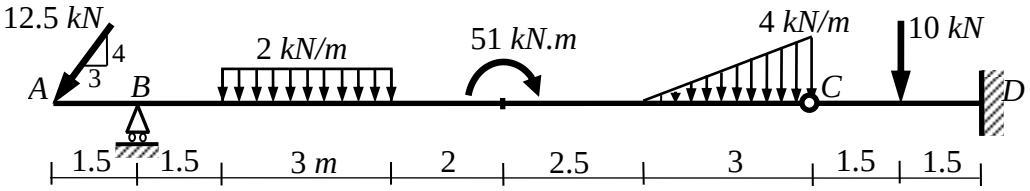
Ministry of Higher Education
Giza Higher Institute of Engineering & Technology
Civil Engineering Department
Course Name: **Theory of Structures (1)A**
Course Code: **CIV 111** Date: **7 / 3 / 2021**

Academic Year: **2020/2021**
Semester: **First**
Level: **1st Civil**
Time: **3 Hours**
Examiner: ***Dr. M. Abdel-Kader***

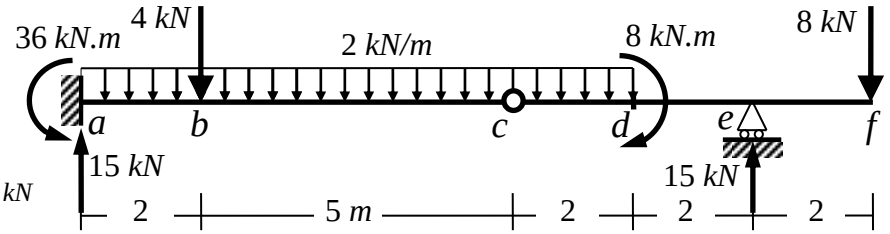
Final Exam

Total Marks: **90** No. of Questions: **45** (Attempt all questions)

Choose the nearest answer.

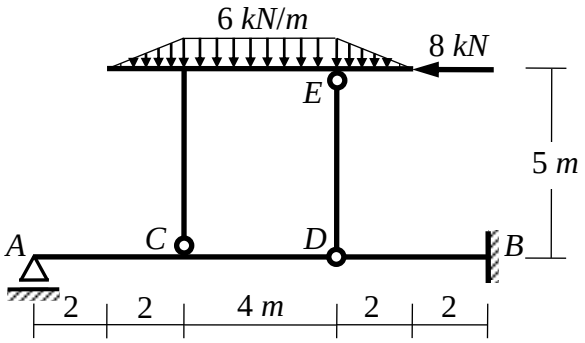


1. The shown beam is:
   (A) Statically Indeterminate. (B) Unstable. (C) Statically Determinate. (D) Simple beam.
2. The horizontal component of the inclined force at ***A*** is:
   (A) 7.5 *kN* ← (B) 10 *kN* → (C) 7.5 *kN* → (D) 10 *kN* ←
3. The vertical component of the inclined force at ***A*** is:
   (A) 10 *kN* ↑ (B) 10 *kN* ↓ (C) 7.5 *kN* ↑ (D) 7.5 *kN* ↓
4. The horizontal reaction at the fixed support ***D*** is:
   (A) 7.5 *kN* ← (B) 10 *kN* → (C) 7.5 *kN* → (D) 10 *kN* ←
5. The vertical reaction at the roller support ***B*** is:
   (A) 10 *kN* ↑ (B) 12 *kN* ↑ (C) 7.5 *kN* ↑ (D) 12 *kN* ↓
6. The vertical reaction at the intermediate hinge ***C*** is:
   (A) 15 *kN* (B) 12 *kN* (C) 30 *kN* (D) 10 *kN*
7. The vertical reaction at the fixed support ***D*** is:
   (A) 45 *kN* ↑ (B) 12 *kN* ↑ (C) 7.5 *kN* ↑ (D) 20 *kN* ↑
8. The moment reaction at the fixed support ***D*** is:
   (A) 30 *kN.m* ↺ (B) 45 *kN.m* ↻ (C) 30 *kN.m* ↻ (D) 15 *kN.m* ↻

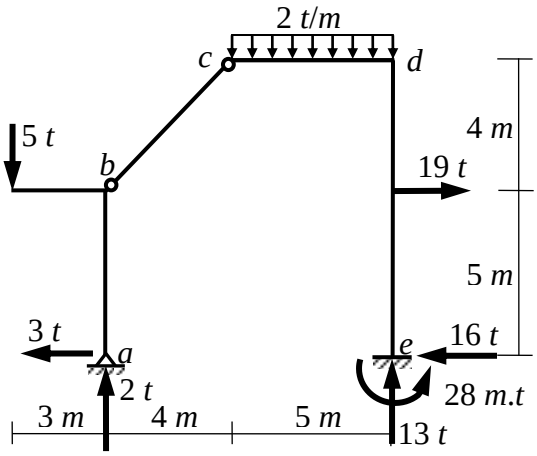


9. The normal force at ***c*** is:
   (A) 15 *kN* (B) zero (C) -8 *kN*
10. The shear force at ***a*** is:
    (A) 15 *kN* (B) 36 *kN* (C) -21 *kN*
11. The shear force just at the left of ***b*** is:
    (A) zero (B) 11 *kN* (C) -11 *kN* (D) 7 *kN*
12. The shear force just at the right of ***b*** is:
    (A) zero (B) 11 *kN* (C) -11 *kN* (D) 7 *kN*
13. The shear force at ***d*** is:
    (A) 8 (B) 11 *kN* (C) -11 *kN* (D) -7 *kN*
14. The shear force at ***f*** is:
    (A) 15 (B) 11 *kN* (C) -11 *kN* (D) 8 *kN*
15. The bending moment at ***a*** is:
    (A) -30 *kN.m* (B) 45 *kN.m* (C) 36 *kN.m* (D) -36 *kN.m*
16. The bending moment at ***c*** is:
    (A) -30 *kN.m* (B) 45 *kN.m* (C) zero (D) 15 *kN.m*
17. The bending moment just at the left of ***d*** is:
    (A) -30 *kN.m* (B) -2 *kN.m* (C) -10 *kN.m* (D) 15 *kN.m*
18. The bending moment just at the right of ***d*** is:
    (A) -30 *kN.m* (B) -2 *kN.m* (C) -10 *kN.m* (D) 15 *kN.m*
19. The bending moment at ***e*** is:
    (A) 16 *kN.m* (B) -2 *kN.m* (C) -16 *kN.m* (D) 15 *kN.m*
20. The bending moment at a distance of 4 *m* from the fixed support ***a*** is:
    (A) zero (B) 60 *kN.m* (C) -2.25 *kN.m* (D) 2.25 *kN.m*
21. The maximum positive bending moment for the beam is:
    (A) zero (B) 16 *kN.m* (C) 12.25 *kN.m* (D) 2.25 *kN.m*
22. The maximum negative bending moment for the beam is:
    (A) zero (B) -16 *kN.m* (C) -12.25 *kN.m* (D) -36 *kN.m*

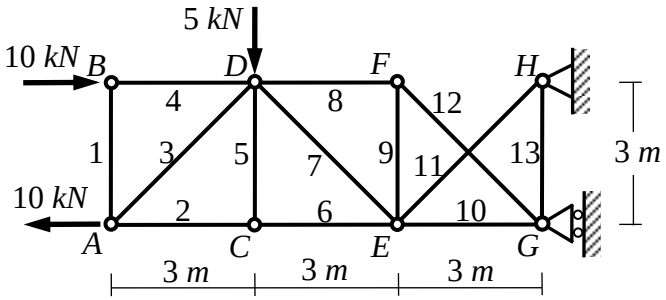
Please turn over



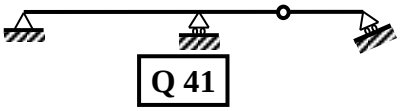
23. The horizontal reaction at the fixed support ***B*** is:
(A) 8 *kN* ← (B) 14 *kN* → (C) 8 *kN* → (D) 10 *kN* ←
24. The vertical reaction at the roller support ***A*** is:
(A) 10 *kN* ↑ (B) 14 *kN* ↑ (C) 8 *kN* ↑ (D) 14 *kN* ↓
25. The vertical reaction at the intermediate hinge ***C*** is:
(A) 14 *kN* (B) 10 *kN* (C) 22 *kN* (D) 28 *kN*
26. The vertical reaction at the fixed support ***B*** is:
(A) 14 *kN* ↑ (B) 12 *kN* ↑ (C) 8 *kN* ↑ (D) 22 *kN* ↑
27. The moment reaction at the fixed support ***B*** is:
(A) 88 *kN.m* ↺ (B) 88 *kN.m* ↻ (C) 8 *kN.m* ↻ (D) 22 *kN.m* ↻
28. The normal force between ***A*** and ***C*** is:
(A) -8 *kN* (B) 10 *kN* (C) 8 *kN* (D) zero

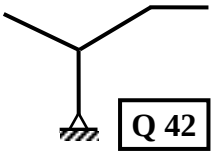


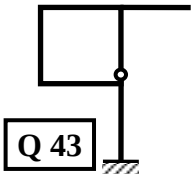
29. The normal force between ***a*** and ***b*** is:
(A) 3 *t* (B) -2 *t* (C) -5 *t* (D) 2 *t*
30. The normal force between ***b*** and ***c*** is:
(A) 4.243 *t* (B) -4.243 *t* (C) -5 *t* (D) 3 *t*
31. The normal force between ***c*** and ***d*** is:
(A) 5 *t* (B) -3 *t* (C) -16 *t* (D) 3 *t*
32. The shear force between ***a*** and ***b*** is:
(A) 5 *t* (B) 3 *t* (C) -2 *t* (D) 2 *t*
33. The shear force just at the right of ***c*** is:
(A) zero (B) 11 *t* (C) -2 *t* (D) -3 *t*
34. The shear force at ***e*** is:
(A) 19 (B) 28 *t* (C) 13 *t* (D) 16 *t*
35. The bending moment at ***d*** is:
(A) -30 *t.m* (B) 19 *t.m* (C) 36 *t.m* (D) -40 *t.m*
36. The bending moment at ***e*** is:
(A) -30 *t.m* (B) 19 *t.m* (C) 13 *t.m* (D) 28 *t.m*



37. The force in the member 1 (*AB*) is:
(A) 10 *kN* C (B) 10 *kN* T (C) 5 *kN* T (D) zero
38. The force in the member 4 (*BD*) is:
(A) 10 *kN* C (B) 10 *kN* T (C) 5 *kN* T (D) 5 *kN* C
39. The force in the member 8 (*DF*) is:
(A) 10 *kN* C (B) 10 *kN* T (C) 5 *kN* T (D) 5 *kN* C
40. The force in the member 10 (*EG*) is:
(A) 10 *kN* C (B) 10 *kN* T (C) 5 *kN* T (D) 5 *kN* C


Q 41


Q 42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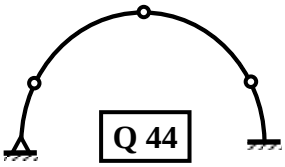
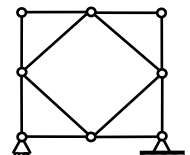

Q 44


Q 45

41. The shown structure is:
(A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree
42. The shown structure is:
(A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree
43. The shown structure is:
(A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree
44. The shown structure is:
(A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree
45. The shown structure is:
(A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree

With my best wishes
Dr. M. Abdel-Kader