CIVIL

KADI SARVAVIDHAYALAYA

LDRP INSTITUTE OF TECHNOLOGY AND RESEARCH, GANDHINAGAR.

B.E. 4th Semester

MID SEMESTER EXAMINATION

Date/Day : 08/03/2014, Saturday **Branch : Civil Engineering**

Subject Name: Structural Analysis - II

Time : 08:30 AM to 10:00 AM **Max. Marks : 30**

Instructions: (1) All questions are compulsory and Figures to the right indicate full marks.
(2) Indicate clearly, the options you attempt along with its respective question number.
(3) Do not Write anything on the Question Paper except your Enrollment Number.

Q-1 [A] Draw quantitative I.L.D. for R_B, R_C and M_B of Continuous beam shown in **Fig.1**. Calculate ordinates at 1 m interval. A Train load consisting of 7 Loads, 15 KN each spaced at 1 m interval traversing from left to right. Find out max. value of M_B. [7]

Q-1 [B] A Fixed Beam 7 m span carries a U.D.L. of 10 KN/m from one left end for 3 m. Draw B.M.D. and S.F.D. [6]

Q-2 [A] Determine the supports moments using Slope Deflection Method for the frame as shown in **Fig.2** and draw S.F. and B.M. Diagram. [7]

Q-2 [B] Analyse the Portal Frame shown in **Fig.3** by Moment Distribution Method and draw S.F. and B.M. Diagram. [7]

Q-3 Derive the Generalize Equation in brief for Slope Deflection Method. [3]

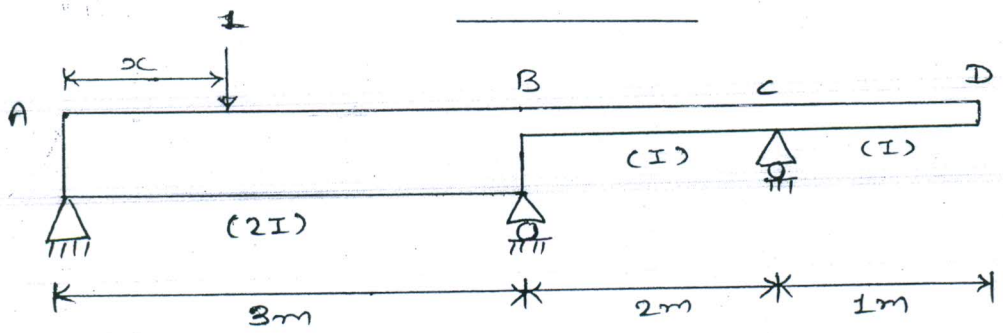

Fig. 1

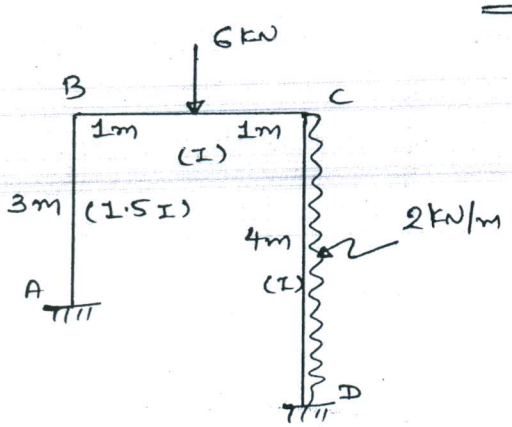

Fig 2

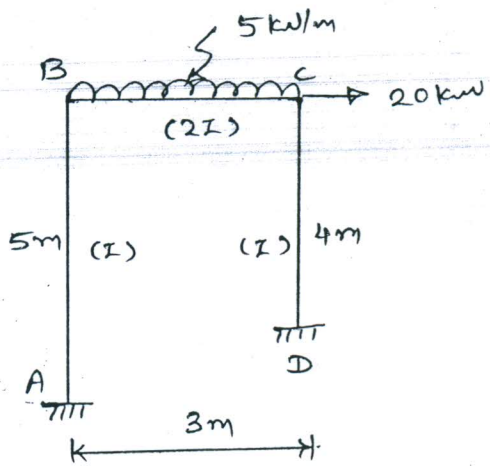

Fig 3

Enrollment No | | | | | | | | | | | | | | | |

L.D.R.P. Institute of Technology & Research, Gandhinagar

Mid semester Examination, B.E.CIVIL Semester-IV – February'2015

Branch: Civil
Subject: Structural Analysis-II
Time: 12:00 p.m. to 1:30p.m

Date: 05/02/2015
Subject Code-CV-405
Marks: 30

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 **(A)** Determine unknown reactions for a fixed beam as shown in **Fig.1.** **05**

(B) A pre-tensioned concrete beam 100 mm wide and 300 mm deep is prestressed by straight cable carrying initial force of 150 kN at an eccentricity of 50 mm. The modulus of elasticity of steel and concrete are 210kN/mm^2 and 35 kN/mm^2 respectively .Calculate percentage loss of prestress in steel due to elastic shortening of concrete if area of concrete wire is 188 mm^2. **05**

Q.2 **(A)** Determine Final moments for a continuous beam by slope deflection method as shown in **Fig.2.** **05**

(B) A simply supported prestressed concrete beam of 10 m span, rectangular section of 600 x 900 mm is subjected to prestressing force of 5600 kN at eccentricity of 200 mm below the centroid of section. Find top and bottom fiber stresses at transfer. Consider losses 15 %.Draw stress distribution diagram due to initial prestress and dead load at mid-span. **05**

OR

(A) Determine Final end moments for a continuous beam as shown in **Fig.3**.Support B sinks by 10 mm. EI=4000 kN m^2.Use slope deflection method. **05**

(B) A beam of 230 x 450 mm is presstressed by a force of 500 kN by steel cables located at an eccentricity 75 mm below cenroidal axis. Estimate loss of prestress due to creep of concrete. **05**

F_{ck}=45 N/mm^2
Cables=8 nos of 8 mm diameter
Creep coefficient=1.6 (at 28 days transfer)

Q.3 **(A)** Draw shear force and bending moment diagram for propped cantilever beam as shown in **Fig.4.** **05**

(B) (i).Determine fixed end moment of UVL as shown in **Fig.5 by directly equation.** **05**

(ii).Draw BMD for cantilever beam of span length L for following cases.

- Point load P kN at L/2
- Clock wise Moment M kN.m at L/2
- UDL of w kN/m throughout span

OR

(A) Determine unknown reactions for propped cantilever beam as shown in **Fig.6.** **05**

(B) All reactions for a fixed beam are given as shown in **Fig.7.**Draw Shear force diagram and Bending moment diagram. **05**

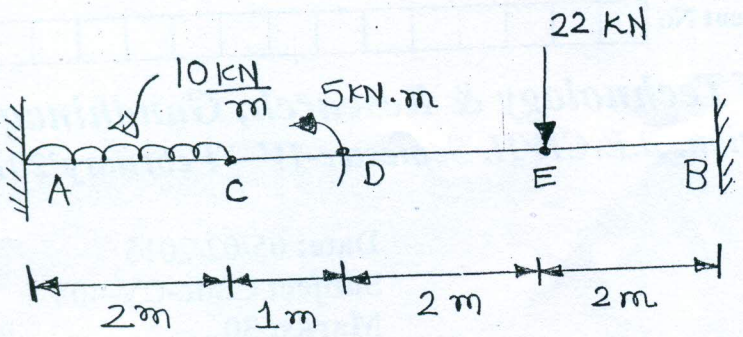

Fig.1

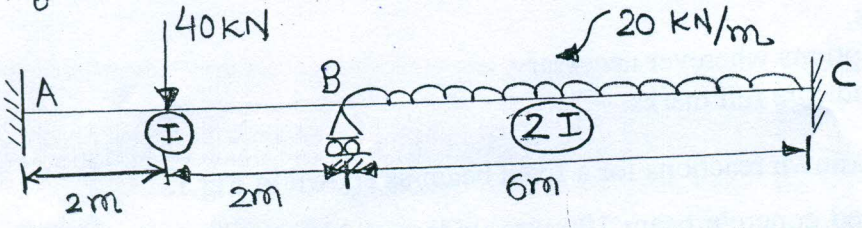

Fig. 2

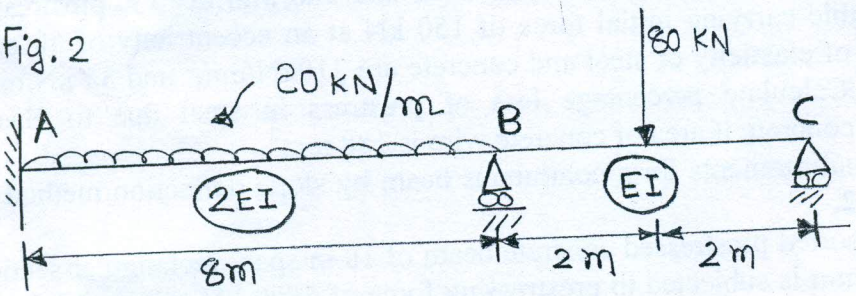

Fig. 3

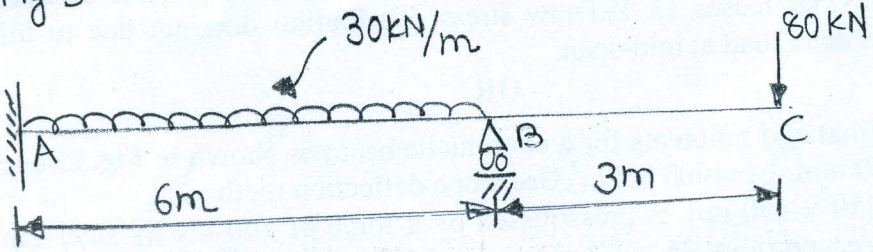

Fig. 4

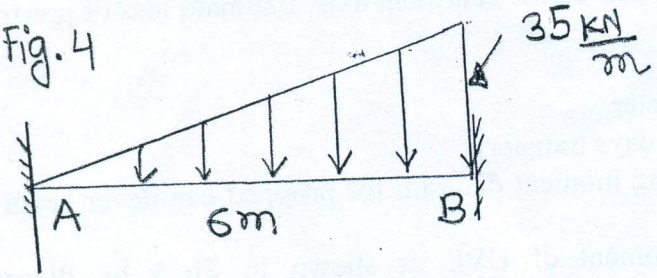

Fig.5

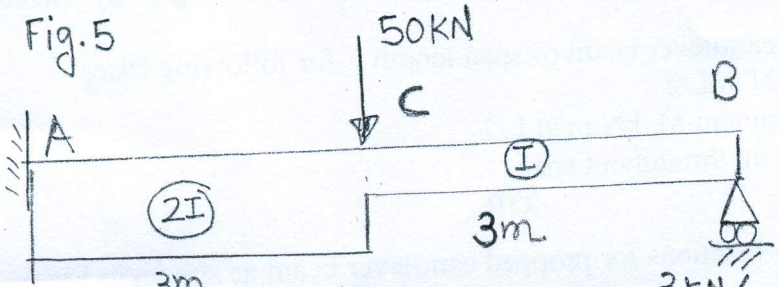

Fig. 6

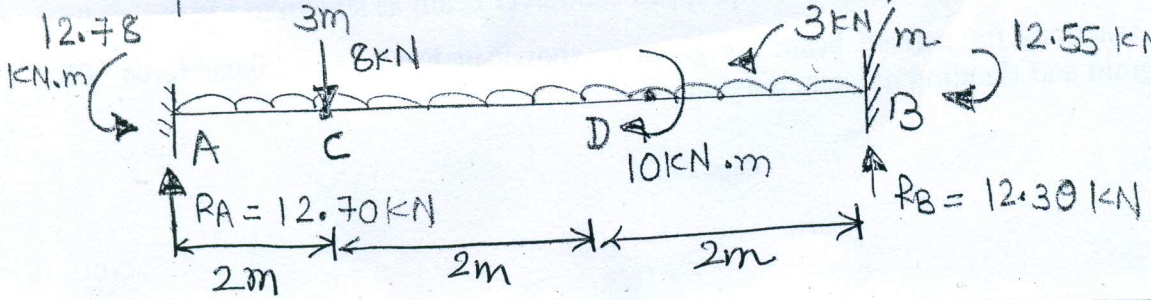

Fig. 7