




**FACULTY: ENGINEERING**  
**SEMESTER II EXAMINATIONS (JULY 2016)**  
**2015/2016 ACADEMIC SESSION**

  
HOD'S SIGNATURE

**COURSE CODE: CVE 312**  
**COURSE TITLE: STRUCTURAL MECHANICS**  
**DURATION: 2.5 Hours**

**INSTRUCTIONS:**

1. YOU ARE TO ANSWER ANY FOUR QUESTIONS
2. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM
3. YOU ARE NOT ALLOWED TO BORROW CALCULATORS AND ANY OTHER WRITING MATERIALS

ELIZADE UNIVERSITY, ILARA-MOKIN  
 FACULTY OF ENGINEERING  
 DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING  
 SECOND SEMESTER 2015/2016 EXAMINATIONS  
 CVE 312: STRUCTURAL MECHANICS

**Instructions:** Attempt any **FOUR** questions.

**Time allowed:** 2.5 hrs.

Name:..... Mat. No:.....

**Q1.** Using method of joints, determine forces in the members of the truss shown in Figure Q1.

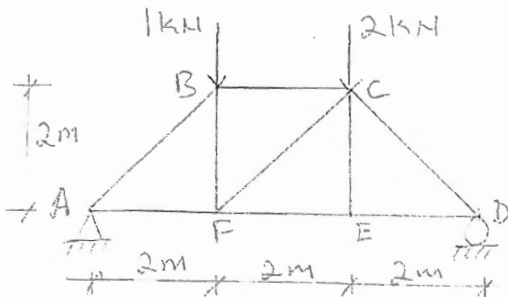


Figure Q1

**Q2.** Determine the forces in the members CD, DG, and GH for the truss shown in Figure Q2, using method of sections.

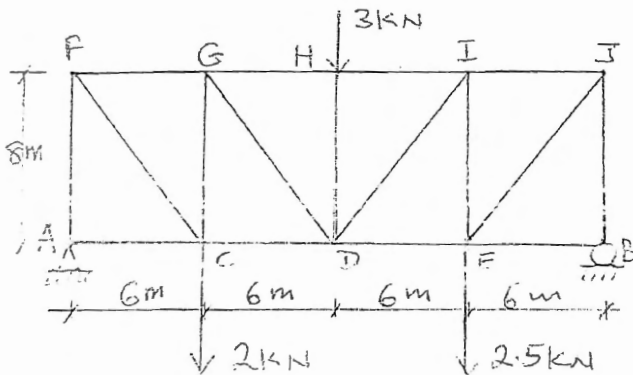


Figure Q2

Q3. Draw the Bending Moment and Shear Force Diagrams for the beam shown in Figure Q3.

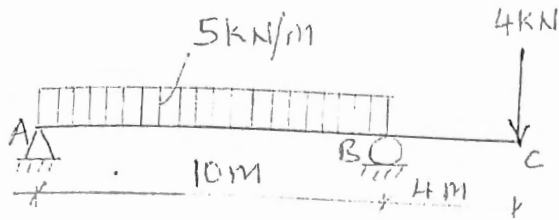


Figure Q3

Q4. Draw the Bending Moment and Shear Force Diagrams for the cantilever beam shown in Figure Q4.



Figure Q4

Q5a. Determine the slope of the beam shown in Figure Q5a at points B and C. Take  $E = 200 \times 10^3 \text{ N/mm}^2$  and  $I = 250 \times 10^6 \text{ mm}^4$ .

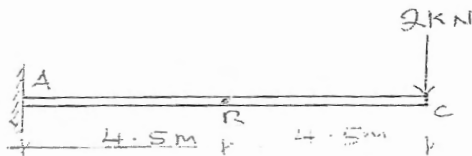


Figure Q5a

b. Determine the deflection of the beam shown in Figure Q5b at points B and C. Take  $E = 200 \text{ GPa} = 200 \times 10^3 \text{ N/mm}^2$ ,  $I_{AB} = 8 \times 10^6 \text{ mm}^4$  and  $I_{BC} = 4 \times 10^6 \text{ mm}^4$ .



Figure Q5b