

**B.Tech. IV Semester (Main/Back) Examination, May -2018**  
**Mechanical Engg.**  
**4ME6A I.C. Engines**  
**AE, ME**

**Time : 3 Hours**

**Maximum Marks : 80**  
**Min. Passing Marks : 26**

*Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.) Units of quantities used/calculated must be stated clearly.*

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**Unit - I**

1. a) Explain the working of 2-stroke Engine with suitable Diagram. (6)  
 b) Following observations were recorded during a test on a single cylinder oil Engine.

Bore = 300mm, Stroke = 450mm

Speed = 300rpm, i.m.e.p = 6bar

Net brake load = 1.5KN, brake drum diameter = 1.8 meter brake rope diameter = 2c.m.

Calculate:- (i) Indicated power

(ii) Brake power

(iii) Mechanical efficiency (10)

**(OR)**

1. a) Explain the working of 4-Stroke petrol Engine and Also Explain classification of I.C. Engine. (8)  
 b) A 4-Stroke C.I. Engine delivers 5000kw while using 1000 kw to overcome friction losses. It consumes 2300 Kg of fuel per hour at Air-fuel ratio of 20:1. the heating value is 42000 KJ/Kg. Find the following terms -
- (i) Indicated power
  - (ii) Mechanical Efficiency
  - (iii) Air consumption per hour
  - (iv) Indicated thermal efficiency
  - (v) Brake thermal efficiency (8)

## UNIT - II

2. a) What is meant by abnormal combustion? Explain the phenomenon of knocking in S.I engine. (8)
- b) Explain Manufacturing of Methanol from Municipal Solid Wastes. (8)

OR

2. a) Explain alcohols as alternate fuels for IC Engines bringing out their merits and demerits. (8)
- b) Explain the petroleum refining process. (8)

## Unit - III

3. a) What do you mean by carburetion? Describe the essential parts of a Modern Carburetor. (2+8=10)
- b) What are the functional requirement of an Injection system? Classified the Injection System and why the air Injection System is not used now a days. (2+2+2=6)

OR

3. a) Draw a Schematic diagram of Jerk pump type Injection System. (8)
- b) Explain the battery Ignition System. Mention the various important qualities of a good Ignition System. (8)

## UNIT - IV

4. a) Explain Mechanical friction and the various factors affecting them. (8)
- b) What is meant by Crankcase ventilation? Explain the details (8)

(OR)

4. Explain the following.

- a) Forced Circulation Cooling System.
- b) Evaporative Cooling System. (2×8)

## UNIT - V

5. a) What are the factors those affect the combustion in dual fuel Engine? Also explain the process of combustion in dual fuel engines. (8)
- b) With a neat sketch Explain the working principle of free piston engine. (8)

(OR)

- 5 Explain the following -

- a) Variable compression Ratio engines
- b) Rotary Engine. (2×8)

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