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Code No: 155SA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January/February - 2023

BASIC MECHANICAL ENGINEERING FOR CIVIL ENGINEERS

(Civil Engineering)

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) What are the types of followers? [2]
- b) List out the methods of heat treatment of metals. [3]
- c) State any two advantages of gear drive over other types of drives. [2]
- d) Write the applications of Bull dozers. [3]
- e) Define Ton of Refrigeration. [2]
- f) What are the stages in IC engine cycles? [3]
- g) What is the sheet metal work? [2]
- h) Discuss the defects in welding process. [3]
- i) What is the function of tail stock? [2]
- j) Describe the end milling process. [3]

**PART – B**

**(50 Marks)**

- 2.a) What are the assumptions made in the design of riveted joints?
- b) How welded joints are different from riveted joints? [5+5]

**OR**

- 3.a) How are the Cams classified? Describe in detail with sketches.
- b) Explain any two heat treatment of metals. [5+5]

- 4.a) Write in brief notes on Industrial trucks and its applications.
- b) What are the advantages and disadvantages of Chain Drive over Belt or Rope Drive? [5+5]

**OR**

- 5.a) Describe briefly on Spur, Helical and Bevel gears.
- b) Differentiate between simple gears and compound gears.
- c) What are the advantages of gears over belt drives? [4+3+3]

- 6.a) What are the difference between diesel engine and petrol engine?
- b) Describe the working principle of a external combustion engine. [5+5]

**OR**

- 7.a) Explain the working of a vapour compression refrigeration with a sketch.
- b) Describe the basic laws of heat transfer. [5+5]

- 8.a) Describe the direct metal forming process with a sketch.  
b) What are the tools used in sheet metal process? [5+5]

**OR**

- 9.a) Explain the soldering operation with a suitable application.  
b) What are the advantages and limitations of welding process? [5+5]

- 10.a) Describe the different parts of drilling machine and its functions.  
b) Explain the different operations in Lathe machine. [5+5]

**OR**

- 11.a) Explain the working of a grinding machine and write its applications.  
b) Discuss the main parts of a milling machine. [5+5]

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Used papers 2023