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Roll No. Total No. of Pages: 02

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B.Tech.(ME) (E-I 2012 Onwards) (Sem.-6) I.C ENGINES

Subject Code: DE/ME-1.1 M.Code: 71189

Time: 3 Hrs. Max. Marks: 60

# **INSTRUCTIONS TO CANDIDATES:**

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

# **SECTION-A**

# Q1 Answer briefly:

- a) What is heat engine?
- b) Discuss the valve timing diagram of 4-stroke petrol engine.
- c) Discuss the role of composition of cylinder gases in fuel air cycles.
- d) Explain various types of IC engines fuels.
- e) What do you mean by petrol injection system for C.I?
- f) Discuss the significance of fuel injector system in engines.
- g) Why ratings of S.I engine fuels is done?
- h) Explain what is governing of I.C engines.
- i) Give the purpose of supercharging.
- j) How performance of S.I engine is checked?



# **SECTION-B**

- Q2 Discuss with suitable diagram working of 2-stroke petrol engine and its valve timing diagram.
- Q3 Discuss the differences between Actual and fuel air cycle for S.I engines.
- Q4 Discuss the important qualities of S.I Engine fuels.
- Q5 Discuss the actual air fuel ratio of single jet carburetor and also discuss the idea requirements from a carburetor.
- Q6 Calculate the diameter and length of the stroke of a diesel engine working on four-stroke constant pressure cycle from the given data: I.P =18.75 kW. R.P.M= 220. Compression ratio = 14 Fuel cut-off = 1/20<sup>th</sup> of the stroke. L/d=1.5. Index of expansion= 1.3, Index of compression = 1.35, Assume the pressure and temperature of the air at the inlet are 1 bar and 40°C.

# **SECTION-C**

- Q7 Explain various type of supercharger and discuss the arrangement and installation of supercharger for S.I engines?
- Q8 A Carnot cycle works between the temperature limits of 900k and 400k and the pressure limits of 60 bar and 1 bar. Find the following
  - a) Pressure and temperature at all salient points.
  - b) Work done per kg of air.
  - c) Heat supplied and rejected per kg of air.
  - d) Thermal efficiency of the cycle.
  - e) Mean effective pressure of the cycle
- Q9 Discuss the important qualities of C.I Engine fuels.

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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