Question Paper

Exam Date & Time: 07-Jul-2022 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES II SEMESTER B.Sc.(Applied Sciences) in Engg. END SEMESTER THEORY EXAMINATION-MAY/JUNE 2022

Basic Mechanical Engg. [IME 122]

Duration: 180 mins.

Marks: 50

Answer all the questions.

Missing data, if any, may be suitably assumed

1)		Draw the neat sketch of locomotive boiler and explain briefly.	(3)
	A)		
	B)	Steam enters superheater with initial condition of 12 bar and 13% wet condition. Its temperature is raised in superheater such that the degree of superheat is 205 ⁰ C. If the temperature of feed water is 24 ⁰ C, determine i) total heat added to feed water in the boiler ii) amount of superheat.	(4)
	C)	Define the following and write expressions if any i) sensible heat ii) degree of superheat iii) latent heat of evaporation.	(3)
2)		Explain the working principle of impulse, tangential flow water turbine.	(4)
	A)		
	B)	Briefly explain with a sketch the working principle of gas turbine.	(2)
	C)	Draw the schematic diagrams of nuclear and thermal power plants.	(4)
3)		Explain splash lubrication with a neat sketch.	(3)
	A)		
	В)	From a test on a four-stroke petrol engine, the following data are available: engine speed 1000 rpm, net brake torque 70 N-m, indicative mean effective pressure 10 bar, stroke 150 mm, bore 100 mm, rate of fuel consumption 2.57 kg/h, CV of petrol 41000 kJ/kg. Calculate the indicated thermal efficiency, brake thermal efficiency and mechanical efficiency and frictional power.	(3)
	C)	Explain the working principle of CI engine.	(4)
4)		Explain with sketches: i) speed cone ii) fast and loose pulley.	(3)