



SECTION – II

Q-4

- (A) Explain the following pumps: (i) Volute Pump (ii) Vertex Pump 06  
(B) Explain the working of Hartnell governor with a neat sketch. 05

OR

- (A) Explain the working of Vapour Compression Refrigeration system with diagram. 06  
(B) What is drive? Differentiate between individual drive and group drive. 05

Q-5

- (A) Define the term scavenging process? Explain scavenging process in two stroke Compression Ignition engine with neat sketch. 06  
(B) A four cylinder four stroke cycle petrol engine has 110 mm bore and stroke is 1.3 times bore. It consumes 4 kg of fuel per hour having calorific value of 41100 kJ/kg. If the engine speed is 800 r.p.m. Find its indicated thermal efficiency. The mean effective pressure is  $0.7 \text{ N/mm}^2$ . 06

OR

- (A) Derive the work done equation of Single Stage Reciprocating Compressor with consideration of clearance volume. 06  
(B) A single stage, single acting compressor has a bore of 170 mm and stroke of 260 mm. It runs at 130 rpm. The suction pressure is 1 bar and delivery pressure is 9 bar. Find the indicated power if compression (i) follows the law  $PV^{1.25} = \text{Constant}$  (ii) compression is isothermal. Also find isothermal efficiency. Assume there is no clearance volume. 06

Q-6

Attempt any three.

- (A) Derive the equation of volumetric efficiency for compressor. 12  
(B) Write short note on Window Air –Conditioner.  
(C) Write the function of the following components:  
(i) Carburetor (ii) Piston (iii) Fuel Pump (iv) Cam shaft  
(D) Differentiate between clutch and coupling.

END OF PAPER