

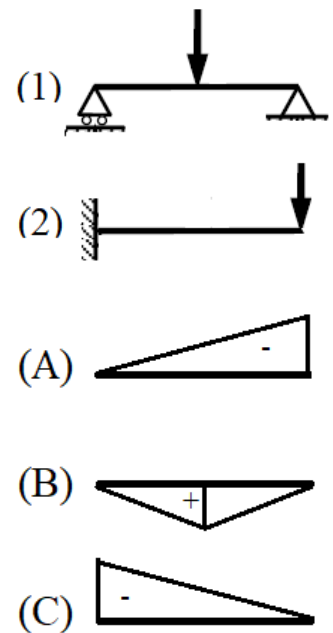
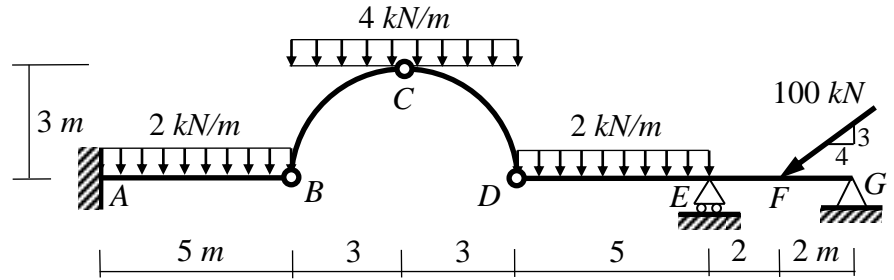
### Final Exam

Total Marks: 90

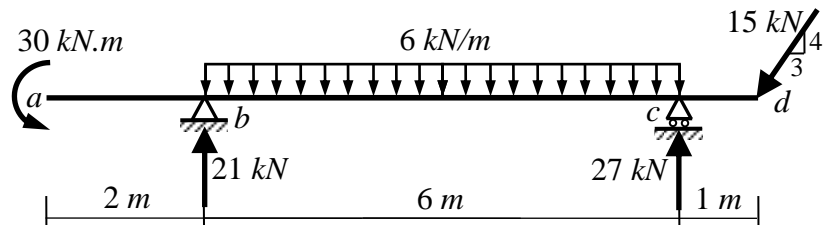
No. of Questions: 45 (Attempt all questions)

Choose the nearest answer.

- The horizontal component of the inclined force at **F** is:  
(A) 60 kN → (B) 60 kN ← (C) 80 kN ← (D) 80 kN →
- The vertical reaction at the intermediate hinge **B** is:  
(A) 4 kN (B) 12 kN (C) 24 kN (D) 6 kN
- The horizontal reaction at the intermediate hinge **B** is:  
(A) 24 kN (B) 4 kN (C) 12 kN (D) 6 kN
- The horizontal reaction at the fixed support **A** is:  
(A) 86 kN → (B) 6 kN → (C) 60 kN → (D) 80 kN →
- The vertical reaction at the fixed support **A** is:  
(A) 22 kN ↑ (B) 12 kN ↑ (C) 10 kN ↑ (D) 60 kN ↑
- The moment reaction at the fixed support **A** is:  
(A) 35 kN.m ⤵ (B) 60 kN.m ⤵ (C) 25 kN.m ⤵ (D) 85 kN.m ⤵
- The vertical reaction at the roller support **E** is:  
(A) 60 kN ↑ (B) 82 kN ↑ (C) 10.5 kN ↑ (D) 73.25 kN ↑
- The horizontal reaction at the hinged support **G** is:  
(A) 80 kN → (B) 54 kN → (C) 74 kN → (D) 86 kN →
- The vertical reaction at the hinged support **G** is:  
(A) 8.75 kN ↑ (B) zero (C) 22 kN ↑ (D) 71.5 kN ↑
- For the shown simple beam in (1), the B.M.D is:  
(A) A (B) B (C) C (D) None
- For the shown cantilever beam in (2), the B.M.D is:  
(A) A (B) B (C) C (D) None

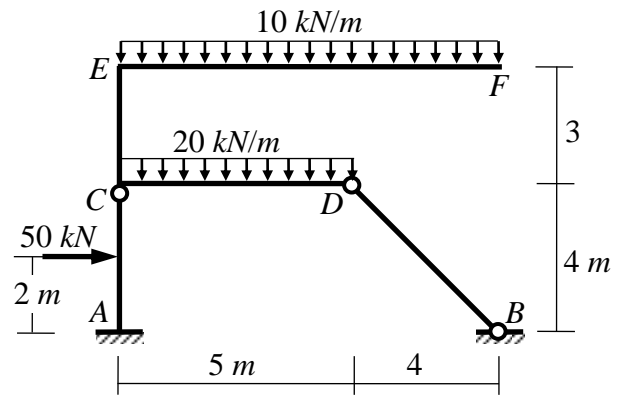


- The normal force at **c** is:  
(A) -9 kN (B) -12 kN (C) -15 kN
- The shear force at **a** is:  
(A) zero (B) -30 kN (C) 30 kN
- The shear force just at the right of **b** is:  
(A) zero (B) -9 kN (C) 21 kN
- The shear force at **d** is:  
(A) -9 kN (B) 12 kN (C) 15 kN (D) 9 kN
- The bending moment at **b** is:  
(A) 21 kN.m (B) -30 kN.m (C) -60 kN.m (D) -42 kN.m
- The bending moment at **c** is:  
(A) 9 kN.m (B) -9 kN.m (C) -15 kN.m (D) -12 kN.m
- The bending moment at a distance of 3 m from the hinged support **b** is:  
(A) 27 kN.m (B) 63 kN.m (C) 6 kN.m (D) 32 kN.m
- The maximum positive bending moment in the beam is at a distance of ..... from the hinged support **b**:  
(A) 1.9 m (B) 2.5 m (C) 3 m (D) 3.5 m
- The maximum positive bending moment in the beam is:  
(A) 30.5 kN.m (B) 65.72 kN.m (C) 33.25 kN.m (D) 6.75 kN.m

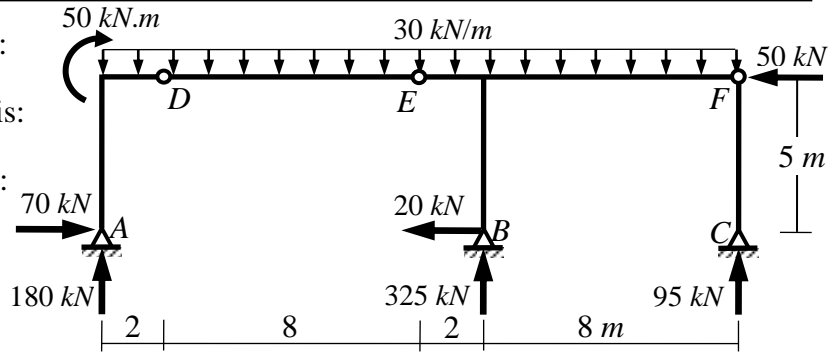


**Please turn over**

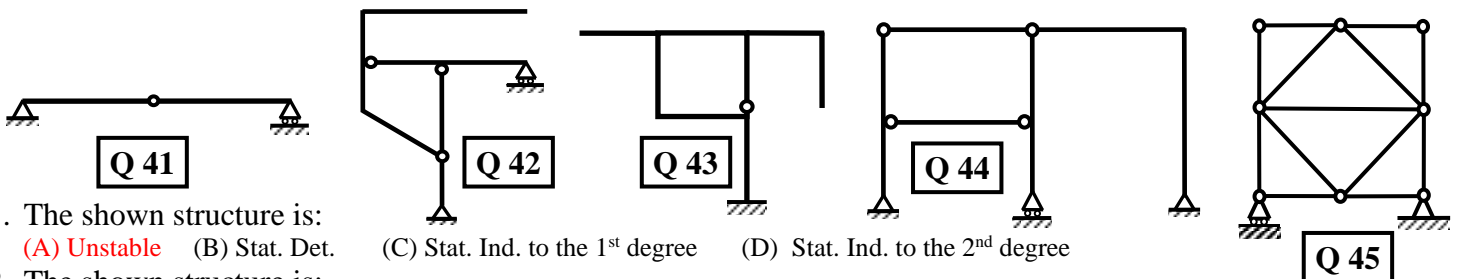
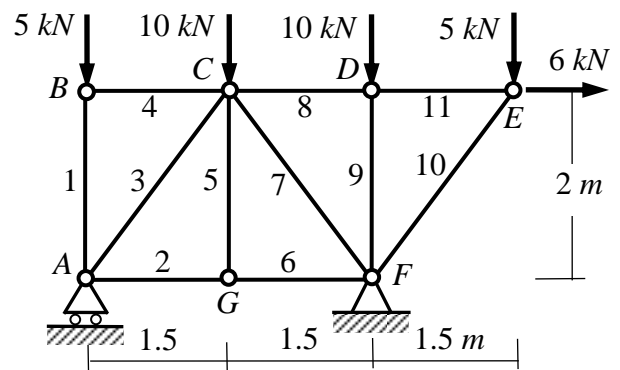
21. The value of the force in the link member **BD** is:  
 (A) 185.3 kN (B) 28.8 kN (C) 20 kN (D) 131 kN
22. The horizontal reaction at the hinged support **B** is:  
 (A) 131 kN ← (B) 20 kN ← (C) 20 kN → (D) 185.3 kN ←
23. The vertical reaction at the hinged support **B** is:  
 (A) 20 kN ↓ (B) 20 kN ↑ (C) 131 kN ↑ (D) 90.8 kN ↑
24. The horizontal reaction at the fixed support **A** is:  
 (A) 181 kN → (B) 81 kN → (C) 50 kN → (D) 50 kN ←
25. The vertical reaction at the fixed support **A** is:  
 (A) 100 kN ↑ (B) 190 kN ↑ (C) 95 kN ↑ (D) 59 kN ↑
26. The moment reaction at the fixed support **A** is:  
 (A) 242 kN.m ⤵ (B) 424 kN.m ⤵ (C) 100 kN.m ⤵ (D) 250 kN.m ⤵



27. The normal force in the left column above **A** is:  
 (A) -70 kN (B) 70 kN (C) -180 kN (D) 180 kN
28. The normal force in the right column above **C** is:  
 (A) zero (B) 50 kN (C) -95 kN (D) -50 kN
29. The normal force in the part **DE** of the beam is:  
 (A) -180 kN (B) -70 kN (C) -20 kN (D) -50 kN
30. The shear force in the left column above **A** is:  
 (A) -70 kN (B) -180 kN (C) zero (D) -50 kN
31. The shear force in the beam at **D** is:  
 (A) 120 kN (B) 180 kN (C) 60 kN (D) 50 kN
32. The maximum negative bending moment in the left column is:  
 (A) -250 kN.m (B) -70 kN.m (C) -50 kN.m (D) -350 kN.m
33. The maximum positive bending moment in the part **DE** of the beam is:  
 (A) 120 kN.m (B) 50 kN.m (C) 30 kN.m (D) 240 kN.m
34. The maximum positive bending moment in the part **EF** of the beam is:  
 (A) 150 kN.m (B) 240 kN.m (C) 250 kN.m (D) 50 kN.m



35. The horizontal reaction at the hinged support **F** is:  
 (A) 30 kN ← (B) 6 kN ← (C) 11 kN ← (D) zero
36. The vertical reaction at the hinged support **A** is:  
 (A) 24 kN ↑ (B) 3.5 kN ↑ (C) 30 kN ↑ (D) 12 kN ↑
37. The force in the member 1 (**AB**) is:  
 (A) 5 kN C (B) 5 kN T (C) 3.5 kN C (D) 30 kN C
38. The force in the member 4 (**BC**) is:  
 (A) zero (B) 5 kN T (C) 5 kN C (D) 10 kN T
39. The force in the member 8 (**CD**) is:  
 (A) 3.75 kN T (B) 15 kN T (C) 9.75 kN T (D) 3.75 kN C
40. The force in the member 3 (**AC**) is:  
 (A) 5.875 kN T (B) 14.14 kN T (C) 7.07 kN T (D) 1.875 kN T



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