Total No. of Printed Pages:1

SUBJECT CODE:- 8210

FACULTY OF ENGINEERING AND TECHNOLOGY

M.E.(Mechanical) Examination Nov/Dec 2015

Advanced I.C. Engines

(Revised)

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

"Please check whether you have got the right question paper."

N.B i) Attempt any three questions from each section
ii) Use of data / property tables' non-programmable calculator is allowed.
iii) Neat diagram must be draw wherever necessary.
iv) Figures to the right indicate full marks.
v) Assume suitable data, if necessary.

Section A

Q.1 a) Explain the combustion stages in a SI engine. 08

b) A petrol engine consumes 7.5 kg/hr of petrol. The specific gravity of petrol is 0.75. The air temperature is 25°c. the air fuel ratio is 15. The choke tube has a diameter of 22mm. calculate the diameter of the fuel jet of a simple carburetor. Top of the jet is 4 mm above the petrol level in the float chamber. Take coefficient of discharge as 0.82 and 0.7 for air and fuel respectively. Atmospheric pressure = 1.013 bar. 05

Q.2 a) Explain in details the spray characteristics of compression ignition engine. 08

b) What is the effect of diffusion combustion phase on smoke emission? Explain. 05

Q.3 a) Calculate the air fuel ratio for gasoline (C_8H18) using combustion reaction. 08

b) Discuss the suitability of producer gas and hydrogen as fuel for SI engines. 05

Q.4 Write explanatory notes on <u>any two</u>. 14

a) Knocking in SI and CI engine
b) Injection characteristics of a CI engine
c) Rating of SI and CI engine fuels.

Section – B

Q.5 a) Derive the horse power required to drive the supercharger. Assume heat loss Q is zero. 07

b) Enlist the methods of turbocharging? Explain any two. 06

Q.6 a) What are the causes of particulate matter formation? Explain with the help of fuel spray. 07

b) Explain the modern methods to control emissions of IC engine. 06

Q.7 a) Explain the methods of charge stratification. 07

b) How the lean burn engine functions. Explain in detail. 06

Q.8 Write short notes on (<u>any two</u>) 14

a) Naturally aspirated and supercharged engine's P-v diagram
b) Exhaust gas recirculation (EGR) engine

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