B.Tech. SEM -VI Mechanical 2014 Course (CBCS) : WINTER - 2018

SUBJECT- INTERNAL COMBUSTION ENGINES

Day: Wednesday | **W-2018-2492** | Time: 10.00 AM TO 01.00 PM

Date: 14/11/2018 | Max. Marks: 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data if necessary.

Q.1 Give the classification of IC engines. **(10)**
Draw P.V. & T.S. diagrams for
i) Otto cycle ii) Diesel cycle iii) Dual cycle.

OR

Explain the 4-stroke petrol engine nomenclature. **(10)**
An engine working on a dual combustion cycle has a pressure of 1 bar & 50° C before compression. The air is then compressed isentropically to 1/15 of its original volume. The maximum pressure is twice the pressure at the end of isentropic compression. If the cutoff ratio is 2, Determine the temperature at the end of each process.

Q.2 Discuss with block diagram fuel feeding system of S.I. engines. **(10)**
Explain different types of nozzles in diesel engines.

OR

Discuss with neat sketch MPFI system. **(10)**
Explain air injection system in diesel engines.

Q.3 Explain with sketch magneto ignition system. **(10)**
Discuss need of cooling system.

OR

Discuss the need of lubrication system. **(10)**
Explain hit & miss governing system.

Q.4 During the test on single cylinder, Oil engine, working on the four stroke cycle fitted with a rope brake dynamometer the following readings are taken. **(10)**
Effective diameter of brake wheel = 630mm
Dead load on brake = 200N, spring balance reading=30N, Speed = 450rpm, Area of indicator diagram = 420mm^2 ,length of indicator diagram = 60mm, spring scale =1.1 bar per mm: Diameter of cylinder =100mm,stroke =150 mm. Quantity of oil used = 0.815 kg/hr: calorific value of oil=42000kJ/kg calculate ,B.P., I.P., mechanical efficiency, brake thermal efficiency & specific fuel consumption.

OR

Explain Willian's line method **(10)**
A gas engine has piston diameter of 150mm, length of stroke 400mm & mean effective pressure of 5.5 bar .The engine makes 120 explosions per minute. Determine the mechanical efficiency of the engine: if it's B.P. is 5kW.

Q.5 Explain the stages of combustion in SI engines. Also discuss the knocking in I.C. Engines. **(10)**

OR

Explain combustion chambers in S.I. engines Also discuss the ignition delay & factors affecting ignition delay. **(10)**

Q.6 Write short note on "Alternative fuel" & "Hybrid cars" **(10)**

OR

Explain the rating of S.I. engine fuels and discuss the emissions from S.I. engines & their harmful effects. **(10)**

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