

Questions

Q1. In a Diesel cycle, the compression ratio is 15. Compression begins at 0.1 Mpa, 40°C. The heat added is 1.675 MJ/kg. Find (a) the maximum temperature in the cycle, (b) work done per kg of air (c) the cycle efficiency (d) the temperature at the end of the isentropic expansion (e) the cut-off ratio and (f) the MEP of the cycle.

Q2. In a Diesel cycle, the compression ratio is 20 and the cut-off volume is 5 percent of stroke volume. Find the standard efficiency

Q3. An oil engine works on the ideal diesel cycle with a compression ratio of 18:1. The constant pressure energy addition ceases at 10% of the stroke. The intake pressure and temperature are 100 kPa and 300 K respectively. The hourly air consumption is 100 m³. If the ratio of specific heats is 1.4, the maximum temperature in the cycle is [GATE-2007]

(A) 953.3 K (B) 1334.6 K (C) 2154.5 K (D) 2573.9 K

Q4. The power developed and the exhaust gas temperature of a diesel engine compared to a spark ignition engine of the same size and running at the same speed respectively, are

(A) higher and lower (B) higher and higher
(C) lower and higher (D) lower and lower [GATE-2012]

Q5. The intake pressure of a diesel engine is 1 bar and pressure at the end of the compression is 34 bar. The adiabatic exponent is 1.3 and the expansion ratio is 7. The diesel cycle efficiency in percentage is _____ [GATE-2016]