Printed Pages : 3   **ME – 602**

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 4050   Roll No. ☐☐☐☐☐☐☐☐☐☐

B. Tech.

(SEM. VI) EXAMINATION, 2006-07

I. C. ENGINES

Time : 3 Hours]   *[Total Marks : 100*

Note :   (i)   *Attempts **all** the **five** questions.*

       (ii)   *All questions carry **equal** marks.*

       (iii)   *Assume missing data suitably, if any.*

1   Answer any **four** of the following :   5×4=20

   (a)   What is carnot cycle and what is its importance?

   (b)   What is meant by pumping loss? Discuss its effect on the engine performance.

   (c)   How are SI engine fuels rated?

   (d)   Explain the various factors that affect the process of carburetion.

   (e)   What is meant by ignition? What is the interretion between ignition and combustion?

   (f)   What are the requirements of a spark plug?

2   Answer any **two** of the following :   10×2=20

   (a)   Obtain an expression for mean effective pressure of a diesel cycle.

(b) Explain the principle of carburetion and for it explains Rich mixture, stochiometric mixture and lean mixture.

(c) Explain with the help of a p-V diagram the loss due to variation of specific heats in an otto cycle.

3   Answer any **two** of the following :   10×2=20

(a) What will be the effect on the efficiency of an otto cycle having a compression ratio of 8, if C_v increases by 1.6%.

(b) Discuss the variables affecting delay period in CI engines.

(c) Explain pre-ignition. How pre-ignition leads to knock and vice versa?

4   Answer any **two** of the following :   10×2=20

(a) A simple jet carburettor is required to supply 5 kg of air and 0.5 kg of fuel per minute. The fuel specific gravity is 0.75. The air is initially at 1 bar and 300 k. Calculate the throat diameter of the choke for a flow velocity of 100 m/sec. Velocity coefficient is 0.8. If the pressure drop across the fuel metering orifice is 0.80 of that of the choke, calculate orifice diameter assuming, $C_{df} = 0.60$ and $\gamma = 1.4$.

(b) Write short notes on the following :
   (i) Centrifugal compressor
   (ii) Pressure cooling system.

(c) Describe with a simple sketch the working of a dry sump lubrication system.

5   Answer any **two** of the following :   **10×2=20**

   (a)   What is the cause of diesel smoke? What are
         the ways of controlling diesel smoke?

   (b)   Describe a magneto ignition system with the
         help of a sketch.

   (c)   Write short notes on following :

         (i)   Alternative fuels for IC engines.

         (ii)   Turbo-prop engine.

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