M.Tech. 1st Semester (Civil Engg.)

Examination, December–2018

SPECIALISATION IN STRUCTUAL ENGG.

Paper– CE–611/MTSD-102

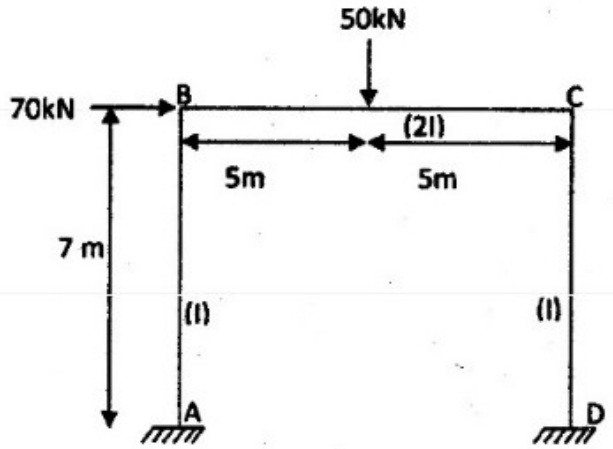
Advanced Structual Analysis

Time allowed : 3 hours] *[Maximum marks : 100*

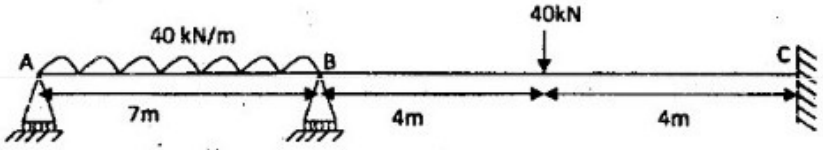
Note: *Attempt any **five** questions. All questions carry equal marks. Assume any data if missing.*

1. What do you understand by flexibility matrix method? Also explain why flexibility method is also called as force method in detail. 20

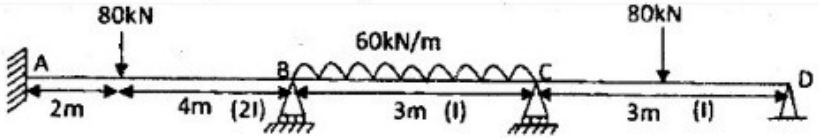
2. Analyze the rigid frame shown in fig. given below by flexibility matrix method. 20



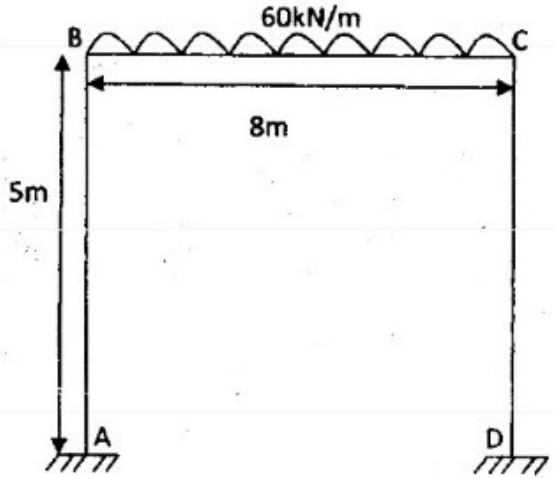
3. Analyze the continuous beam shown by flexibility method in which support reaction at A and B are treated as the redundant. Hence, calculate the bending moment at B. Assume flexural rigidity EI as constant for all the beams. 20



4. Analyze the beam by stiffness matrix method. 20



5. Using stiffness matrix method, analyse the frame shown in fig. Take EI constant throughout. 20



6. Explain the following in detail 20

   (a) How do the flexibility and stiffness matrices depend on static and kinematic indeterminacies?

   (b) Write down the difference between flexibility and stiffness matrix.

7. (a) List the properties of stiffness matrix. Also write down the difficulties with direct stiffness method of formulation. 20

   (b) Write down the relationship between stiffness matrix and flexibility matrix.

8. For simply supported beam of uniform cross-section as shown, develop the flexibility matrix with reference to co-ordinate shown in fig. 20