Total No. of Questions : 4]

SEAT No. :

PC-376

[Total No. of Page : 1

[6358]-107
F.E. (Insem.)
SYSTEMS IN MECHANICAL ENGINEERING
(2019 Pattern) (Semester - I) (102003)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates :

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4.***
2) ***Figures to the right side indicate full marks.***
3) ***Assume suitable data wherever necessary.***

Q1) a) Explain working of wind power plant with neat sketch. State its advantages and disadvantages. **[7]**

b) A coal fired thermal power plant consumes coal at the rate of 120 tons per day with calorific value of 16MJ/kg. The turbine shaft rotates at 1500 rpm with torque of 45kNm. Find i) Input power ii) Output power iii) Thermal efficiency. State any two advantages and disadvantages of thermal power plant. **[8]**

OR

Q2) a) Explain with neat sketch the working of reciprocating compressor. State any two applications of the compressor. **[7]**

b) Explain the working of Nuclear power plant with neat sketch. State its any two advantages and disadvantages. **[8]**

Q3) a) Classify the internal combustion engines. Explain with neat sketch the working of two stroke petrol engine. **[8]**

b) State Newton's law of cooling. A hot plate at a surface temperature of 100 degree Celsius is exposed in air at 27 degree Celsius. The rate of heat transfer by convection is 183 watt find out the convective heat transfer coefficient if the surface area of the plate is 0.1 m^2. **[7]**

OR

Q4) a) State the second law of thermodynamics. Draw neat sketch of heat engine and heat pump. Differentiate between heat engine and heat pump. **[8]**

b) Classify the steam generators. Explain with neat sketch fire tube boiler. **[7]**

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