10	a.	Explain briefly requirements of material at extremely high temperature in rockets and missiles.	10	L2	CO3
	b.	Discuss different criteria for selection of materials for rockets and missiles.	10	L3	CO3

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