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No. of Printed Pages : 2

BAS-024

B.Tech. AEROSPACE ENGINEERING (BTAE)

Term-End Examination

December, 2015

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. Discuss the various materials used in missiles. *10*

2. Derive the expression for steady state pressure in a solid propellant rocket motor. *10*

3. Explain in brief the operation of a liquid propellant rocket. *10*

4. Describe the different sub-systems of rockets with the help of a neat sketch. *10*

5. Elaborate on the significance of staging in rocket. *10*

6. Which type of nozzle is used to increase the velocity of flow ? Why ? Explain in detail. *10*

7. What is thermal protection ? Which types of thermal protection systems are used in rockets and missiles ? Explain. *10*

8. (a) Define and describe the significance of specific propellant consumption. *5*

   (b) List all the assumptions for vertical flight in rockets. *5*

9. Explain regressive, neutral and progressive burning rate in brief. *10*

10. Write short notes on any ***two*** of the following : *5+5*

    (a) Adopted Nozzles

    (b) Guidance System

    (c) Igniters