

Full Marks: 70

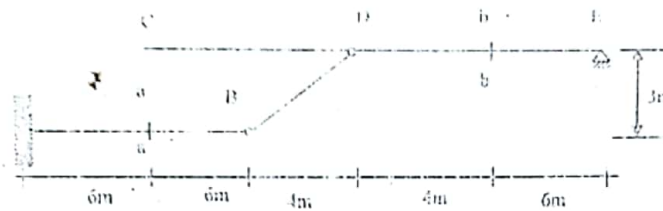
Time: 3 Hours

- N.B.:-
- (i) Answer SIX questions, taking THREE from each section.
 - (ii) Figure in the margin indicates full marks.
 - (iii) Use separate answer script for each section.
 - (iv) Assume reasonable value for any data missing.

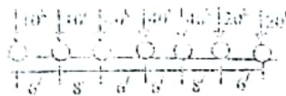
Rakibul Islam
 PE-140022

SECTION-A

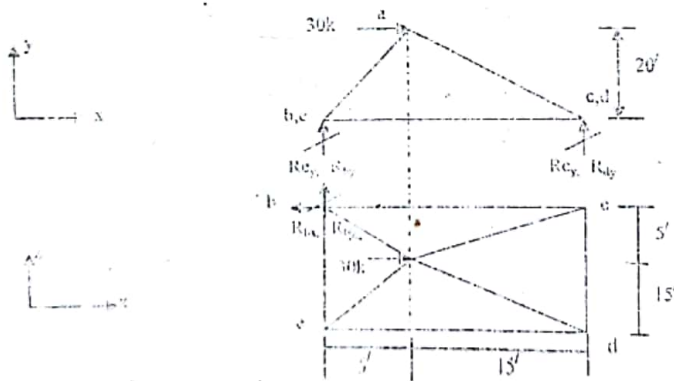
- Q.1(a) Define influence line. Write down the purpose of influence line. 3.00
 (b) Draw the influence lines for M_A , V_a , V_b , M_c and M_e as a unit load moves from A to B and from C to E of the following structure. 9.00



- Q.2(a) Deduce the general criteria for obtaining the maximum shear at any section of a simply supported beam subjected to moving load. 3.00
 (b) For a simply span of 50 ft, calculate the maximum moment at the center and the absolute maximum moment due to the following moving loadings. 9.00

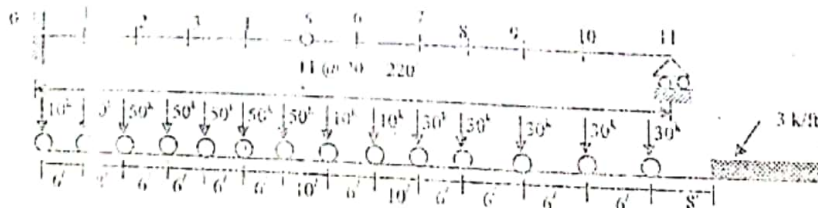


- Q.3 Compute the reaction and bar forces of the following space truss as shown in figure below. 12.00



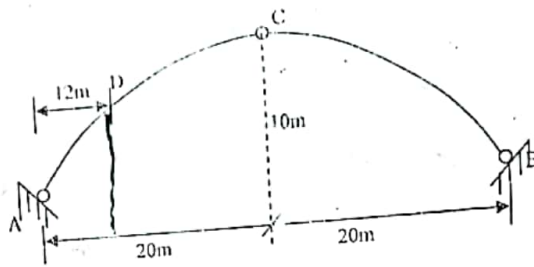
- Q.4(a) Prove that, the shear in a panel is maximum when the average load in the panel is equal to the average load in the span. 3.00
 (b) Using proper criteria to determine the position of load and hence compute the maximum shear in panel 6-7 and the maximum moment at panel point 3 due to the series of moving concentrated load shown in figure below. 9.00

16/17

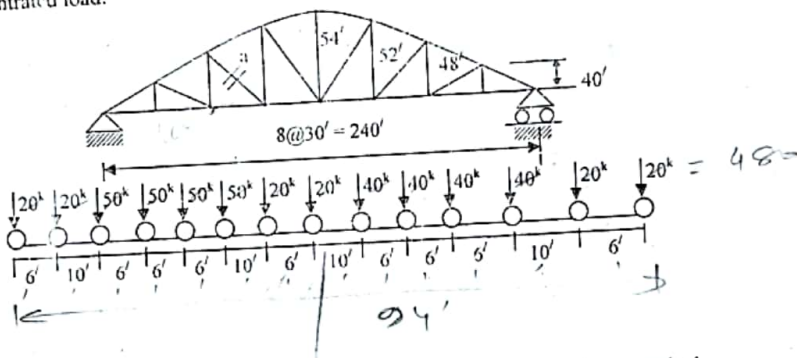


SECTION-B

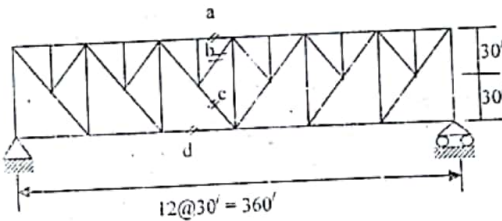
Q.5 Draw influence lines for SF, BM and normal thrust at point D of a three-hinged parabolic arch. Compute the maximum SF, BM and normal thrust at the same point D due to a moving concentrated load of 50 kN. 12.00



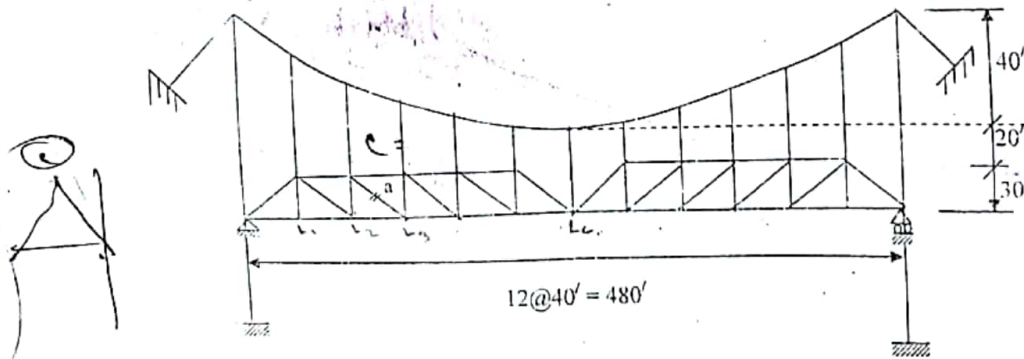
Q.6 Deduce the criteria for the maximum stress in the member 'a' of the non-parallel truss shown in figure below. Find the maximum stress in the same member of the truss due to a series of moving concentrated load. 12.00



Q.7 (a) Deduce the criteria for maximum stress in the upper chord of truss without vertical. 3.00
 (b) Calculate the maximum live load stress in members a, b, c and d of the following structure due to H_{20} loading. 9.00



Q.8 Draw influence lines for hanger tension, maximum cable tension and stress in the member 'a' of the following suspension bridge shown in figure below and hence calculate the maximum stress of those members due to a uniformly distributed moving load of 5 k/ft. 12.00



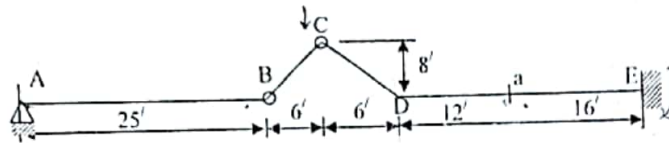
Full Marks: 70

Time: 3 Hours

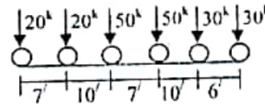
- N.B.:-**
- (i) Answer **SIX** questions, taking **THREE** from each section.
 - (ii) Figure in the margin indicates full marks.
 - (iii) Use separate answer script for each section.
 - (iv) Assume reasonable value for any data missing.

SECTION-A

Q.1 Draw influence line diagrams for R_{HC} , M_a , V_a , V_D and M_D due to a unit load moves from A to B and from D to E of the following structure. 11.67

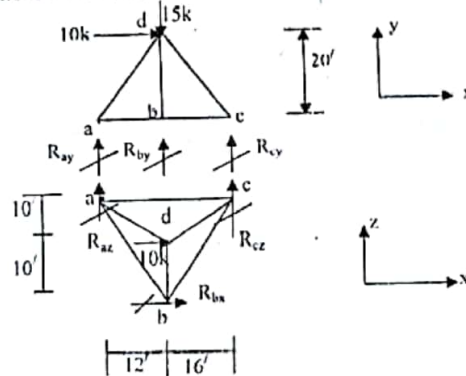


- Q.2(a) Prove that the maximum bending moment at any section under any loading will occur when the average load on the left of the section equal to the average load on the right of section. 2.67
- (b) For a simple span of 80 ft, compute (i) the maximum moment at mid-span, and (ii) the absolute maximum moment due to the loading shown in figure below. 9.00

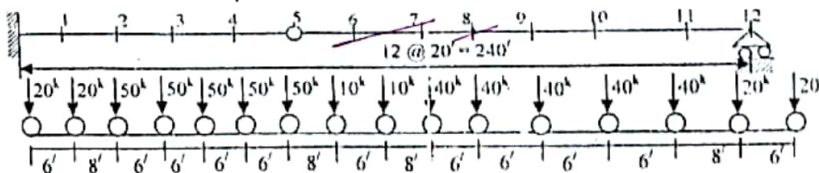


Q.3 Compute the reactions and bar forces of the following space truss as shown in figure below. 11.67

ডাঃ আবুল ফকির
 নানান ইঞ্জিনিয়ারিং সলিউশন
 মোবাইল: ০১৯২২-০৭০৭০০



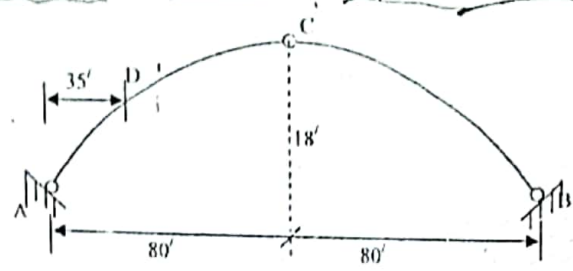
- Q.4(a) Prove that the maximum shear at any panel under any load will occur when the average load in the panel is equal to the average load in the span. 2.67
- (b) Apply an appropriate criteria to determine the position of moving loads and hence compute the maximum shear in the panel 6-7 and the maximum moment at the panel point 8. 9.00



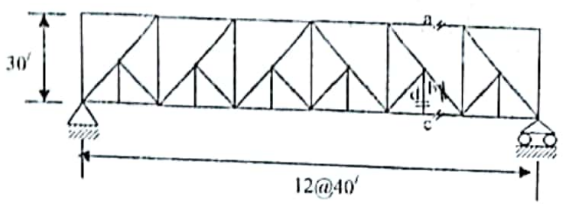
B / 2 -
/ 117

SECTION-B

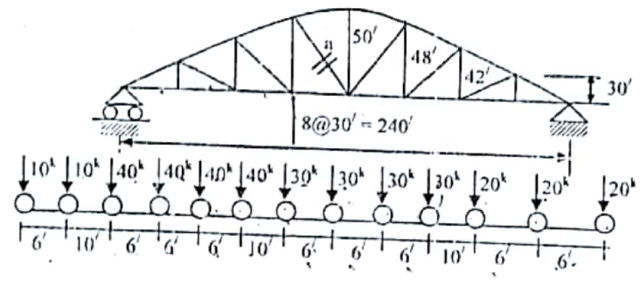
Q.5 A three-hinged parabolic arch as shown in figure below with a span of 160 ft and central rise of 18 ft. Draw influence lines for bending moment, shear force, and normal thrust at a section D of the arch. Also obtain the maximum moment, shear force and normal thrust for H₂₀ loading.



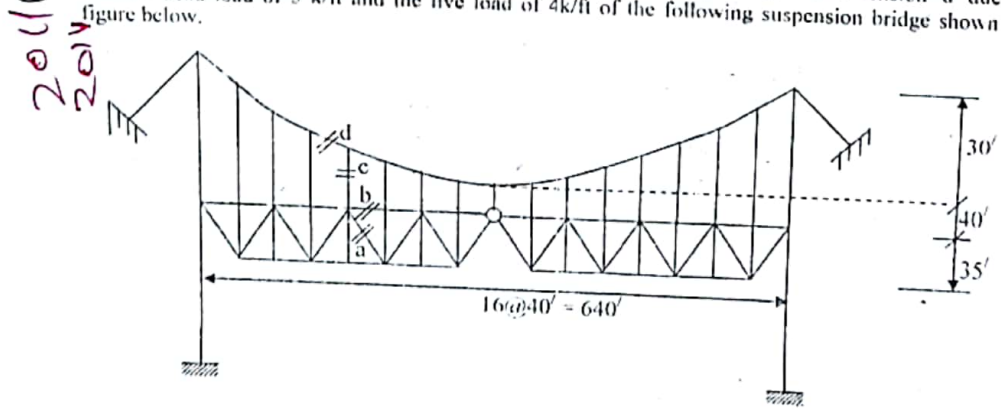
Q.6 (a) Deduce the criteria for maximum stress in the upper chord of truss without vertical. 2.67
 (b) Calculate the maximum stresses in members a, b, c and d of the following truss due to H₂₀ loading. 9.00



Q.7 Deduce the criteria of maximum tension in the member 'a' of the non-parallel chord truss shown in figure below. Find out the maximum stress in the same member of the truss due to a series of moving concentrated loads shown below. 11.67



Q.8 Compute the maximum stresses developed in member 'a', 'b' hanger 'c' and cable tension 'd' due to uniform dead load of 5 k/ft and the live load of 4k/ft of the following suspension bridge shown in figure below. 11.67



2011
2011

Emon

CE 311

Structural Analysis & Design - I

Full Marks: 70

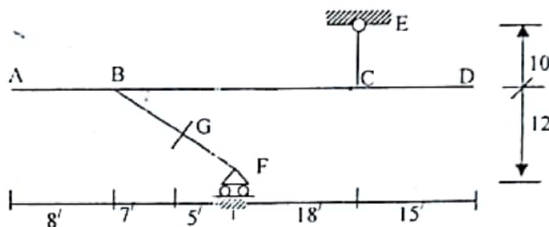
Time: 3 Hours

- N.B.:-
- (i) Answer SIX questions, taking THREE from each section.
 - (ii) Figure in the margin indicates full marks.
 - (iii) Use separate answer script for each section.
 - (iv) Assume reasonable value for any data missing.

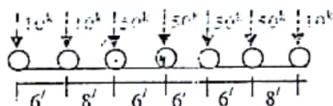
RAKIBUL ISLAM
CE'140022

SECTION-A

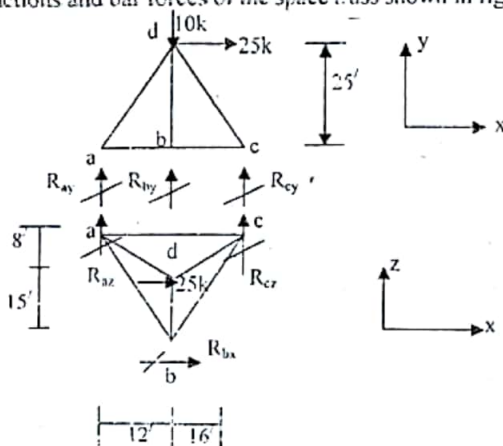
- Q.1(a) Define influence line. Why is it drawn? 2.00
 (b) Draw the following influence line for the structure shown in the figure below as a unit load moves from A to D (i) Moment at B (ii) Moment and shear at G (iii) Shear just to left of C (iv) Horizontal reaction at E. 9.67



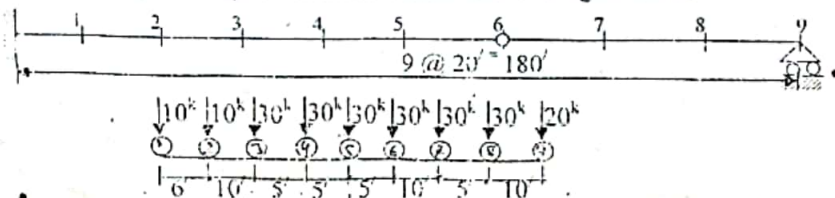
- Q.2(a) Derive a criteria to obtain the maximum shear for a section subjected to moving loads on a simple span. 3.67
 (b) For a simple span of 40 ft, (i) calculate the maximum moment at mid-span, and (ii) also obtain the absolute maximum moment due to the loading shown in figure below. 8.00



- Q.3 Determine the reactions and bar forces of the space truss shown in figure below. 11.67

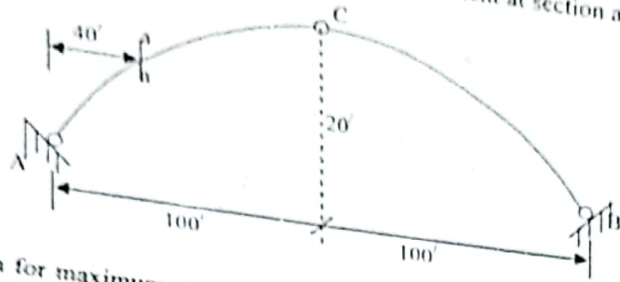


- Q.4 Determine the maximum floor beam reaction at panel point 5 and the maximum shear at panel 2-3 due to loading on the span with floor beams shown in figure below. 11.67

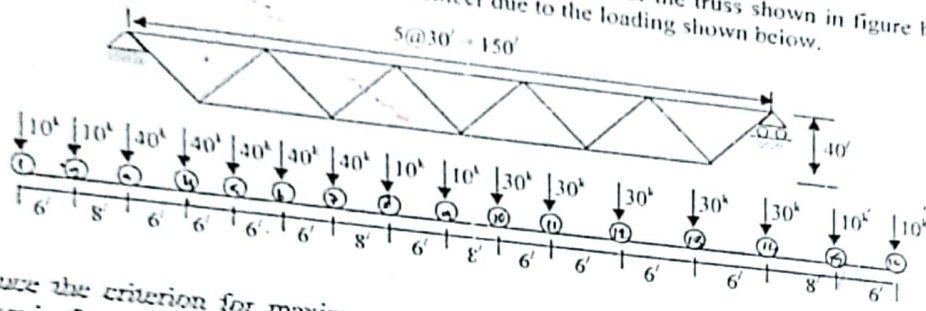


SECTION-B

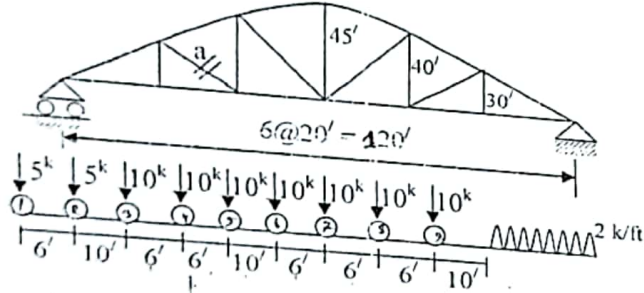
100%
 Determine the maximum shear, normal thrust and bending moment at section a-a due to H_{20} loading.
 (ii) calculate local stiffn



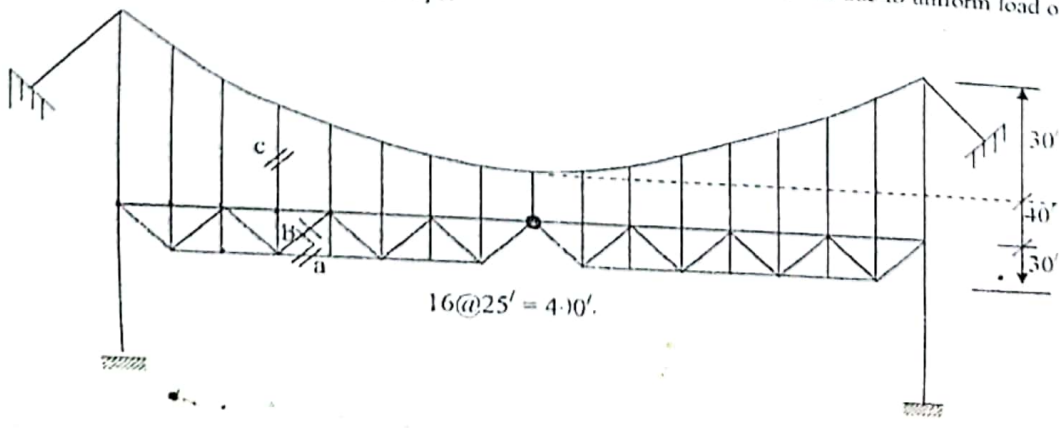
Deduce the criterion for maximum stress at any upper chord of the truss shown in figure below and find out the maximum stress of the same member due to the loading shown below.



Deduce the criterion for maximum tension in the member 'a' of non-parallel chord truss shown in figure below. Find out the maximum stress in the same member of the truss due to a series of moving concentrated loads as shown below.



Draw the influence lines for stresses in member a, b and c of the following suspension bridge shown in figure below and hence determine the maximum stress of the same members due to uniform load of 5 kips/ft and concentrated load of 20 kips.



Full Marks: 70

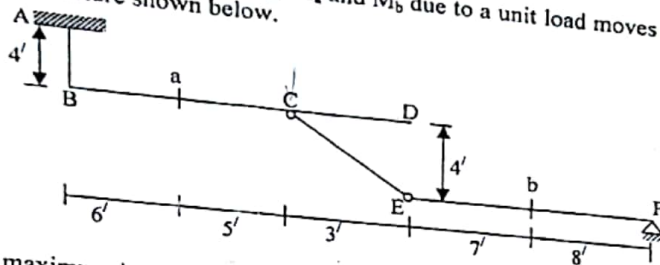
Time: 3 Hours

N.B.:-

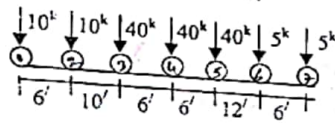
- (i) Answer **SIX** questions, taking **THREE** from each section.
- (ii) Figure in the margin indicates full marks.
- (iii) Use separate answer script for each section.
- (iv) Assume reasonable value for any data missing.

SECTION-A

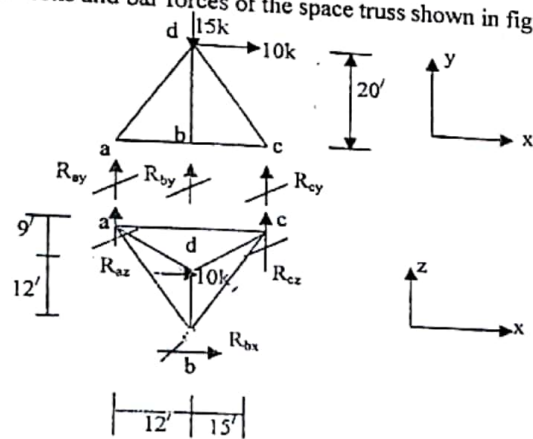
Q.1) Draw influence line diagrams for V_a , V_b , M_a and M_b due to a unit load moves from B to D and E to F for the following structure shown below. 11.67



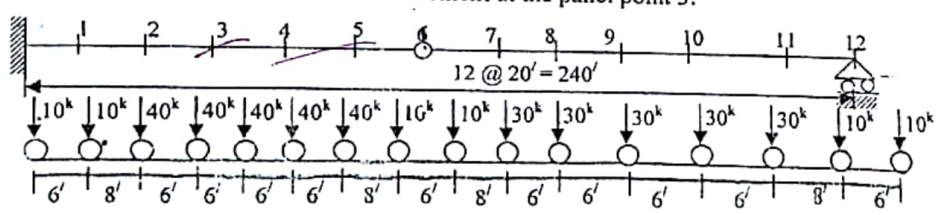
Q.2(a) Prove that the maximum bending moment at any section under any load will occur when the average load on the left section equal to the average load on the right of section. 2.67
 (b) For a simple span of 50 ft, calculate (i) the maximum moment at mid-span, and (ii) the absolute maximum moment due to loading shown in figure below. 9.00



Q.3) Determine the reactions and bar forces of the space truss shown in figure below. 11.67



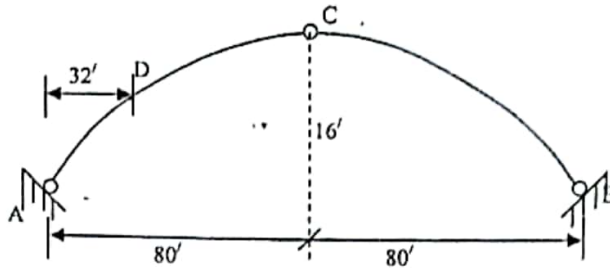
Q.4) Apply appropriate criteria to determine the position of moving loads and hence compute the maximum shear in the panel 4-5 and the maximum moment at the panel point 3. 11.67



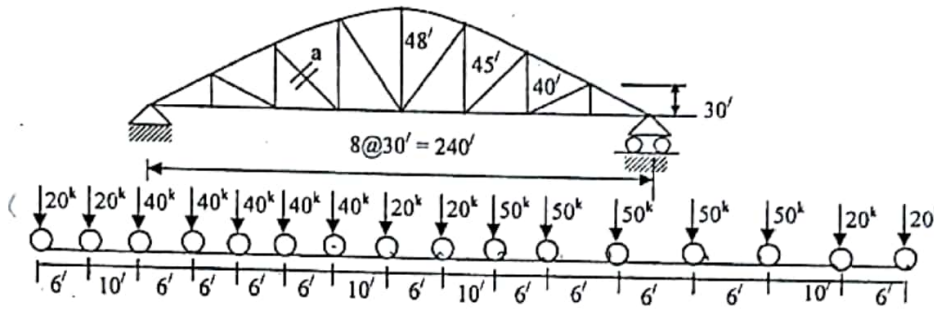
SECTION-B

local stiffness matrix

Draw influence lines for bending moment, shear force, and normal thrust at a section D of the following three hinged parabolic arch. Also obtain the maximum moment at section D for $1/20$ loading.



Apply proper criteria to determine the maximum positive and negative stresses in the member 'a' of the truss due to series of moving loads shown in figure below.

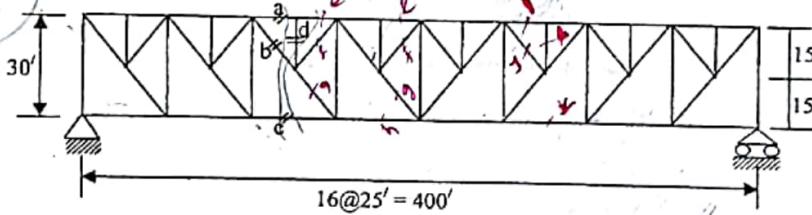


Deduce the criteria for maximum stress in the upper chord of truss without vertical.

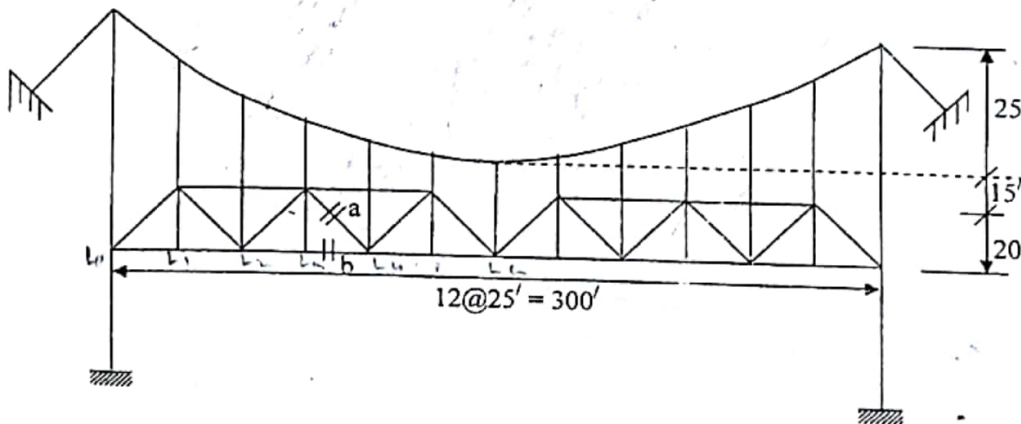
2.67

Calculate the maximum stress in the member a, b, c and d of the following truss due to H_{15} loading.

9.00



Draw the influence lines for hanger tension, maximum cable tension and stress in the member 'a' & 'b' of the suspension bridge shown in figure below. Calculate the maximum stress of the same member due to a uniform load of 2 k/ft with a concentrated load of 15 k.



CE 311
Structural Analysis & Design-I

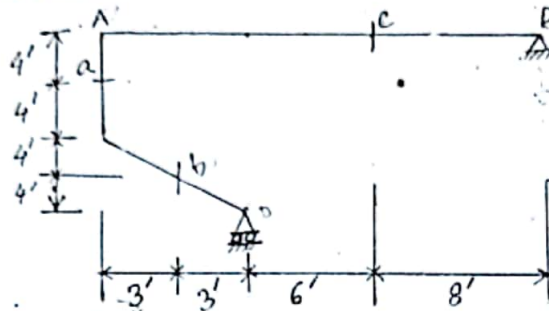
Full Marks: 70

Time: 3 Hours

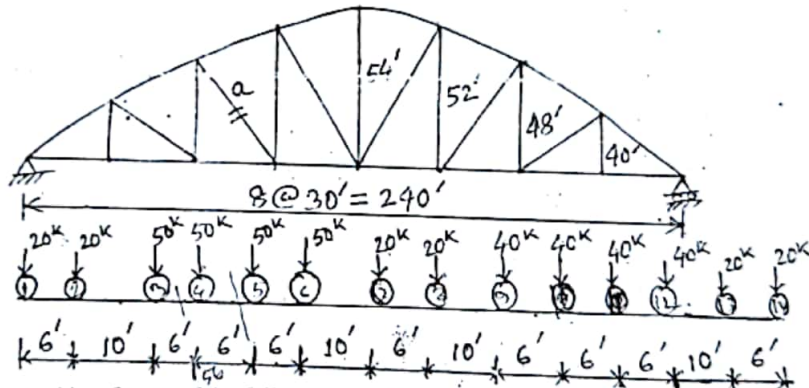
- N.B.:-
- (i) Answer SIX questions, taking THREE from each section.
 - (ii) Figures in the margin indicate full marks.
 - (iii) Use separate answer script for each section.
 - (iv) Assume reasonable value for any data missing.

SECTION-A

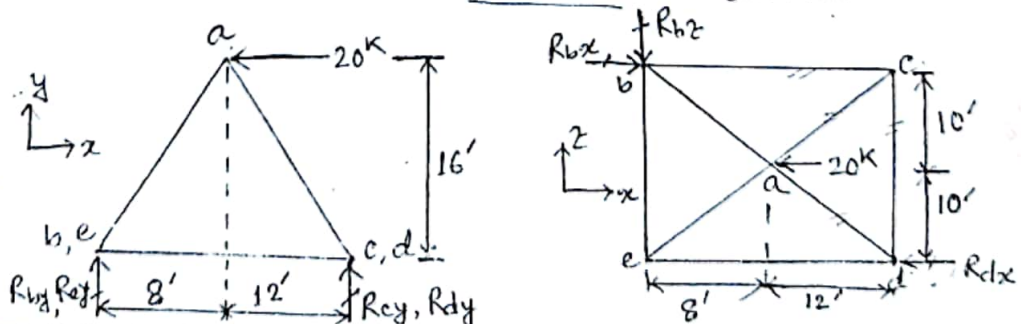
As a unit load moves from A to B, draw influence lines for shear and moment at a, b and c of the structure shown in figure below. 11.67



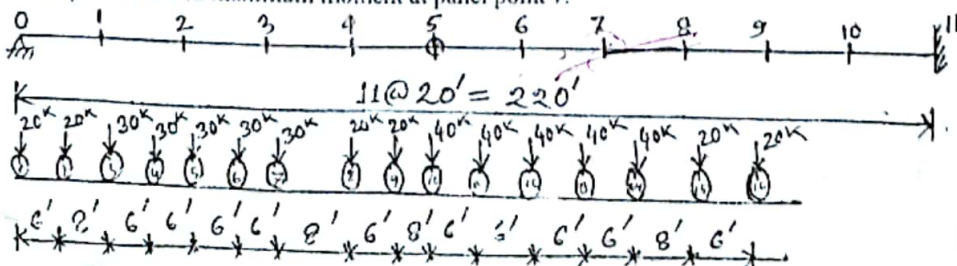
Deduce the criteria for the maximum stress in the member 'a' of the non-parallel chord truss shown in figure below. Find the maximum stress in the same member of the truss due to a series of moving concentrated load. 11.67



Compute the reactions and bar forces of the following space truss as shown in figure below. 11.67



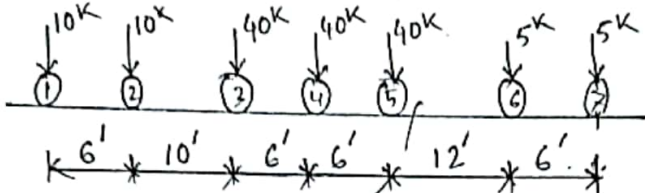
Apply appropriate criteria to determine the position of moving loads and hence compute the maximum shear in the panel 7-8 and maximum moment at panel point 7. 11.67



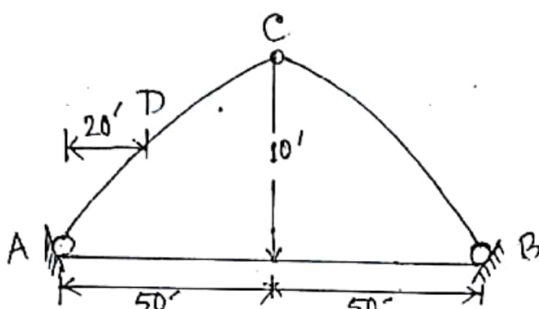
SECTION-B

Q.5 (a) Prove that the maximum bending moment at any section under any load will occur when the average load on the left of section equal to the average load on the right of section.

For a simple span of 50 ft, Calculate (i) The maximum moment at mid-span and (ii) The absolute maximum moment due to the loading shown in figure below.

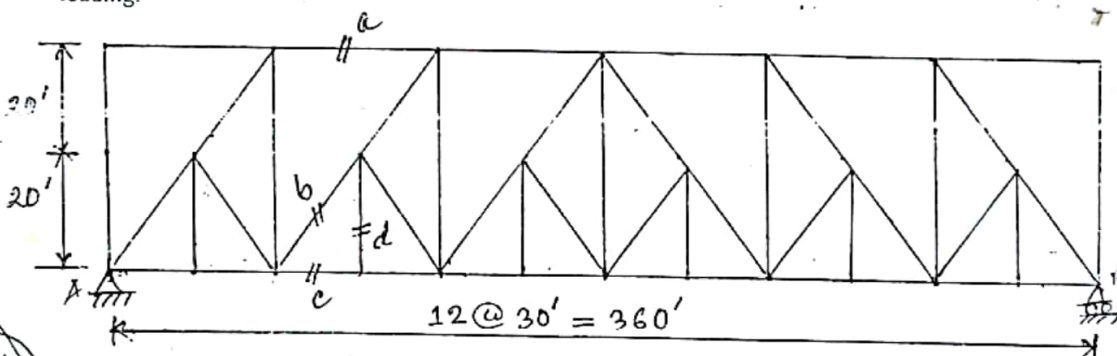


Draw influence lines for bending moment, shear force and normal thrust at a section D of the following three hinged parabolic arch. Also, obtain the maximum moment at section D for H_{15} loading.

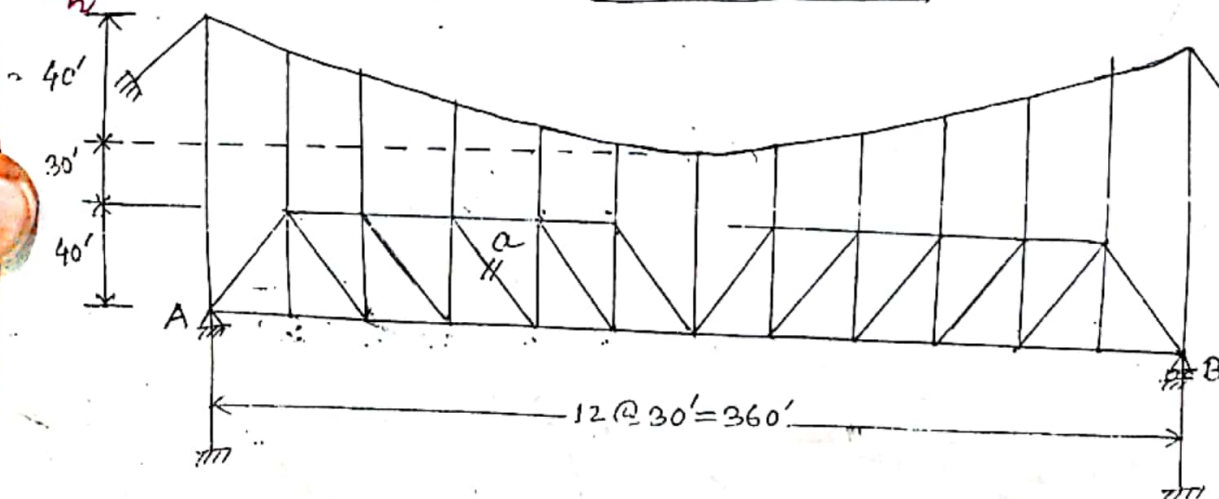


Q.7 (a) Deduce the criteria for maximum stress in the upper chord of truss without vertical.

Calculate the maximum live load stress in members a, b, c, and d of the following structure due to H_{30} loading.



Draw influence lines for hanger tension, maximum cable tension and stress in the member 'a' of the following suspension bridge shown in figure. Find the maximum stress in the member 'a' if the bridge is subjected to a uniform load of 5 k/ft and a moving concentrated load of 20 kip.



DEPARTMENT OF CIVIL ENGINEERING
 RAJSHAHI UNIVERSITY OF ENGINEERING & TECHNOLOGY
 B.Sc. Engineering THIRD year IIIrd Semester Examination, 2011

CE-3111
 Structural Analysis & Design - I

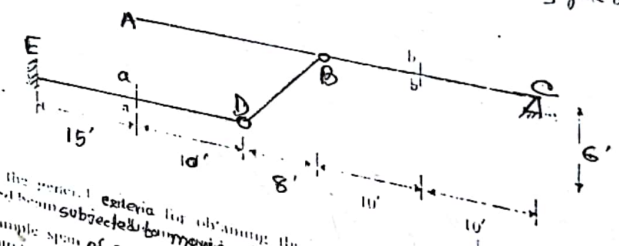
Time: 3 Hours

Full Marks: 70

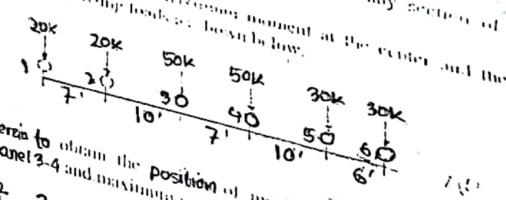
N.B.:

- (i) Answer SIX questions, taking THREE from each section.
- (ii) Figure in the margin indicates full marks.
- (iii) Use separate answer script for each section.
- (iv) Assume reasonable value for any missing data.

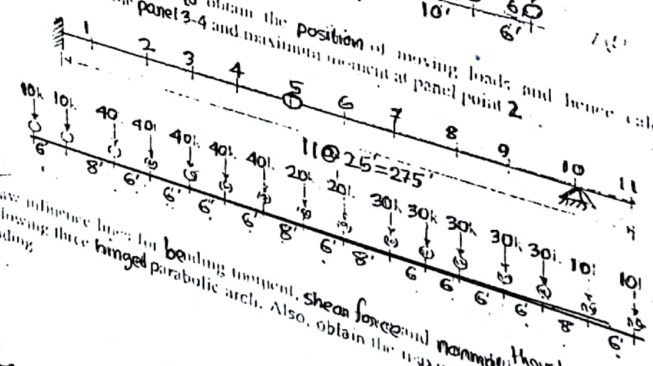
SECTION A
 Q.1 Draw the influence lines for M_a, M_b, V_a and V_b of the structure shown in figure below as a unit load moves from A to C. 11.67



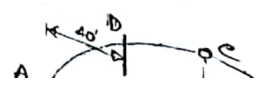
Q.2 Deduce the general criteria for obtaining the maximum shear at any section of a simply supported beam subjected to moving load. 2.67
 For a simple span of 20 ft calculate the maximum moment at the center and the absolute maximum moment due to the following loads as shown below. 9.00



Q.3 Apply appropriate criteria to obtain the position of moving load and hence calculate the maximum shear in the panel 3-4 and maximum moment at panel point 2. 11.67



Q.4 Draw influence lines for bending moment, shear force and normal thrust at a section D. Following three hinged parabolic arch. Also, obtain the maximum moment at section D.



4640
 13350

