Code No: 56072 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, November/December - 2020
AEROSPACE PROPULSION-II
(Aeronautical Engineering)

Time: 2 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1. What do you mean by specific impulse? Derive an expression of Breguet equation for cruise. [15]

2. Explain in detail about the main characteristics of space flight and its application in real- time scenario. [15]

3. A rocket engine is tested on a test bed under the ideal condition of fully expanded jet. The exhaust velocity is 2 km/hr through a nozzle of area 2.5 m^2. The mass flow rate is 200 kg/s. Calculate the specific impulse of the propellant and the thrust developed (assume g = 9.81 m/s^2). [15]

4. Derive a general expression for the thrust produced by a chemical rocket and discuss the importance of the molecular weight of the propellants. [15]

5. Explain the physical or chemical reasons for a maximum value of specific impulse at a particular mixture ratio of oxidizer to fuel. [15]

6. Briefly describe the two types of solid propellant rockets and their grain configuration. [15]

7. With the help of neat sketches explain the need and methods used for cooling rocket engine thrust chamber. [15]

8. Explain the working principle of Plasma propulsion and magneto plasma dynamic propulsion. Draw the neat sketch of it. [15]

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