SUBJECT CODE NO: E-8188
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical) Examination Nov/Dec 2017
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-θ diagram, different stages of combustion in SI Engine. 07

b) Discuss the effect of following engine variables on flame propagation 06
i) Engine speed
ii) Compression ration
iii) Turbulence

Q.2 a) What is meant by detonation? Explain the phenomenon of knock in SI engine. 07

b) Compare knock in CI engine and SI engine. 06

Q.3 a) Explain with the help of diagram combustion in CI Engine. 07
b) Explain with neat diagram 'Swirl Combustion Chamber' used in CI engine. 06

Q.4 a) A six cylinder gasoline engine operates on the four stroke cycle. The bore of each cylinder is 80mm and stroke 100 mm the clearance volume per cylinder is 70 CC. At a speed of 4000 r.p.m., the fuel Consumption is 30 kg/hr. and the torque developed is 150 N.m. 10
Calculate:
i. The break power
ii. The brake mean effective pressure
iii. The break thermal efficiency
iv. Bsfc
Assume the C.V. of fuel as 43,000 kJ/kg.

b) Write a note on Fuel additives. 04

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Section-B

Q.5   a)   Explain scavenging process and scavenging efficiency in two stroke engine.   06

       b)   Explain with neat diagram the three way catalytic convertor.   07

Q.6   a)   Write a short note on : Emission Norms   07

       b)   Explain Exhaust gas recirculation.   07

Q.7   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= 1080 N, 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.8   a)   Explain CRDI with neat diagram.   07

       b)   Explain multipoint fuel injection (MPFI) system.   06

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