

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

00043 **Term-End Examination**  
**December, 2018**

**BASE-002 : ROCKET PROPULSION**

*Time : 3 hours*

*Maximum Marks : 70*

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**Note :** Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is permitted.

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1. Explain the operation of a solid propellant rocket motor with a neat sketch. 10
2. What are the roles of propellants and igniters in rocket propulsion ? Explain in brief. 10
3. Discuss the advantages of hybrid propulsion over solid and liquid propellant rocket motors. 10
4. Give reasons for any **two** of the following : 2×5=10
  - (a) Velocity of flow increases in divergent section of the nozzle.
  - (b) Role of gamma ( $\gamma$ ) is not observed on exit plane velocity.
  - (c) Solid propellant rockets are preferred for missile applications.

5. Explain the purpose and utility of rockets. Briefly describe the different sub-systems of a rocket. 10
6. Explain in brief the future trends in rockets. 10
7. What are the assumptions for thermochemical calculations in combustion of propellants ? Explain each assumption in brief. 10
8. Write short notes on any *two* of the following :  $2 \times 5 = 10$
- (a) Flame Temperature
  - (b) Guidance System of Missile
  - (c) Boost Sustained Trajectory
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