Thermal Engineering-II

Important 13mark questions

Unit I

1. Draw the actual and theoretical p-v diagrams of a four stroke diesel engine and compare them.
2. An air standard Diesel cycle has a compression stroke is 1 bar and the temperature is 30^0C. The heat supplied is $1800\ kJ/kg$. Determine:

Unit II

1. Discuss the construction and working principle of a Battery coil ignition system with neat sketch.
2. With a neat sketch explain the working principle of a simple carburettor.

Unit III

1. What is velocity compounding? List the advantages and limitations of velocity compounding.
2. Steam expands isoentropically in a nozzle from 1 MPa, 250^0 C to 10 kPa. The flow rate of the steam is 1 kg/s. Find the following when the inlet velocity is neglected.
   (i) Quality of Steam
   (ii) Velocity of Steam at exit of the nozzle
   (iii) Exit area of the nozzle.

Unit IV

1. Explain the construction and working principles of Multi stage compressor and discuss the perfect and im-perfect intercooling with neat sketch.
2. Describe the methods of improving isothermal efficiency of a reciprocating air compressor.

Unit V

1. Explain the construction and working of Vapour compression refrigeration with neat sketch.
2. The sling psycrometer in a laboratory test recorded the following readings. DBT = 35^0 C and WBT = 25^0 C. Calculate
   (i) Specific humidity
   (ii) Relative humidity
   (iii) Vapour density in air
   (iv) Dew point temperature
   (v) Enthalpy of mixture per kg of dry air,
   Take atm Pressure as = 1.0132 bar.