Kadi Sarva Vishwavidyalaya

LDRP INSTITUTE OF TECHNOLOGY & RESEARCH, GANDHINAGAR.

B.E. CIVIL 3rd Semester

MID SEMESTER EXAMINATION

Date/Day	**: 28/08/14 , Thursday**	**Branch**	**: Civil Engineering**
Subject Name & Code	**: STRUCTURAL ANALYSIS - I**	**Max. Marks**	**: 30**
Time	**: 12:00 NOON to 01:30 PM**		

Instructions: 1) All questions are **compulsory**

2) Figures to the **right** indicate full marks.

3) Indicate **clearly**, the options you attempt along with its respective question number.

Q.1 (a) Differentiate S.I. and K.I. [5]

(b) Derive the Euler's formula by considering any of Four end condition. [5]

Q.2 (a) Find Slope and Deflection at support B. **Ref. Fig.1** [5]

(b) Find Slope and Deflection at support C. **Ref. Fig.2** [5]

OR

Q.2 (a) Find S.I. and K.I. of all types of Beams. [5]

(b) Draw S.F.D. and B.M.D. for **Fig.3.** [5]

Q.3 (a) A Column has one end fixed and another end hinged with length of 6.0 m. It is made up of a tube having external diameter of 100 mm and wall thickness of 10 mm. If yield strength of the material is 410 N/mm^2 and Rankine's constant is 1/4800, calculate Euler's critical load and Rankine's critical load. [5]

(b) A Steel bar 100 cm long and rectangular in section 40 mm x 80 mm s subjected to an axial load of 1 KN. Find the maximum stress if, (a) The load is applied gradually (b) The load is applied suddenly (c) The load is applied after falling through height of 8 cm. What are the strain energies in each of the above cases? E = 200 GPa. [5]

OR

Q.3 (a) An "I" Section has 260 mm depth and 120 mm width. Thickness of flange and web is 10 mm. It is used as a column with one end fixed and another hinged. Using Euler's formula determine safe load. F.O.S. = 3. Length of column is 8.0 m. [5]

(b) A Simply supported beam AB of span 5m carries a U.D.L. of 5 KN/m over its entire span. Determine the strain energy stored due to bending in the beam. E = 200 GPa, I = 200 cm^4. [5]

[P.T.O.]

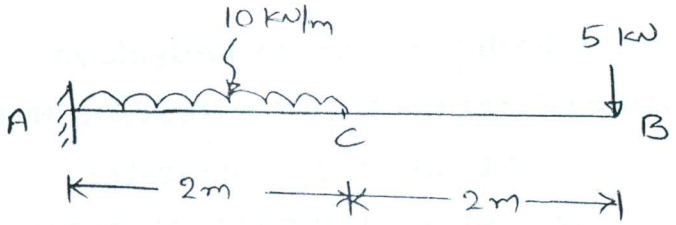

Fig. 1

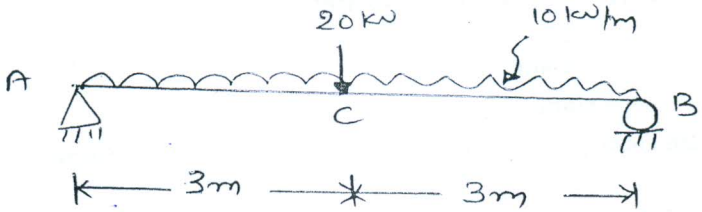

Fig 2

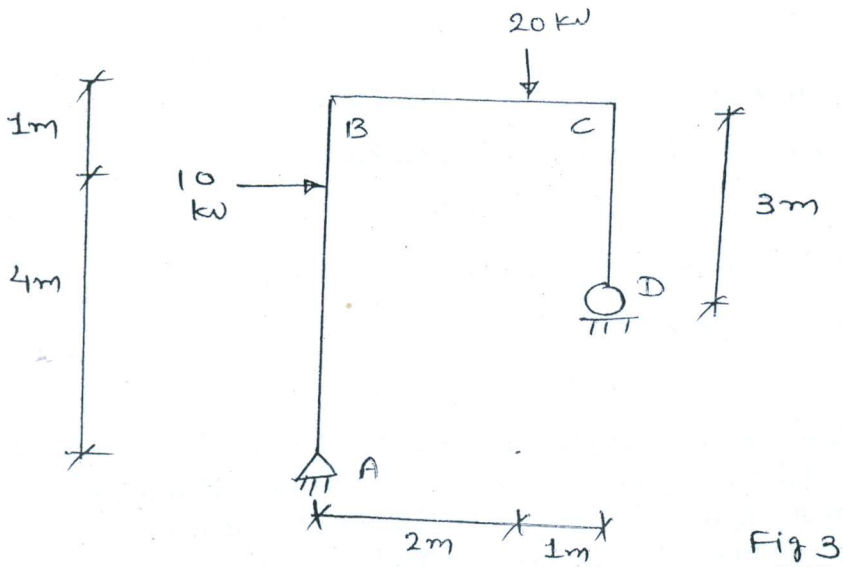

Fig 3

**********All THE BEST**********