

I B. Tech II Semester Regular Examinations, September- 2021
BASIC CIVIL AND MECHANICAL ENGINEERING
(Only EEE)

Time: 3 hours

Max. Marks: 70

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

UNIT-I

- 1 a) Define Force, Stress, Strain and Elasticity with suitable examples. (7M)
 b) A steel bar of 20 mm diameter and 400 mm length is subjected to a tensile force of 40 kN. Determine the tensile stress and axial strain. Take $E = 200 \text{ kN/mm}^2$. If the force is reversed in direction with same magnitude, What will be the stress and strain. (7M)

Or

- 2 a) Define shear force and bending moment. Derive the relation between load, shear force and bending moment. (7M)
 b) Evaluate the shear force and bending moment of a simply supported beam with a point load W acting at a distance of 'a' from one end and a distance of 'b' from other end. Draw the shear force and bending moment diagram. (7M)

UNIT-II

- 3 a) What are the different types of strain gauges? What are the advantages over other types of gauges? (7M)
 b) What is strain gauge? Write strain gauge principles. (7M)

Or

- 4 a) Explain in detail the working principle and measurement of strains. (7M)
 b) Discuss about Electrical Capacitance. (7M)

UNIT-III

- 5 a) Write common building materials and state its importance. (7M)
 b) How do you detect defects in timber? Explain. (7M)

Or

- 6 a) Explain the different ways of classification of timber. (7M)
 b) Explain how you use glass as a building material. (7M)

UNIT-IV

- 7 a) Differentiate between Centrifugal and reciprocating pumps. Write their advantages and applications. (7M)
 b) Explain the construction and working of a Hydraulic reaction turbine. (7M)

Or

- 8 a) Explain the working of a double acting reciprocating pump with a neat sketch. (7M)
 b) Classify hydraulic turbines. (7M)



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UNIT-V

- 9 a) Draw and explain the port timing diagram of a 2S Engine. (7M)
b) Explain the construction and working of a Benson Boiler. (7M)
- Or
- 10 a) Difference between Fire Tube and Water Tube Boilers. (7M)
b) Explain the working of fuel supply system used in a petrol engine. (7M)

