

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

Term-End Examination

June, 2015

00366

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

Time : 3 hours

Maximum Marks : 70

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

1. Draw a neat diagram of a liquid stage and engine with a turbine feed system. Show the details and explain the purposes of the various components. 10

2. (a) Define payload ratio of a single stage rocket, payload ratio of a stage of a multistage rocket and total payload ratio of the multistage rocket. 4
- (b) Discuss the stage separation dynamics. 6

3. Find the diameter of a solid sustainer to give a mass flow rate of 15 kg/s for a propellant of density 1760 kg/m^3 , burning at 10 mm/ sec. 10

4. Explain the purpose and utility of rockets. Explain the different sub-systems of rockets. 10

5. Differentiate between Rockets and Missiles. Compare their characteristics with suitable examples. 10
6. What is area ratio for a rocket nozzle ? Derive the expression for area ratio of a rocket nozzle. 10
7. (a) Write solid propellant's characteristics. 5
(b) Discuss the importance of the various ingredients of a solid propellant. 5
8. (a) Write a short note on optimum bias. 5
(b) What is geysering ? Explain the sequence of events for geysering cycle. 5
9. (a) Write a short note on jet controls. 5
(b) Classify missile according to the purpose and explain any one in detail. 5
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