

Code: ME4T3

II B.Tech - II Semester – Regular Examinations - JUNE 2014

**IC ENGINES AND GAS TURBINES
(MECHANICAL ENGINEERING)**

Duration: 3 hours

Marks: 5×14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Explain about the losses due to gas exchange process and rubbing frictions in cycles. 7 M
b) Compare air standard cycles and actual cycles. 7 M
2. a) Explain briefly about various fuel injection systems. 8 M
b) Explain the terms ignition, lubrication and write principle of wankle engine. 6 M
3. a) Explain about importance of flame speed and effect of engine variables in S.I. Engines. 7 M
b) What are anti-knock additives? Write about those additives briefly. 7 M
4. a) What are open and divided combustion chambers? Explain about the nozzles used in C.I.Engines. 10 M

- b) Explain combustion and compression induced turbulence briefly. 4 M
5. An eight cylinder automobile petrol engine of 100 mm bore and 90 mm stroke has a compression ratio of 7. The engine develops 136 kW at 400 rpm. The engine operates at 20% rich in fuel and the atmospheric conditions are 27°C and 760mm of Hg barometer. The *bsfc* is 0.34 kg/kW h. Estimate the *power output* and *bsfc* when
- barometer is 740mm of Hg and temperature is 47°C.
 - barometer is 775mm of Hg and temperature is 7°C. *fmep* at 400 rpm is 2.10 bar. 14 M
6. a) Explain about the advantages and disadvantages of Methanol. 8 M
- b) Compare the gaseous fuels CNG and LPG. 6 M
7. a) What are closed and semi closed gas turbines? Write merits and demerits briefly. 8 M
- b) What is intercooling and reheating? Explain briefly. 6 M
8. a) What is the importance of specific impulse in rocket performance? 6 M
- b) Define jet propulsion. Differentiate rocket propulsion and jet propulsion. 8 M