

C U SHAH UNIVERSITY

WADHWAN CITY

MAY EXAMINATION – 2015 (B.Tech- Auto)

Branch: Automobile Engineering

Semester: IV

Subject Code:4TE04AEN1

Subject Name: Automobile Engines

SECTION – I

- Q – 1 (a) Define (i) Swept volume (ii) Compression ratio 02
(b) What is the purpose of supercharging? 02
(c) Differentiate between two stroke and four stroke engine. 02
(d) Write down the firing order of 6 cylinder engine? 01
- Q – 2 (a) Sketch and explain valve timing diagram of four stroke diesel engine. 05
(b) A 4-Stroke SI engine develops 37.5 kW at 85% mechanical efficiency. The specific fuel consumption is 0.385 kg/kWh. The A:F ratio used is 15:1. Taking CV of fuel = 42.5 MJ/kg, find (a) IP & FP (b) Indicated and Brake thermal efficiency. 05
(c) Explain the working of a single jet carburettor with neat sketch. 04

OR

- Q – 2 (a) Explain types of nozzles used in C.I. engine with neat sketch. 05
(b) A 6 cylinder, 4 stroke engine, 8 cm in diameter and 12 cm stroke runs at 3600 r.p.m. The volumetric efficiency of the engine is 0.8. If the maximum head causing the air flow is limited to 11.765 cm of mercury, find the throat diameter of the venturi required. Also find the diameter of the nozzle orifice if the desired A:F ratio is 15:1. Take the following data:
 $Cd_a = 0.9$, $Cd_f = 0.7$, $\rho_a = 1.3 \text{ kg/m}^3$ and $\rho_f = 720 \text{ kg/m}^3$
(c) Explain working of Solex carburettor with neat sketch. 04
- Q -3 (a) Classify the combustion chambers of C.I. engine. Explain with neat sketch working of 'M' combustion chamber. 05
(b) Discuss the factors effecting on Ignition delay for C.I. engine. 05
(c) Explain stages of combustion in SI engines with help of P- θ diagram. 04

OR

- Q -3 (a) Differentiate between knocking and detonation with required diagrams. 05
(b) List out the requirement of good combustion chamber for S.I. engine 05
(c) Explain working of two stroke diesel engine with neat sketch. 04

SECTION – II

- Q – 4 (a) Write down disadvantages of water cooling system. 02
(b) What is supercharging? 02
(c) Classification of mechanical type tachometers. 02
(d) Which are the major constituents of SI engine emission? 01
- Q – 5 (a) Explain about Dry sump lubrication system. 05

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- (b) Explain in detail about components of water cooling system. 05
(c) Differentiate between supercharging and turbocharging. 04

OR

- Q – 5 (a) Explain in detail about oil additives. 05
(b) Classification of lubricating system. Explain pressure lubricating system with neat sketch. 05
(c) Write merits and demerits of air cooling and water cooling. 04

- Q -6 (a) Explain infrared absorption gas analyser for measuring CO. 05
(b) Explain measurement of brake power with rope brake dynamometer. 05
(c) Write a short note on Three way catalytic converter. 04

OR

- Q -6 (a) Explain Hartridge smoke meter with neat sketch. 05
(b) Write a short note on morse test. 05
(c) Write a short note on CI engine emissions. 04