SAINTGITS COLLEGE OF ENGINEERING

Model University Question Paper

First and second semester

(Common for all branches)

Time : 3hrs **EN010 107 BASIC MECHANICAL ENGG.** **Max:100 marks**

PART A (Answer all questions) **(5x3=15)**

1) Explain Fourier law of heat conduction.
2) Define COP of a refrigerator.
3) List out the types of belt drives.
4) Compare centrifugal and reciprocating pumps.
5) Explain the types of milling.

PART B (Answer all questions) **(5x5=25)**

6) Define a Quasi-Static process and state its salient characteristics.
7) Compare Petrol and Diesel engines
8) Explain the types of gear trains.
9) Explain the working of a Pelton turbine.
10) List any five properties of moulding sand.

PART C **(5x12=60)**

11) Draw the PV and TS diagrams of an Otto cycle. Derive the expression for the air standard efficiency of the same.

OR

12) $3.5m^3$ of hydrogen gas at a pressure of 100 KPa and 20^0C are compressed adiabatically to 4.5 times its 3original pressure. It is then expanded isothermally to its original volume. Determine the final pressure of the gas and the heat transfer. Also determine the quantity of heat that is to be exchanged to reduce the gas to its original pressure and volume. Take the specific heat at constant pressure of hydrogen as 14.3KJ/Kg K .
13) Explain the working of four stroke petrol engine with neat sketches.

OR

14) Explain the working of vapour absorption refrigeration system with the help of a neat sketch.
15) Derive the expression for calculating the length of belt for a cross belt drive.

OR

16) Derive an expression for ratio of belt tensions

17) Explain the different methods of compounding for steam turbines.

OR

18) Explain the general layout of a hydro electric power plant.

19) Explain the principal parts of a lathe with the help of a neat sketch.

OR

20) Explain the different of die casting.