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3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) State the compression ratio of petrol (S.I.) and diesel (C.I.) engine.

b) List four different engine components of 4-stroke S.I. engine.

c) State the material used for compression and oil ring.

d) Enlist four different types of nozzles used in diesel fuel injection system.

e) Give examples of air-fuel ratio requirements for Rich, Lean and chemically correct mixtures.

f) Rewrite the firing-order for four and six cylinder engine.

g) Name six components of Engine cooling (Water cooling) system.

P.T.O.

Marks

2. Attempt any THREE of the following: **12**

a) State two advantages and disadvantages of internal combustion engines. (I.C. Engine)

b) Explain with sketch cycle of operations in four-stroke C.I. engine.

c) Describe nomenclature of Piston.

d) Draw a neat layout of Battery ignition system.

3. Attempt any THREE of the following: **12**

a) Describe the specifications of any one Bharat stage 6, two wheeler motor cycle.

b) Describe with neat sketch Electrical Fuel pump.

c) Select a relevant type of silencer/muffler for any one petrol engine four wheeler. Justify the use of same.

d) Describe the construction and working of Thermostat valve.

4. Attempt any THREE of the following: **12**

a) Describe the function of given engine components –

i) Cylinder Liners

ii) Piston Pin

iii) Camshaft

iv) Engine Gasket.

b) Explain with neat block diagram unit injector system.

c) Compare Magneto and Battery ignition system. (Minimum four points)

d) Give examples of vehicles using mist, splash, wet-sump and Dry-sump lubrication system.

e) Explain the effect of Engine coolant and additives on performance of engine cooling.

Marks

5. Attempt any TWO of the following: **12**

a) Differentiate SI and CI engine on the basis of following parameters –

i) Fuel used

ii) Operating cycle

iii) Compression ratio

iv) Thermal efficiency

v) Method of ignition

vi) Engine speed.

b) Describe with neat sketch working of over head valve mechanism.

c) Explain with sketch construction and working of Fuel injector in diesel engine.

6. Attempt any TWO of the following: **12**

a) Suggest suitable material for given engine components with relevant justification –

i) Piston Pin

ii) Exhaust valve

iii) Cylinder Liner.

b) Draw a neat graph to explain the Air-fuel ratio requirements in S.I. engines.

c) Explain with sketch construction and working of pressure cap used in cooling system.