

Code No: 155SA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, August - 2022

BASIC MECHANICAL ENGINEERING FOR CIVIL ENGINEERS

(Civil Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) Explain the process of normalizing the metals along with the changes in properties.
- b) Explain the function of cam and follower with a suitable diagram. [8+7]
2. Find the efficiency of the following riveted joints:
 - a) Single riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 50 mm.
 - b) Double riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 65 mm. Assume Permissible tensile stress in plate = 120 MPa; Permissible shearing stress in rivets = 90 MPa; Permissible crushing stress in rivets = 180 MPa. [7+8]
- 3.a) Derive the relation for power transmitted in an open belt drive and also discuss the condition for maximum power.
- b) Write short notes on belt conveyors and industrial trucks. [8+7]
4. Draw the schematic diagram, spur gear and label the nomenclature. [15]
5. Explain various components used in air refrigeration system with a neat sketch. [15]
- 6.a) What are the advantages and applications of IC engines? Explain them.
- b) Discuss about the conduction and convection modes of heat transfer with examples for each. [7+8]
- 7.a) Explain various sheet metal operations along with their applications.
- b) List and explain any three various welding defects, causes and remedies. [7+8]
- 8.a) Explain the various parts of a milling machine with a neat sketch.
- b) What are different operations performed on lathe machine? Explain them. [8+7]

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