

B.TECH. SEM -I (2007 COURSE) (ALL BRANCHES) :

SUMMER - 2018

SUBJECT: ELEMENTS OF MECHANICAL ENGINEERING

Day : **Wednesday**

Date : **23/05/2018**

S-2018-2549

Time : **10.00 AM TO 01.00 PM**

Max. Marks: 80

N. B. :

- 1) **Q. No.1 and Q. No.5 are COMPULSORY.** Out of remaining attempt **ANY TWO** questions from each section.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Answers to both the sections should be written in the **SEPARATE** answer book.
 - 4) Use of non-programmable electronic **CALCULATOR** is allowed.
 - 5) Assume suitable data if necessary.
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SECTION-I

- Q.1**
- a) Explain the working of constant volume gas thermometer. (05)
 - b) Explain with neat sketch working of Double acting Reciprocating Pump. (05)
 - c) Write a short note on: Tidal energy (04)
- Q.2**
- a) What are macro and micro view point of studies of thermodynamic? Explain in brief? (06)
 - b) State different types of hydraulic turbine. Explain any one type. (07)
- Q.3**
- a) Explain with neat sketch the principle and working of Household refrigerator. (07)
 - b) Air enters a nozzle with a velocity of 40 m/sec. The decrease in the enthalpy in the nozzle is 180000J/Kg. Determine the exit velocity. Assume nozzle to be adiabatic. (06)
- Q.4**
- a) Explain the following: (06)
 - i) Fourier's law of heat conduction
 - ii) Newton's law of cooling
 - iii) Stefan- Boltzmann law
 - b) Explain with neat sketch of Nuclear power plant. (07)

SECTION-II

- Q.5**
- a) Differentiate between piercing and blanking. (05)
 - b) Explain in details soldering. (05)
 - c) Explain the steam generation process on T-H diagram. (04)
- Q.6**
- a) Derive the expression for work-done and heat supplied for poly tropic process for non-flow system. (06)
 - b) What is the tungsten inter gas welding process? State their applications? (07)
- Q.7**
- a) Explain with neat sketch electro discharge machining. (07)
 - b) Deduce the relationship between C_p , C_v and R . (06)
- Q.8**
- a) Explain the various advantages and disadvantages of V-belt over flat belt. (07)
 - b) Explain different types of gears with neat sketches. (06)

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