

17408

21819

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. (A) Attempt any SIX :

12

- (a) State meaning of scavenging.
- (b) State function of (i) Cylinder block (ii) Cylinder head.
- (c) List any two application of C.I. engine.
- (d) State any four specification of two-wheeler engine.
- (e) List any four components of water cooling system.
- (f) Define :
 - (i) Indicated power
 - (ii) Brake power
- (g) State manufacturing method of
 - (i) Connecting rod
 - (ii) Cylinder block
- (h) State meaning of Air-Fuel (A/F) ratio.

[1 of 4]

P.T.O.

(B) Attempt any TWO :**8**

- (a) Classify I.C. engine on the basis of
 - (i) Stroke
 - (ii) Fuel
 - (iii) Number of cylinders
 - (iv) Ignition
- (b) Compare four stroke and two-stroke engine (four points).
- (c) Explain working of four stroke Spark-Ignition (S.I) engine.

2. Attempt any FOUR :**16**

- (a) Define :
 - (i) I.C. Engine
 - (ii) Stroke length
 - (iii) T.D.C.
 - (iv) B.D.C.
- (b) Name the material for :
 - (i) Piston
 - (ii) Cylinder block
 - (iii) Gasket
 - (iv) Connecting-rod
- (c) State function and location of :
 - (i) Piston
 - (ii) Connecting-rod
 - (iii) Crankshaft
 - (iv) Camshaft
- (d) Draw schematic diagram of camshaft and connecting-rod.
- (e) Compare dry liner and wet liner.
- (f) State types of camshaft drives with application.

3. Attempt any FOUR :**16**

- (a) Explain valve timing diagram for four-stroke engine.
- (b) State the approximate Air-Fuel (A/F) ratio required for (i) Idling (ii) Normal speed (iii) Acceleration.
- (c) List types of nozzle in diesel engine and explain any one.
- (d) State need and requirement of fuel injection system.
- (e) Draw a neat sketch of simple carburetor.
- (f) State types of fuel injection system and explain any one.

4. Attempt any FOUR :**16**

- (a) State the requirement of ignition system in S.I. engine.
- (b) Explain working of battery ignition system.
- (c) State any four types of silencer/mufflers and explain any one.
- (d) State different properties of lubricating oil.
- (e) Compare air cooling system and liquid cooling system (four points).
- (f) State different types of lubrication system and explain one of them.

5. Attempt any FOUR :**16**

- (a) State need of cooling system.
- (b) State any four components of lubrication system with their function.
- (c) Explain positive crankcase ventilation.
- (d) Draw sketch of pump circulation liquid cooling system.
- (e) Define mechanical efficiency, brake thermal efficiency, indicated thermal efficiency and friction power.
- (f) State different types of dynamometer and explain any one.

P.T.O.

6. Attempt any TWO :**16**

- (a) Explain Morse test and Willian's line method to measure friction power.
- (b) State procedure to calculate heat balance sheet of I.C. engine.
- (c) During a test on a single cylinder two-stroke diesel engine, following readings were noted.
 - (i) The engine is motored by an electric motor and friction power loss recorded on watt meter is 1.5 kW.
 - (ii) Net brake load = 210 N
 - (iii) Diameter of brake wheel = 210 cm
 - (iv) Engine speed = 595 rpm
 - (v) Fuel consumption = 2.01 kg/hr.
 - (vi) Calorific value of fuel = 44000 kJ/kg

Find :

- (i) Mechanical efficiency
 - (ii) Brake thermal efficiency
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