

# Question Paper

Exam Date & Time: 31-May-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 - S2]**

**Marks: 50**

**Duration: 180 mins.**

**Answer all the questions.**

**Missing data, if any, may be suitably assumed**

- 1) Mention the different states of steam and write the application of superheated steam. (2)
  - A)
  - B) Name any two boiler mountings and accessories and mention their requirement in boiler. (2)
  - C) Sketch the water tube boiler and explain salient features. (6)
- 2) What are prime movers? Give the classification of prime movers with examples. (2)
  - A)
  - B) Compare the working principle of impulse and reaction turbines. (2)
  - C) Explain the principle of working of vapour compression refrigeration system with necessary sketches. (6)
- 3) A four-cylinder two stroke petrol engine with stroke to bore ratio of 1.2 develops brake power of 32 kW at 2500 rpm. The mean effective pressure on the piston is 8 bar and mechanical efficiency is 85%. Determine (i) the diameter and stroke of each cylinder and (ii) the brake thermal efficiency, if the fuel consumption is 9 kg/h having calorific value of 44000 kJ/kg. (4)
  - A)
  - B) With a neat sketch explain the splash lubrication system. (3)
  - C) Write a note on Creep and Slip in belt drives. (3)
- 4) Explain with sketches i) taper turning by swivelling compound rest method ii) reaming. (4)
  - A)
  - B) List the advantages and limitations gear drives. (2)
  - C) Determine the belt specifications for the following data. Driven pulley (4)