

FACULTY OF ENGINEERING & TECHNOLOGY

B.E.(Mechanical) Examination – DEC – 2014

Internal Combustion Engines (Revised)

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

N.B

- 1) Solve any three from each section.
- 2) Support your answer with figure wherever possible.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary

SECTION A

- | | | | |
|-----------|----|---|----|
| Q.1 | A) | Explain with neat diagram the working of 4-stroke petrol engine. | 07 |
| | B) | Write the assumptions of air standard cycle. | 07 |
| Q.2 | A) | Explain dissociation and its effects. | 07 |
| | B) | Define carburetion. Explain the factors that affect the process of carburetion. | 06 |
| Q.3 | A) | What are the desirable properties of good I-C-engine fuels? | 07 |
| | B) | Write note on ‘Hydrogen’ as alternative fuel. | 06 |
| Q.4 | A) | What is meant by abnormal combustion? Explain the phenomenon of knock in SI engine? | 07 |
| | B) | Explain the different factors that influence the flame speed. | 06 |
| Q.5 | A) | Write the general objectives of combustion chamber design for SI engine. | 06 |
| | B) | State different types of combustion chamber used in SI engine. Explain any two with neat diagram. | 07 |
| SECTION B | | | |
| Q.6 | A) | Explain the phenomenon of knock in CI engines and compare it with SI engine knock. | 07 |
| | B) | Write the effect of compression ratio and engine speed on delay period in CI engine. | 06 |
| Q.7 | A) | Explain, with neat diagram ‘cylindrical chamber’ and ‘toroidal chamber’ in CI engine. | 07 |
| | B) | Write note on ‘Cetane Number’ | 06 |
| Q.8 | A) | State the objectives of supercharging. Also write the limitations of same. | 06 |
| | B) | The following readings were taken during the test of a single cylinder 4 stroke oil engine.
Bore = 250mm, stroke = 400mm, Gross m.e.p. = 7 bar, pumping m.e.p.=0.5 bar,
engine speed = 250 rpm. ,Net load of the brake = 1080N., dia of the brake = 1.5 meters, fuel
used =10kg/hr , CV = 44300kj/kg.
Calculate i) Indicated power ii) brake power iii) mechanical efficiency iv) Indicate thermal
efficiency. | 08 |
| Q.9 | A) | explain stratified engines | 07 |
| | B) | Explain CRDI engine. | 06 |
| Q.10 | A) | Explain catalytic convertor as after treatment device to control CO, HC & NOX. | 07 |
| | B) | Explain the effect of engine emission on human health. | 06 |