INTERNATIONAL CENTRE FOR APPLIED SCIENCES
MAHE, MANIPAL

B.Sc. (Applied Sciences) in Engg.

End – Semester Theory Examinations – May 2021

II SEMESTER - BASIC MECHANICAL ENGINEERING (IME 122)

(BRANCH: MECHANICAL)

Time: 3 Hours **Date: 22 May 2021** **Max. Marks: 50**

- ✓ **Answer ALL the questions.**
- ✓ **Missing data, if any, may be suitably assumed**

1A	Define the following: i) wet steam ii) degree of superheat, iii) sensible heat of water iv) latent heat of evaporation v) saturation temperature vi) dryness fraction.	(3)
1B	What are boiler accessories? Write the functions of any 4 boiler accessories.	(3)
1C	2 boilers, one with super heater and another without super heater are delivering equal quantities of steam into a common main. The pressure in the boiler and main is 20 bar. The temperature of steam from a boiler with a super heater is 350^0 C and the temperature of steam in the main is 250^0 C. Determine the quality of steam supplied by the other boiler.	(4)
2A	With necessary sketches ,explain pressure- velocity compounding of steam turbines	(3)
2B	Briefly explain with a sketch working of Pelton wheel.	(3)
2C	Explain working principle vapour compression refrigeration system.	(4)
3A	Compare: i) 2 stroke and 4-stroke engines ii) SI and CI engines.	(3)
3B	A six cylinder, four stroke IC engine develops 100 KW of brake power at 800 rpm. The stroke to bore ratio is 1.5. The indicated mean effective pressure is 8 bar and mechanical efficiency is 80 %. Determine the cylinder diameter and piston stroke of the engine.	(3)
3C	Explain the working principle of 2-stroke petrol engine.	(4)
4A	Explain : Slip in belt drives ii) Creep in belt drives.	(3)
4B	Write short note on: i) Open and cross belt drive ii) Types of gears.	(3)
4C	What are advantages and disadvantages of gear drives.	(4)
5A	List the lathe operations. With neat sketch, any one method of taper turning	(3)
5B	Explain with sketch: Single piece pattern and Split piece pattern.	(3)
5C	With relevant sketches explain the following briefly : i) Metal arc welding ii) Casting defects	(4)

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