B.Tech. SEM -VI Mechanical 2014 Course (CBCS) : SUMMER - 2019
SUBJECT- INTERNAL COMBUSTION ENGINES

Day: Friday
Date: 24/05/2019
S-2019-2757
Time: 02.30 PM TO 05.30 PM
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 Explain the constructional features of four stroke diesel engine. **(10)**
Derive the expression for ASE of dual combustion cycle.

OR

Explain the nomenclature of 2-stroke IC engine. An oil engine, working on Dual combustion cycle, has a compression ratio of 10 & cut off takes place at 1/10 of the stroke .If the pressure at the beginning of compression is 1 bar & maximum pressure 40 bar determine the ASE of the cycle .Take γ=1.4. **(10)**

Q.2 Explain simple carburetor with neat sketch. Also discuss the solid injection system in diesel engines. **(10)**

OR

Draw & explain fuel injector in diesel engines. **(10)**
Explain acceleration pump in case of S.I. fuel feeding system.

Q.3 What is the need of governing system? **(10)**
Explain battery ignition system with sketch.

OR

Explain the functions of Lubrication system & discuss wet sump system with sketch. **(10)**

Q.4 A four stroke petrol engine 80mm bore & 110 mm stroke is tested at full throttle at constant speed. The fuel supply is fixed at 0.068 kg/ min & the plugs of the four cylinders are successively short circuited without change of speed brake torque being correspondingly adjusted. The brake power measurements are the followings: **(10)**
With all cylinders firing=12.5 kW
With cylinders No.1 cutoff = 9 kW
With cylinders No.2 cutoff =9.15 kW
With cylinders No.3 cutoff =9.2 kW
With cylinders No.4 cutoff = 9.1 kW
Determine: IP of the engine under these conditions. Also determine the indicated thermal efficiency. Calorific value of the fuel is 44,000 kJ/kg. Compare this efficiency with the air standard value. Clearance volume of one cylinder is 70x $10^3 mm^3$. Also calculate specific fuel consumption.

OR

Q.4 Explain Waillian's line method. Also explain Morse test for measurement of friction power **(10)**

Q.5 Explain the combustion chambers in SI engines. And also discuss knocking in diesel engines.

OR

Explain the scavenging in I.C. engines .Discuss the detonation in I.C. engines. **(10)**

Q.6 Discuss types of hybrid vehicles. Explain rating of S.I. engine fuels. **(10)**

OR

Explain rating of C.I. engine fuels and discuss the alternative fuels for I.C. engines. **(10)**

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