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BAS-024

B.Tech. AEROSPACE ENGINEERING (BTAE)

Term-End Examination

00373

December, 2016

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. What is a rocket ? Classify it on the basis of the sources of energy. *10*

2. Explain the working of a liquid propellant rocket with the help of a block diagram. *10*

3. What is the area ratio for the rocket nozzle ? Derive the expression for area ratio of a rocket nozzle. *10*

4. (a) What are the differences in altitude control of solid rockets and altitude control of liquid rockets ? Explain clearly with neat sketches. *5*

   (b) Describe the criteria for selecting suitable materials for fabricating rockets and missiles. *5*

5. What is staging ? Explain its utility by taking a suitable example. *10*

6. Differentiate between rockets and missiles. Compare their characteristics with suitable examples. *10*

7. (a) What is geysering ? Explain the sequence of events for geysering cycle. *5*

   (b) Describe the significance of specific propellant consumption. *5*

8. Draw the external configuration of a rocket and explain the different aerodynamic forces and moments acting on it. How do you obtain the non-dimensional coefficients corresponding to these and how do they vary with Mach number ? *10*

9. Explain the homing command guidance and beam rider guidance. Discuss their advantages and disadvantages. *10*

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

    (a) Jet Control

    (b) Body Up Wash

    (c) Rocket Dispersion

    (d) Igniters
