

4E4145

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Total No. of Pages : **3**

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B. Tech. IV-Sem. (Main & Back) Exam; April-May 2017

Mechanical Engineering

4ME6A I C. Engines

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

1. NIL

2. NIL

UNIT I

1 (a) What are the fundamental differences between SI and CI engines ?

8

(b) Discuss the differences between ideal and actual valve timing diagrams of a petrol.

8

OR

1 A two stroke C.I. Engine delivers 5000 kW while using 1000 kW to overcome frictional losses. It consumes 2300 kg of fuel per hour at an air-fuel ratio of 20 to 1. The heating value of fuel is 42000 kJ/kg. Find the

(a) indicated power

(b) mechanical efficiency

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- (c) indicated thermal efficiency,
- (d) brake thermal efficiency.

4×4=16

UNIT - II

2 (a) Explain briefly the process of combustion in S.I. engine and also explain the stages of combustion with the help of P-Q diagram.

8

(b) Describe the phenomenon of detonation in C.I. Engine.

8

OR

2 (a) Write a short note on alternative fuel for I.C. engines.

8

(b) What are the desirable properties of good I.C. engine fuels,

8

UNIT - III

3 Describe with suitable diagram the following systems of a carburettor :

- (a) Main metering system.
- (b) Idling system.
- (c) Power enrichment or economizer system.
- (d) Acceleration pump system.

4×4=16

OR

3 (a) State the advantages of electronic ignition system over conventional ignition system.

8

(b) Describe with the help of suitable diagram common rail direct injection system.

UNIT - IV

- 4 (a) Discuss the functions of lubricant in an engine: 8
- (b) Describe the mist lubrication system used for a two stroke engine. 8

OR

- 4 (a) Explain water cooling system with suitable diagram. What is the function of fins ? 8
- (b) Explain the methods of supercharging in four stroke engines. 8

UNIT - V

- 5 (a) What is a dual fuel engine ? How mixing of fuel takes place. 8
- (b) What is the effect of variable compression ratio on thermal efficiency of the engine ? 8

OR

- 5 (a) Explain the working of stratified engine. 8
- (b) What are the requirements of a dual fuel engine ? 8