

T.E (Production Engineering)(SEM-V)(Choice Base) / 32906 / NOV -2019 /29 .11 . 2019

(3 Hours)



Total Marks : 80

N.B : 1. Question no. 1 is compulsory

2. Attempt any THREE questions out of remaining FIVE questions.
3. All questions carry equal marks.
4. Assume suitable data if necessary.

- Q.1 Attempt any Four. (20)
- A. Write down the application of IC engine in different engineering filed.
  - B. What you mean by Choke in terms of carburettor and how it is useful at the starting of automobile.
  - C. Write short note on: method of fuel injection.
  - D. What are the functions of lubrication? Name different types of lubricant used in automobile.
  - E. Explain Supercharging of IC engine.
  - F. Explain briefly various methods to control emission.
- Q.2
- A. State the Assumptions in an Air Standard cycle. (04)
  - B. What is the importance of CRDI in diesel engine? Explain with neat sketch. (06)
  - C. Write short note on: Electronic Fuel-injection system. (06)
  - D. What are the sources of HC formation in petrol engine? (04)
- Q.3
- A. During an engine trial on a six cylinder four stroke diesel engine, cylinder bore 180 mm, the stroke 200 mm, the following observation were recorded : speed 1500 rpm, BP = 245 kW, mep = 8bar, fuel consumption = 70 kg/hr, air consumption is 42 kg/hr, heating value of fuel 44 MJ/kg, mass of cooling water 85 kg/min, cooling water temperature rise 42°C, cooling oil circulated through the engine = 50kg/min, temperature rise of cooling oil = 24°C, specific heat of the dry exhaust gas 1.045 KH/kg<sup>0</sup>k. Draw heat balance sheet and find mechanical efficiency. (12)
  - B. Why Morse test is conducted on IC engines? (04)
  - C. Explain the working principal of Wankel Engine. (04)
- Q.4
- A. Justify: Spark plug and exhaust valves are located away from each other inside combustion chamber of spark ignition engine. (10)
  - B. Explain how the induction swirl is created. What is the requirement of the injector with this type of swirl? (10)

Q.5

- A. A test of one hour duration was conducted on a single cylinder petrol engine having a bore of 300 mm & stroke of 450 mm. Fuel consumed is 8.8 kg at an average speed of 200 rpm. The mean effective pressure of the engine 5.8 bar and calorific value of fuel is 41800 KJ/kg. The brake friction load is 1860 N for a brake wheel of diameter of 1.22m, Quantity of cooling water consumed during the test is 650 kg with a rise in temperature of 22°C. If the compression ratio is 12:1 and  $\gamma=1.4$ .  
**Find:** Mechanical Efficiency, Brake thermal efficiency, Air standard efficiency. (12)
- B. Explain the different method of turbo charging. (08)

Q.6

- A. Explain any one type water cooling system in IC engine. (05)
- B. Write short note on: MPFI for SI engines (05)
- C. List out and define various engine efficiencies with their tentative values for the modern engines. (05)
- D. Write short note on: Valve timing diagram for four stroke SI engine. (05)