BAS-013

B.Tech. AEROSPACE ENGINEERING (BTAE)

Term-End Examination

00025   **December, 2014**

BAS-013 : PROPULSION – I

Time : 3 hours   *Maximum Marks : 70*

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

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1. Derive an expression for thermal efficiency and mean effective pressure of Diesel cycle.   *14*

2. Distinguish between the following : $4 \times 3\frac{1}{2} = 14$

    (a) SI engine and CI engine

    (b) Bypass jet and Ram jet

    (c) Otto cycle and Dual cycle

    (d) Air-cooling and Water-cooling

3. (a) Explain the effect of altitude and speed on performance of an aircraft SI engine.   *7*

    (b) Describe the process of combustion in an aircraft engine.   *7*

4. (a) Describe the working of a carburettor with a neat sketch. 7

(b) Give brief description and principle of propeller engine. 7

5. Derive the expressions for thrust, thrust power, propulsive efficiency and thermal efficiency of turbojet engine. *14*

6. The bore and stroke of a water-cooled vertical cylinder 4-S diesel engine are 80 mm and 110 mm respectively. What will be the mean effective pressure and torque developed by the engine, if its rating is 4 kW at 1500 rpm ? *14*

7. Write short notes on any *four* of the following : $4 \times 3\frac{1}{2} = 14$

(a) Planck's distributive law

(b) Splash lubrication system

(c) Lubricants

(d) Supercharging

(e) Ignition system