

R18

Code No: 157EH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, July/August - 2023

BASIC MECHANICAL ENGINEERING

(Common to CE, EEE, ECE, CSE, IT)

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) Label continuum concept. [2]
- b) Define Coefficient of Performance (COP). [3]
- c) Outline the applications of air conditioning. [2]
- d) List the advantages of systems applicable to mining environment. [3]
- e) Define gear ratio. [2]
- f) Label the limitations of gear trains. [3]
- g) What is the significance of kinematics of machines? [2]
- h) Explain degree of freedom in brief. [3]
- i) List the applications of rotodynamic machines. [2]
- j) Outline the importance of intercooling in air compressors. [3]

PART – B

(50 Marks)

- 2.a) Explain steady and unsteady flow systems.
- b) Analyze black body and grey body radiation. [5+5]

OR

- 3.a) Evaluate the general conduction equation in cartesian coordinates.
- b) Build first law applied to open and closed systems. [5+5]

4. Classify Internal Combustion (IC) engines. Write working of two stroke engine. [10]

OR

- 5.a) Explain vapour absorption cycle with neat diagram.
- b) Discuss the powdered coal as an alternative to diesel fuel. [5+5]

6. Judge the various types of couplings, its features and applications in detail. [10]

OR

- 7.a) Explain laws of gearing and nomenclature of gears.
- b) Evaluate the working of hydraulic power devices and their utilization. [5+5]

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8. Explain principle and working of quick return mechanism with neat sketch. [10]

OR

9.a) Analyze straight line generators with diagrams. QA QA QA QA QA QA QA G
b) Discuss the terminology used in cams and followers. [5+5]

10.a) Explain the types of fans and compressors.
b) With neat sketch, explain multi stage air compressor. [5+5]

OR

11.a) Distinguish between free and forced vibrations.
b) Analyze the characteristics and applications of multistage air compressor. [5+5]

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