Question Paper

Exam Date & Time: 27-May-2022 (09:30 AM - 12:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
IV SEMESTER B.Sc. (Applied Sciences) in Engg.
END SEMESTER THEORY EXAMINATION - MAY/ JUNE 2022

DESIGN OF MACHINE ELEMENTS [IME 242 - S2]

Marks: 50 **Duration: 180 mins.**

Answer all the questions.

Missing data may be suitably assumed
Design data handbook is permitted

1) Explain different types of cyclic stresses with the help of neat sketches. (2)

A)

B) A cylindrical member is subjected to a tensile load of 20 kN and a shear load of 10 kN. The material has yield strength of 350 MPa. Taking factor of safety as 2, determine the diameter maximum normal stress theory. (4)

C) Find the dimensions of the beam shown in Fig.Q1C if yield strength of the material is 300MPa. Take Factor of safety as 3. (4)

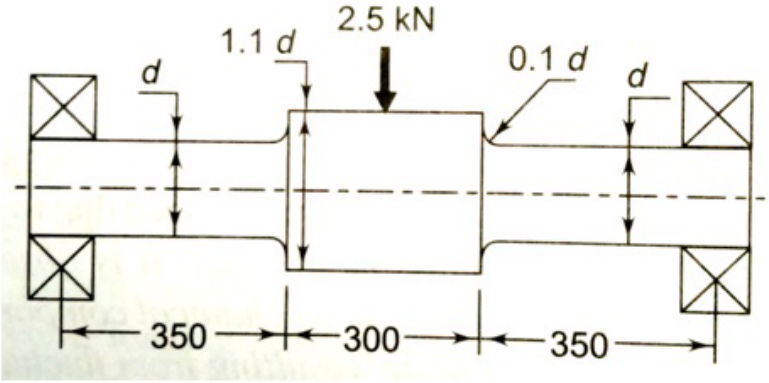

Fig.Q1C

2) The tangential and radial forces acting shaft are as shown in Fig Q2A. Design the shaft based on ASME code of design. Assume C_m=2, C_t=1.5. (8)

A)