Code No: 157EH **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, December-2023/January-2024
BASIC MECHANICAL ENGINEERING
(Common to EEE, CSE, IT, CSE(AI&ML), CSE(DS))

Time: 3 Hours **Max.Marks:75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A
(25 Marks)

1.a)	Differentiate free and forced convection.	[2]
b)	State the Zeroth law and first law of thermodynamics.	[3]
c)	Define Ton of Refrigeration.	[2]
d)	List out any four important components of the IC engine and their functions.	[3]
e)	State the law of gearing.	[2]
f)	Define the terms: (i) Module and (ii) Pressure angle.	[3]
g)	What is a universal joint? Give example.	[2]
h)	State the difference between a mechanism and a machine.	[3]
i)	Define resonance.	[2]
j)	Differentiate between longitudinal vibration and transverse vibration.	[3]

PART – B
(50 Marks)

2. Explain the working of a Carnot heat engine with p -V and T- s diagrams. [10]

OR

3. What are the different modes of heat transfer? Explain with suitable examples and diagrams. [10]

4. Explain the working principle of the vapour compression refrigeration system with a neat sketch. [10]

OR

5. Differentiate between two-stroke and four-stroke engines. [10]

6. Classify the gears and types of gears and explain them with neat sketches. [10]

OR

7.a) Differentiate between hydraulics and pneumatics.
b) List and explain the different properties of hydraulic fluids. [5+5]

8. Discuss the classification of the cam and followers with a neat sketch. [10]

OR

9. Explain the working of any one type of quick return mechanism with a neat sketch.[10]

10. Explain the working of a reciprocating compressor with a neat sketch. [10]

OR

11. Differentiate between fans, blowers, and compressors. Mention its characteristics and applications. [10]

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