Printed Pages : 2

EAU061

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

PAPER ID : 147854

Roll No.

B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15

COMPUTER SIMULATION OF IC ENGINES

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

Note: *(1) Attempt all questions. Be precise in your answer. Draw neat and clean diagram where ever required. Assume data suitably if necessary.*

1.   Attempt any **Four Parts** Of the following: (5×4 =20)
   a)   Define the constant volume adiabatic combustion process.
   b)   A single cylinder dual pressure engine works with internal conditions of one bar and 310 K. the compression ratio is 10 and total heat added is 2805 kJ/kg of change. The maximum pressure is limited to 70 bars. Calculate mean effective pressure and thermal efficiency.
   c)   Explain the heat of reaction in brief and losses due to dissociation.
   d)   Write down the deference's between actual cycle and ideal cycle on the basic of efficiency variation.
   e)   Explain the simulation factors in briefly

2.   Attempt any **Two Parts** Of the following: (10×2 =20)

   a)   Discuss and explain briefly the measurement of heat of reaction parameter Urp and Hrp with the help of bomb calorimeter.
   b)   Explain the adiabatic flame and common flame and also write down the temperature calculation equations.

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c) Explain the following:-
   a) Variation of tractive force
   b) Swaying Couple
   c) Hammer Blow

3. Attempt any **Two Parts** Of the following: (10×2 =20
   a) Show the effect of spark advance on power output for different combustion model with neat sketch.
   b) Discuss the full throttle operation with neat sketch briefly and also show the effect of spark advance on power output for various duration of combustion with sketch.
   c) An Otto cycle working on air has a compression ratio 6 and starting conditions are 40°C and 1 bar. The peak pressure is 50 bars. Draw the cycle on P-V and T-S conditions if compression and expansion follow the pv^1.25 = C. calculate mean effective pressure and heat aided per kg of air

4. Attempt any **Two Parts** Of the following: (10×2 =20
   a) Explain the heat reaction process of internal combustion engine and also discuss the different type of heat reaction
   b) Discuss the P-φ diagram with neat sketch in detail and also write down the effect of engine speed variation.
   c) Explain the comparison of power cycle on the basis of following factor.
      a) Same Compression Ration And Heat Input
      b) Same Maximum Pressure And Temperature
      c) Constant Maximum Pressure And Heat Input

5. Attempt any **Two Parts** Of the following: (10×2 =20
   a) Discuss the balancing of Two stroke engine in briefly and also discuss the primary and secondary unbalanced force.
   b) Explain the different heat transfer models briefly with sketch and also write down it's the effect on heat transfer.
   c) Explain the heat balance sheet of engine and also write the efficiency calculation equations