Total No. of Printed Pages:2

SUBJECT CODE:- 8181

FACULTY OF ENGINEERING AND TECHNOLOGY

M.E.(Structural Engg.) Examination Nov/Dec 2015

Advanced Structural Mechanics -I

(Revised)

[Time: Three Hours] **[Max. Marks: 80]**

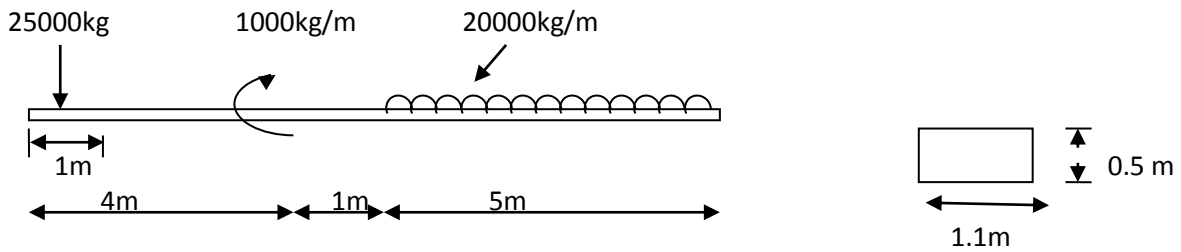
"Please check whether you have got the right question paper."

N.B i) Solve any two questions from each section.

ii) Assume suitable data, if required & state it clearly.

Section A

Q.1 Draw foundation pressure diagram & BMD for a beam loaded as shown in fig. Take $E = 2 \times 10^9 \text{kg/m}^2$& modulus of the foundation = $1 \times 10^7 kg/m^2/m$ 20



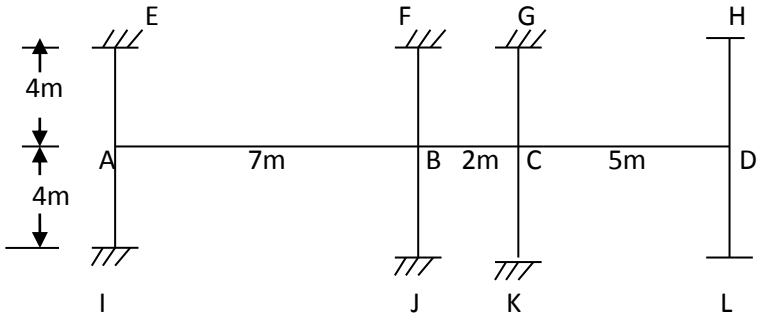
Also find maximum pressure & maximum B.M

Q.2 a) What do you mean by skew bridges? Explain the effect of skewness on the analysis of bridge 05

b) Classify the beam according to their stiffness considering term α, L 2 also explain beam absolutely rigid 05

c) Determine bending moment. Twisting moment and reactions for a semicircular beam simply supported on three supports equally spaced carrying ud1 w/m over entire span. 10

Q.3 Analyse the beams AB,BC,CD for a maximum positive & negative moments for the fig. Shown 20



Beam size = $200\text{mm} \times 400\text{mm}$

Column size = $200mm \times 500mm$

Total live load on beam = 18kw/m

SECTION-B

Q.4 a) What are the approximate method application for the analysis of grid floor structure. 05

b) What is mean by secondary stresses in a truss? 05

c) What is mean by secondary stresses in frames. 05

d) Explain minimum weight design for plan frames. 05

Q.5 The truss show in fig has an area of compression members twice that of tension member. Area of each tension member is =2000mm^2. If the joints are rigid determine the secondary stresses. All members is of I-section has depth 2000mm. With $M.I = 530 \times 10^4 mm^4$ 20

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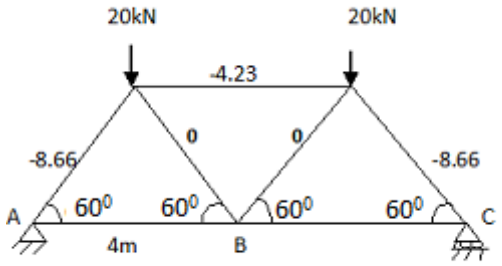
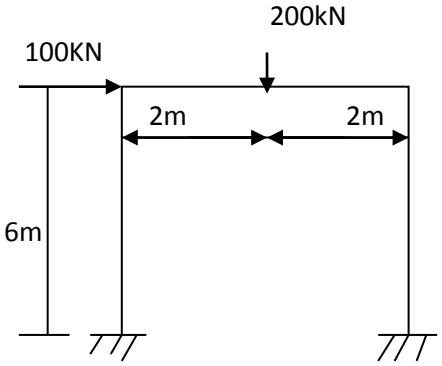


Q.6 Design the frame for minimum weight. 20



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