Total No. of Printed Pages:02

SUBJECT CODE NO:- H-1790
FACULTY OF SCIENCE AND TECHNOLOGY
M.E (Mechanical)
Advanced I.C. Engines
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
        A. Solve any three questions from each section.
        B. Figure to the right indicate full marks.
        C. Assume suitable data, if necessary.
        D. Use of non-programmable calculator is allowed.

Section A

Q.1   a) Explain with the help of $P - \theta$ diagram, different stages of combustion in SI Engine.   07
        b) Explain the mixture requirements at different loads and speeds for automotive engine.   06

Q.2   a) What is meant by abnormal combustion? Explain the phenomenon of knock in SI engine.   07
        b) Explain S.I. engine various operating and performance parameters.   07

Q.3   a) The following readings were taken during the test of a single cylinder 4 stroke oil engine.   13
        Bore = 250 mm, stroke= 400 mm, Gross m.e.p = 7 bar, pumping m.e.p.=0.5 bar, engine
        speed = 250 rpm, Net load of the brake = 1080N, Diameter of the brake = 1.5 meters, fuel
        used 10 kg/hr, CV = 44300 kJ/kg. Calculate i) Indicated power ii) Brake power
        iii) Mechanical efficiency iv) Indicated thermal efficiency.

Q.4   a) State different combustion chamber used in SI engine. Explain any two with neat diagram.   06
        b) Explain with $P - \theta$ diagram the CI engine combustion.   07

Section B

Q.5   a) Explain the phenomenon of scavenging in two stroke engines with neat sketch.   06
        b) Discuss effect of supercharging on the following.   07
            i)   Fuel consumption
            ii)   Volumetric efficiency
            iii)   Power output

Q.6   a) A four cylinder two stroke petrol engine develops 30 kw at 2500 rpm. The mep on each   13
        piston is 8 bars and mechanical efficiency is 80%. Calculate the diameter and stroke of each
        cylinder if stroke to bore ratio is 1.5. Also calculate fuel consumption in kg/hr if brake
        thermal efficiency is 28%. The calorific value is 43900 KJ/kg.

Q.7   a) Explain CRDI engine.   06
        b) Explain catalytic convertor as after treatment device to control CO, HC, & NOx   07

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Q.8 Write short note on (any two) 14
    (a) Biodiesel as alternative fuel
    (b) Turbo charging
    (c) Crankcase blow by