MACHINE DESIGN
6th Exam/Mech./5336/Jan'2022
(FOR 2018 BATCH ONWARDS)

Duration: 1.15Hrs.   **M.Marks:25**

SECTION-A

Q1. Attempt any three questions.   **5x3=15**

   i. Discuss the advantages and disadvantages of welded joints over riveted joints
  ii. Explain the effect of keyway on the strength of shaft using H.F Moore relation.
 iii. Define the following terms.   a) Creep   b) Fatigue   c) Ductility   d) Malleability.
 iv. Explain the screw thread terms: Major diameter, Minor diameter, Pitch and Lead.
  v. Explain caulking and fullering of riveted joints
 vi. Explain Rankine theory or Maximum principal stress theory.
vii. A plate 100 mm wide and 10 mm thick is welded to another plate by means of double parallel fillets. The plates are subjected to a static load of 120 kN. Find the length of weld if permissible shear stress does not exceed 70 MPa

SECTION-B

Q2. Attempt any one question.   **1x10=10**

  a. What do you know about stress concentration? Also explain the various methods to reduce stress concentration.
  b. A solid circular shaft subjected to a bending moment of 5000 Nm and a torsion moment of 12000 Nm. The allowable tensile and shear stresses are 120 MPa and 80 MPa. Determine the shaft diameter.
  c. Design a Knuckle joint to transmit a load which varies from 150 kN in tension to 150 kN in compression. The permissible stresses are 75 MPa in tension, 150 MPa in compression and 60 MPa in shear. Design the knuckle rod, knuckle pin in shear and single eye end.
  d. A double riveted lap joint with chain riveting is made for joining two plates having thickness of 16 mm ,if permissible tensile and shear stresses are 60 MPa and 50 MPa respectively. Find diameter of rivet, pitch of rivet, and efficiency of the joint.