FACULTY OF ENGINEERING & TECHNOLOGY
F.E (All)Year Examination - June– 2015
Elements of Mechanical Engineering
(Revised)

[Time: Two *Hours*]   [Max. Marks:40]

"Please check whether you have got the right question paper."
i)   Question No.1 is compulsory.
ii) Attempt <u>any two</u> questions form remaining.
iii) Assume suitable data wherever necessary.
iv) Figures to the right indicate full marks.
v)   Use of non- programmable calculator is allowed.

SECTION-A

Q.1   Solve <u>any five</u> of the following :   10
      a) State and Explain Zeroth law of Thermodynamics
      b) Define specific heat of a substance
      c) State the sign conventions for the heat and work.
      d) State and explain charle's law.
      e) Define heat engine and state its basic classification.
      f) Define working substance and name any two.
      g) What is scavenging in two stroke engines?
      h) State any four advantages of solar energy.

Q.2   a) State and explain the ISO thermal process with P-V and T-S diagram and obtain the equation for   08
         i)   Work done
         ii) Change in internal energy
         iii) Heat transfer
      b) Derive steady flow equation.   07

Q.3   a) Air at 1.2 bar, $0.2M^3$ volume and 60℃ is compressed isentropically till 12 bar calculate its final   10
         conditions of temperature, volume and work done.
      b) State similarities between heat and work.   05

Q.4   a) Explain with heat diagram The construction   and working of Nuclear power plant .   10
      b) Differentiate between petrol engine and diesel engine .   05

Q.5   a) State the applications of compressed air ?   05
      b) Explain in brief renewable and non-renewable energy source.   05
      c) What is thermodynamics equilibrium?   05

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