

Seat No.	
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**T.E. (Mechanical) (Part - III) (Semester - VI) (New) (Revised)
Examination, May - 2018**

INTERNAL COMBUSTION ENGINES

Sub. Code : 66841

Day and Date : Tuesday, 15 - 05 - 2018

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :**
- 1) Attempt all the questions.
 - 2) Make suitable assumptions if necessary and clearly mention them.
 - 3) Figures to the right indicates full marks.

Q1) a) Define the following terms. [8]

- i) Volumetric Efficiency.
- ii) Square Engine.
- iii) Stroke.
- iv) Compression ratio.

OR

- b) Classify IC Engine and explain each type with examples. [8]
- c) Explain with neat sketch valve timing diagram for high speed petrol engine. [8]

Q2) a) A simple jet carburetor is required to supply 4kg of air and 0.5 kg of fuel per minute. The Specific gravity of fuel is 0.75 and density of fuel is 750 kg/m³, the air is initially at 1 bar and 300 k, Determine [9]

- i) The throat diameter of choke for a flow velocity of 100 m/s.
- ii) If velocity coefficient is 0.8, the coefficient of discharge for the fuel nozzle is 0.60, and Pressure drop across metering orifice is 0.80 of that of choke, calculate orifice diameter.

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- b) What are the modern systems added in simple carburetor to become a complete Carburetor. [9]

OR

- c) Explain solid injection system for CI engine and its types. [9]

- Q3) a)** Explain stages of combustion in SI engine with P- θ diagram. [8]

OR

- b) Explain the following terms for SI engine. [8]

- i) Ignition lag.
- ii) Flame propagation.
- iii) Octane number.
- iv) HVCR.

- c) What are the design requirements of SI engine combustion chamber? Explain any two types of combustion chambers. [8]

- Q4) a)** Explain the design considerations of CI engine combustion chambers. List the types of indirect combustion chambers. [8]

- b) Compare between Induction swirl and compression swirl of CI engines. [8]

- Q5) a)** Explain the effects of engine variables on 'Delay period' as referred to CI engines and its importance. [8]

- b) Compare abnormal combustion in CI Engines with SI Engines. [8]

OR

- b) What are the various requirements of fuel injections stem for Diesel engines. [8]

- Q6) a) List the types of superchargers used and their advantages for diesel engine. [7]
- b) In Morse test with a four cylinder four stroke petrol engine the following data were observed for a particular speed setting.
BHP with all cylinder cut out = **32.0**, BHP with No.1 cylinder cut out = **21.6**, BHP with No.2 cylinder cut out = **22.3**, BHP with No.3 cylinder cut out = **22.5**, BHP with No.4 cylinder cut out = **23.0**, Estimate the IHP of the engine and mechanical efficiency. [7]
- c) Write note on Catalytic convertors. [4]

