Questions

Q1. In an air standard Otto cycle, the compression ratio is 7 and the compression begins at 35°C and 0.1 MPa. The maximum temperature of the cycle is 1100°C. Find (a) the temperature and the pressure at various points in the cycle, (b) the heat supplied per kg of air, (c) work done per kg of air, (d) the cycle efficiency and (e) the MEP of the cycle.

2. The stroke and bore of a four stroke spark ignition engine are 250 mm and 200 mm respectively. The clearance volume is 0.001. If the specific heat ratio is 1.4, the air standard cycle efficiency of

Q3. Air enters into an engine cylinder at a pressure of 100 kPa and temperature of 300 K in the suction stroke of an ideal Otto cycle. The cylinder clearance volume is 600 cm^3 and compression ratio is 8:1. The expansion stroke of the cycle is polytrophic in nature. The pressure at the beginning of the expansion stroke is 10 MPa and the temperature at the end of the expansion stroke is 1800 K. The polytrophic exponent of the expansion stroke is
_____.   [GATE 2018]

Q4. A tractor tyre contains 31 L of air at a pressure of 190 kPa and a temperature of 30°C. Using R=8.314 J (gmol)-1 K-1 and molecular mass of air = 29 g (gmol)-1, the mass of air contained in the tyre is M × 10-3 kg. The value of M is_____   [GATE 2014]

Q5. Air temperature at the beginning of the compression stroke of IC engine is 27° and the compression ratio is 16. The temperature at the end of the compression stroke is

[GATE 2017]

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