



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR, SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

BCECD 213: THEORY OF STRUCTURE II

DATE: 11/12/2017

TIME: 8.30-10.30 AM

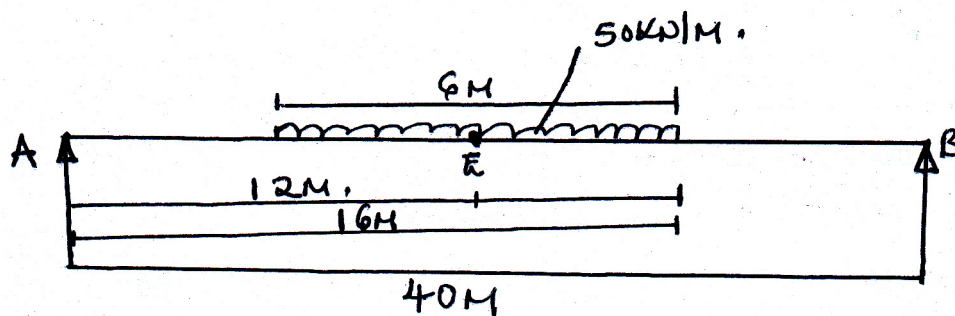
INSTRUCTIONS

Answer Question One and Any Other Two Questions

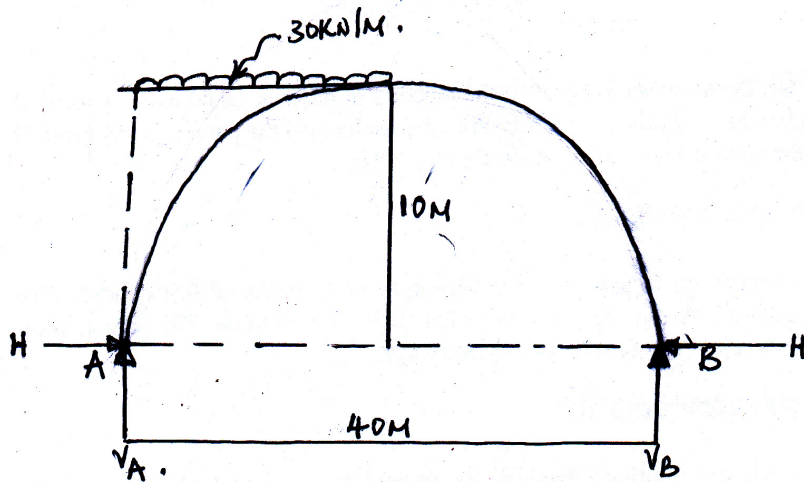
1. a) A uniformly distributed load of 50KN/M of 6m length crosses a girder of span 40m from left to right.

With the help of influence lines, determine the values of shear force and bending moment at a point 12m from the left support, when the load is 16m from the left support.

(20 marks)

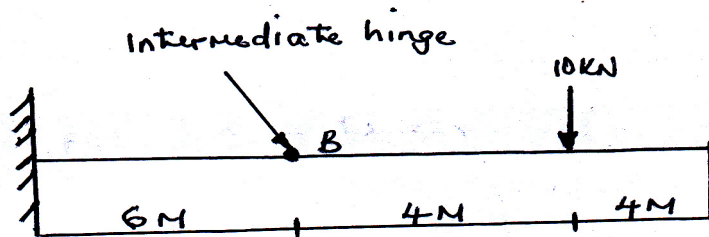


- b) A three-hinged parabolic arch of span 40m and rise 10m is carrying a uniformly distributed load as shown

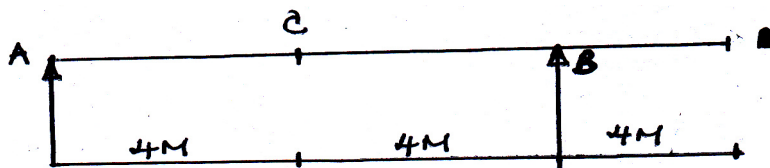


Find the horizontal thrust at the springing (10 marks)

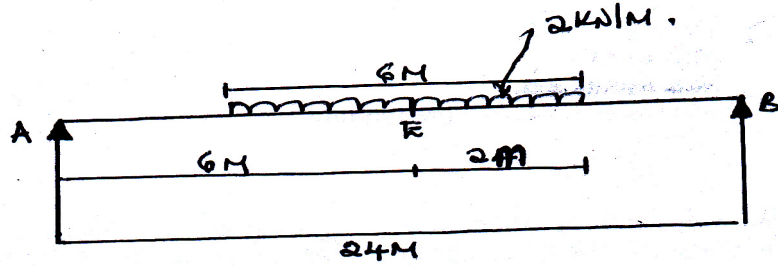
2. a) Draw the influence lines for the shear force and bending moment, when two concentrated loads cross over a beam (10 marks)
- b) Obtain the internal force diagram(SFD and BMD)for the beam (10 marks)



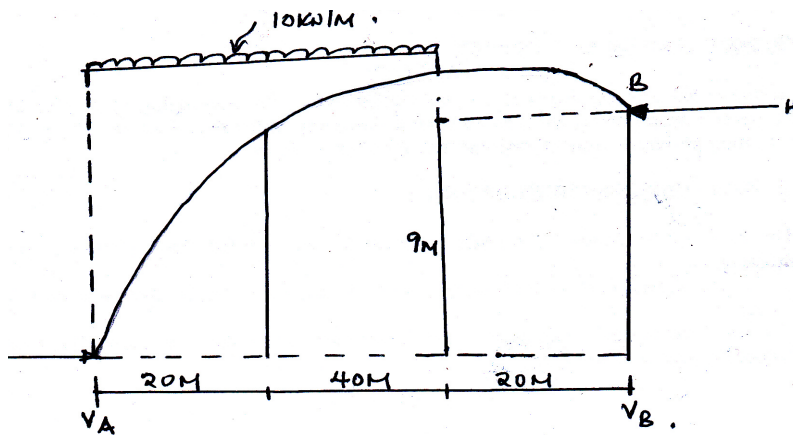
3. a) Two point loads of 50kN and 150kN, spaced 4m apart cross a girder of 12m span with 50kN leading. Find the value of maximum bending moment under the 150kN load on the girder
- b) Construct the influence line for:
 - i. Reaction of A and B
 - ii. Shear at point C
 - iii. Bending moment at point C in the following figure (10 marks)



4. In the following diagram, u.d.l of 2KN/M , 6m long crosses a girder of span 24m . Determine the values of S.F and B.M at a point E.



5. A three-hinged parabolic arch of 60m span is loaded as shown below.



Find the bending moment at a point P, which is 20m from the left hand support