Exam Roll No. ..003180..

END TERM EXAMINATION

FOURTH SEMESTER [B.TECH.] MAY-JUNE 2015

Paper Code: ETCE 204	Subject: Structural Analysis
	Maximum Marks :75
Time : 3 Hours	

Note: Attempt five questions including Q.no.1 which is compulsory. Assume any missing data suitably.

(5x5=25)

Q1 Answer **any five** from following:
(a) What is middle third rule?
(b) What are wire wound cylinders and why they are needed?
(c) Differentiate between internal and external static indeterminacy.
(d) Define castigliano's first and second theorems.
(e) Differentiate between truss and frame.
(f) What is carry over factor? Differentiate between distribution factor and Rotation factor.
(g) Prove that S.I. for plane frame is 3m+r-3j where m is no of members, r is no of reaction components and j is No. of joints.
(h) What is effective length of a column? Write down effective length for fix-fix, fix-hinged & fix-free column ends.

(12.5)

Q2. Show that for column with initial curvature:-
Final deflection= constant X initial deflection

Or $\delta = \left(\dfrac{P_{EULER}}{P_{EULER} - P} \right) X \ \delta'$

Where δ is initial curvature.

Q3. Show that for cylindrical shell with hemispherical ends; the governing thickness for safety of shell is thickness of cylindrical portion i.e. thickness of hemispherical portion is redundant in safety calculations. **(12.5)**

Q4. A simply supported beam has a span of 15m. Uniformly distributed load of 40 KN/m and 5m long crosses the girder from left to right. Find maximum shear force (positive and Negative) and bending moment at a section 6m from left end. (12.5)

Q5. Determine the reaction @ B using consistent deformation method only. **(12.5)**
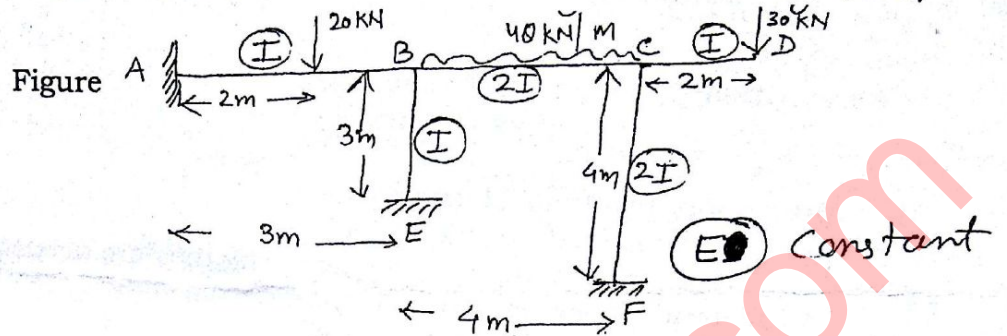

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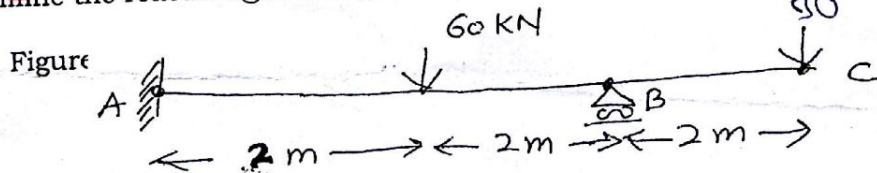
Q6. Analyse following beam for BMD & SFD. (12.5)
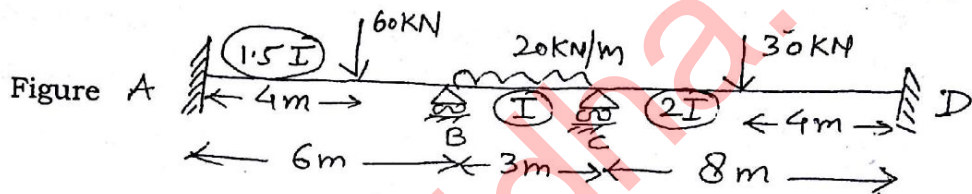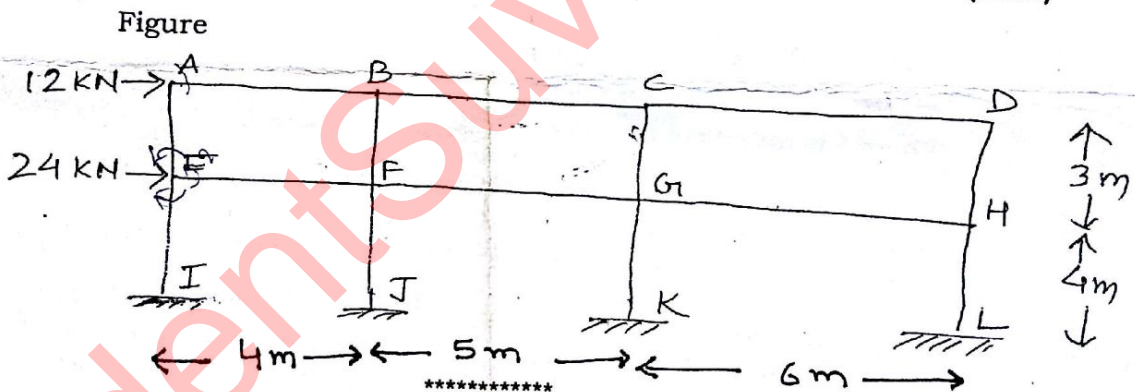

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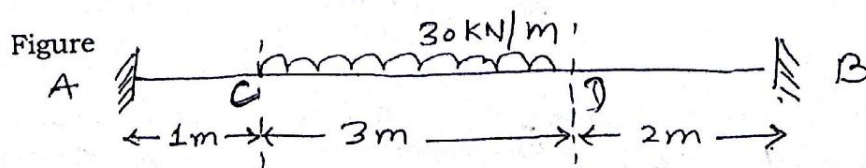
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Q7. Analyse the frame using slope deflection method assuming No Sway. **(12.5)**

Figure A

Q8. Analyse continuous beam using Moment distribution method or Kani's method. **(12.5)**

Figure A

Q9. Analyse the frame using approximate method's (i.e.)portal or cantilever method. **(12.5)**

Figure

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