

00561

**B.Tech. AEROSPACE ENGINEERING
(BTAE)**

Term-End Examination

June, 2019

BASE-002 : ROCKET PROPULSION

Time : 3 hours

Maximum Marks : 70

Note : (i) Attempt any seven questions.

(ii) All questions carry equal marks.

(iii) Use of scientific calculator is permitted.

1. What is a rocket ? How is it propelled ? 10
2. (a) What are the important factors that influence the burning rate of a solid propellant ? 5
(b) Describe the concept of nozzle-less propulsion with its merits and demerits. 5
3. Describe three important applications of rocket propulsion in brief. 10
4. What are the important factors to be considered for the designing of a solid propellant rocket ? 10
5. Is missile aerodynamics different from aircraft's aerodynamics ? Discuss each parameter that differentiates the two dynamics. 10
6. Explain in brief the future trends in rockets. 10

7. (a) What are the important properties required for a good propellant used for a rocket engine ? 5
- (b) Discuss the advantages and disadvantages of solid propellant over a liquid propellant. 5
8. Explain all the forces and moments acting on the two separating stages in a multi-stage rocket. Draw neat sketches showing details. 10
9. Write short notes on any four of the following : 4x2½=10
- (a) Aero-thermo Chemistry
 - (b) Hybrid Propellant Rocket
 - (c) Staging of Rockets
 - (d) Turbo-jet Engine
 - (e) Guidance System of Missile
 - (f) Specific Impulse
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