Question Paper

Exam Date & Time: 23-Dec-2018 (08:30 AM - 11:30 AM)

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

FIRST SEMESTER B.TECH END SEMESTER MAKEUP EXAMINATIONS, DECEMBER 2018

Basic Mechanical Engineering [MME 1051 - 2018 -PHY]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions.

Instructions to Candidates:
Answer ALL the questions.
Missing data if any may be suitably assumed.
Use of Steam Tables is permitted

1)	A)	Determine the enthalpy required to convert 4 kg of water at 20ºC into steam at 8 bar and 200ºC. Assume specific heat of superheated steam as 2.25 kJ/kgºK and that of water as 4.187 kJ/kgºK	(5)
	B)	Differentiate between water tube and fire tube boilers	(3)
	C)	Briefly explain the function of a Safety Valve and a Fusible Plug	(2)
2)	A)	Power transmitted between two shafts, 3.5m apart by a crossed belt drive using two pulleys of 0.6m and 0.3m diameters is 6KW. The speed of the larger pulley is 220 rpm. The permissible load on the belt is 25N per mm width of the belt. The coefficient of friction between the pulley surface and the belt is 0.35 Determine a) The necessary length of the belt b) The width of the belt c) The necessary initial tension in the belt	(5)
	B)	With a neat sketch explain the working of a Fast & Loose pulley.	(3)
	C)	Differentiate between open and crossed belt drives.	(2)
3)	A)	From a test on a four stroke petrol engine, the following data is available: engine speed 1000 rpm, net brake torque 70 N-m, mean effective pressure 10 bar, stroke 150 mm, bore 100 mm, rate of fuel consumption 2.57 kg/hr., calorific value of petrol 41000 kJ/kg. Calculate the	(5)

indicated thermal efficiency and brake thermal efficiency.

B) With a neat sketch explain the splash lubrication system. (3)

C) Differentiate between a four stroke engine and a two stroke engine (minimum 4 points). (2)

4) With a neat sketch explain the working of a Pelton Wheel and discuss the propelling force in an impulse turbine. (5)

A)

B) Draw the general layout of a Thermal Power Plant and name the various components? (3)

C) Briefly explain the thermodynamic properties of an ideal refrigerant. (2)

5) Draw the neat sketch of an engine lathe, label the parts and explain the functions of the parts of carriage assembly (5)

A)

B) With a neat sketch explain the electric resistance spot welding process. (3)

C) Explain the positive pattern making allowances and highlight the importance of cores in sand casting. (2)

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