Question Paper

Exam Date & Time: 30-Apr-2019 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
II SEMESTER B.Sc. (Applied Sciences) IN ENGINEERING END SEMESTER EXAMINATION APRIL/MAY 2019
Basic Mechanical Engg. [IME 122/ME 123]

Marks: 100 **Duration: 180 mins.**

Answer 5 out of 8 questions.

1) A) Explain the formation of steam experiment at constant pressure, with Temperature-Enthalpy diagram. (10)

B) Define and write the expression for i. Enthalpy of Dry Saturated Steam, ii. Enthalpy of Wet Steam, iii. Enthalpy of Superheated Steam. (10)

2) A) Determine the condition of steam in the following cases: (i) at a pressure of 10 bar and temperature of 200^{o}C and (ii) at a pressure of 8 bar and enthalpy of 2500kJ/kg. (iii) Steam at 20bar and 300^{o}C is cooled at constant pressure during which the heat lost by the steam is 400kJ/kg. (10)

B) With respect to Babcock & Wilcox Boiler give a brief description about i. Function of chain grate stocker, ii. Water Circuit in the Boiler, iii. Superheating of the Steam. (10)

3) A) Explain boring, counter boring, counter sinking, spot facing and tapping operations performed on a lathe machine. (10)

B) With a neat schematic diagram explain the working principle of thermal power plant. (10)

4) A) Explain Pressure Velocity Changes in a Reaction Turbine With suitable sketches. (10)

B) Explain with a neat sketch any one type of Water Turbine. (10)

5) A) Describe the function of 1) Evaporator 2) Compressor or Circulating System 3) Condenser 4) Expansion valve in VCR system. (10)

	B)	Describe the working of a Simple Carburetor with neat labeled sketch.	(10)
6)	A)	List out any 10 comparisons between two and four stroke engines.	(10)
	B)	Discuss the working of four-stroke diesel engine with the help of theoretical Diesel cycle.	(10)
7)	A)	A belt drive transmitting power between two pulleys which are 2 meters apart with a speed reduction ratio of 4 has an angle of contact of 3.91 radians. The diameter of the larger pulley is 120 cm and the driver pulley runs at 1600 rpm. The initial tension in the belt is 0.95KN and coefficient of friction is 0.28 Calculate the length of the belt, power transmitted and width of the belt if the permissible tension per meter of the belt is 10 KN.	(10)
	B)	Describe any five Pattern Making Allowances.	(10)
8)	A)	With neat sketch explain arc welding and oxy-acetylene gas welding.	(10)
	B)	Describe the function of any 5 major parts of a lathe.	(10)

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