College of Engineering, Pune

End Semester Exam

T.Y. B. Tech. (Civil)

(CE 303 – Structural Mechanics-II)

Civil

Date:- 28th Nov 2012 | Time: - 2:00 pm to 5:00 pm

Maximum Marks: 50 | Duration : - 3 hr.

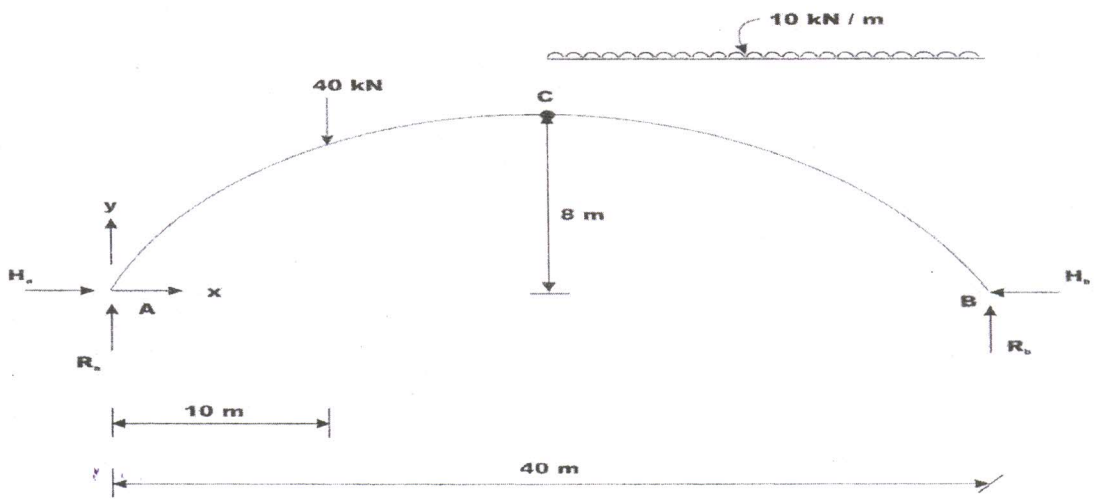
Instructions:

1. All questions are compulsory.
2. Marks of each question are indicated against it.
3. Assume suitable data wherever applicable and mention it clearly.
4. Use of mobile phones is strictly prohibited in the exam hall.

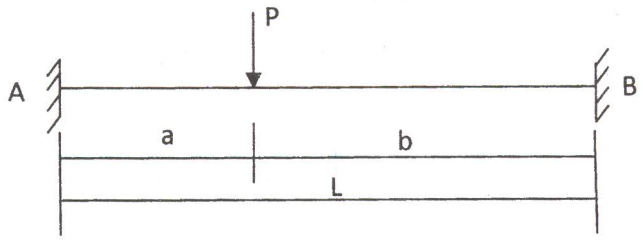
Q.1 Answer the following (08)

a) Differentiate between flexibility and stiffness method
b) State and explain advantages of arches
c) Explain central, forward and backward finite difference
d) State the necessity of approximate methods

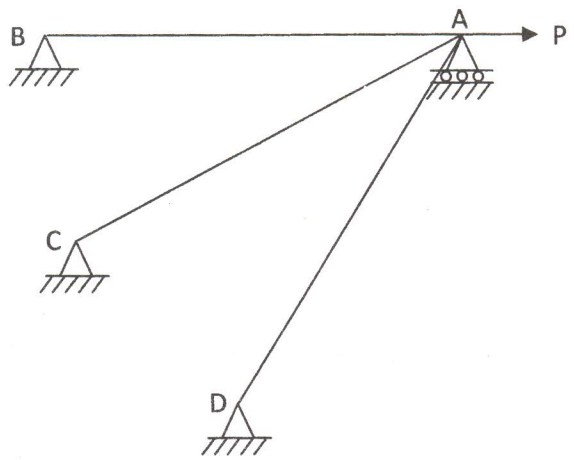
Q.2 A three-hinged parabolic arch is loaded as shown in Figure below. Calculate the location and magnitude of maximum bending moment in the arch. Draw bending moment diagram. (08)



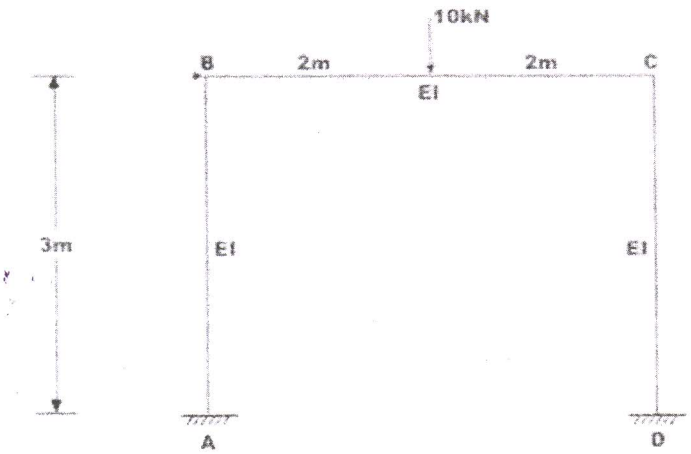
Q.3 Draw Shear force and bending moment diagram for the fixed beam as shown in Figure below. Assume constant flexural rigidity and b > a. Take M_A and M_B as redundant. Use flexibility method. (09)



Q.4 Find the axial forces in all members of the truss as shown in Figure below. The truss is subjected to a horizontal force P at joint A. Omit the weights of the members from the analysis. Each member has length L and axial rigidity AE. Use stiffness method. (09)



Q.5 Analyse the rigid frame as shown in Figure below using slope deflection method. Assume *EI* to be constant for all members. Draw bending moment diagram and sketch deflected shape. (08)



Q.6 Analyse the rigid frame shown in figure below by moment-distribution method. Moment of inertia of different members is shown in the diagram. (08)