

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

Term-End Examination

00239

June, 2017

**BAS-024 : INTRODUCTION TO ROCKETS AND
MISSILES**

Time : 3 hours

Maximum Marks : 70

Note : Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is permitted. Assume suitable data, if any.

1. Explain the purpose and utility of rockets.
Explain the different sub-systems of rockets. 10
2. Explain the working of hybrid rocket with a suitable block diagram. 10
3. Describe the different methods of thrust vector control of a rocket. 10
4. Derive the expression for exit plane velocity for the flow through a nozzle. 10
5. What are igniters ? What are their functions and uses ? 10

6. What is thermal protection ? Which types of thermal protection systems are used in rockets and missiles ? Explain. 10
7. Explain the various materials used for missiles giving their characteristics with their functions. 10
8. (a) List all the assumptions for vertical flight in rockets. 5
- (b) Discuss the characteristics of solid propellants. 5
9. How is missile aerodynamics different from that of aircraft ? Discuss each parameter. 10
10. Write short notes on any **two** of the following : 5+5
- (a) Equilibrium and Stability
 - (b) Guidance System
 - (c) Agni Missile
 - (d) Altitude Control
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