

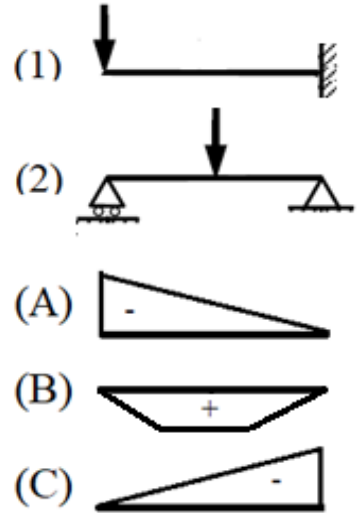
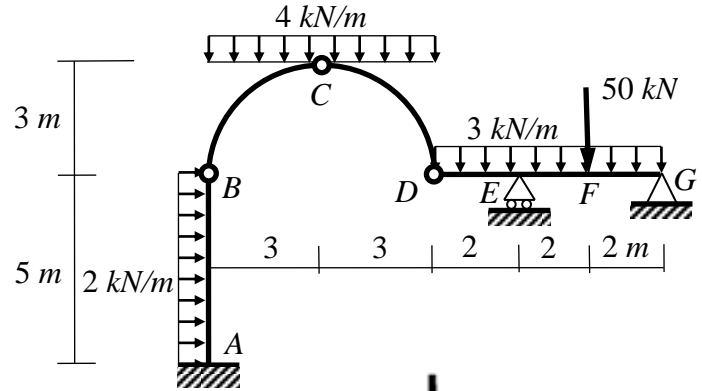
Final Exam

Total Marks: **50**

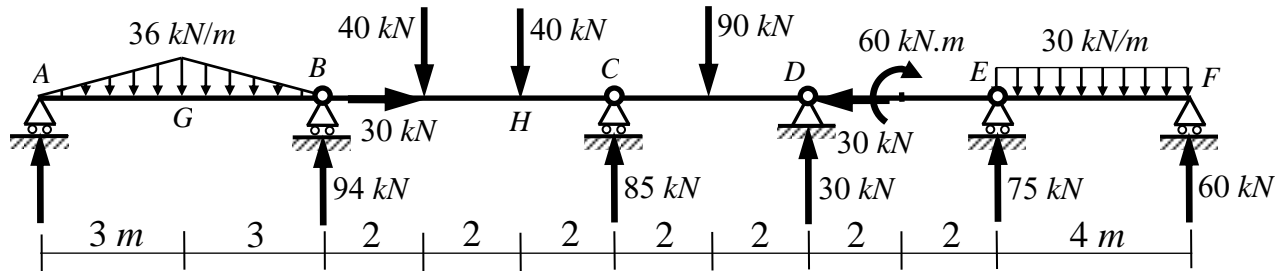
No. of Questions: **50** (Attempt all questions)

Choose the nearest answer.

- The vertical reaction at the intermediate hinge **B** is:
(A) 12 kN (B) 4 kN (C) 24 kN (D) 6 kN
- The horizontal reaction at the intermediate hinge **B** is:
(A) 12 kN (B) 4 kN (C) 24 kN (D) 6 kN
- The vertical reaction at the intermediate hinge **C** is:
(A) 12 kN (B) 4 kN (C) zero (D) 6 kN
- The horizontal reaction at the intermediate hinge **C** is:
(A) 12 kN (B) 4 kN (C) 24 kN (D) 6 kN
- The horizontal reaction at the fixed support **A** is:
(A) 4 kN ← (B) 6 kN → (C) 10 kN ← (D) 6 kN ←
- The vertical reaction at the fixed support **A** is:
(A) 22 kN ↑ (B) 24 kN ↑ (C) 12 kN ↑ (D) 10 kN ↑
- The moment reaction at the fixed support **A** is:
(A) 5 kN.m ∪ (B) 30 kN.m ∪ (C) 25 kN.m ∪ (D) 55 kN.m ∪
- The vertical reaction at the roller support **E** is:
(A) 68 kN ↑ (B) 56.5 kN ↑ (C) 25 kN ↑ (D) 32.5 kN ↑
- The horizontal reaction at the hinged support **G** is:
(A) 4 kN → (B) 6 kN ← (C) 4 kN ← (D) 16 kN →
- The vertical reaction at the hinged support **G** is:
(A) 65.5 kN ↑ (B) 23.5 kN ↑ (C) 55 kN ↑ (D) 47.5 kN ↑



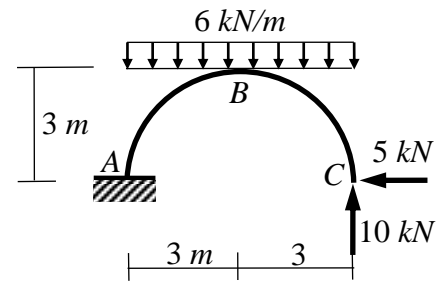
- For the shown cantilever beam in (1), the B.M.D is:
(A) A (B) B (C) C (D) None
- For the shown simple beam in (2), the B.M.D is:
(A) A (B) B (C) C (D) None



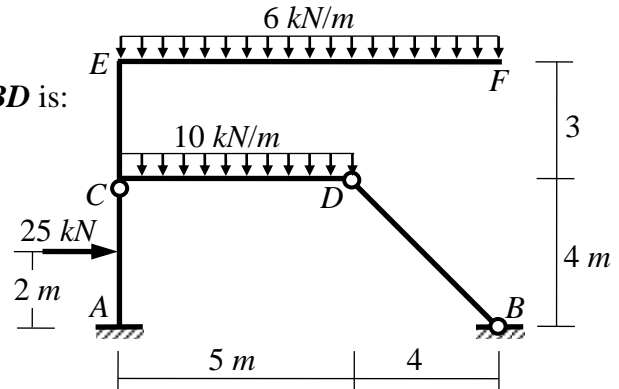
- For the shown beam, the vertical reaction at the support **A** is:
(A) 45 kN (B) 54 kN (C) 108 kN (D) 72 kN
- For the shown beam, the normal force at **C** is:
(A) -30 kN (B) -85 kN (C) 30 kN (D) -40 kN
- The shear force at **A** is:
(A) zero (B) 54 kN (C) 36 kN (D) 18 kN
- The shear force just at the right of **B** is:
(A) 148 kN (B) 40 kN (C) 94 kN (D) 54 kN
- The shear force just at the right of **D** is:
(A) -30 kN (B) 30 kN (C) 60 kN (D) -15 kN
- The bending moment at **G** is:
(A) 81 kN.m (B) 324 kN.m (C) 162 kN.m (D) 108 kN.m
- The bending moment at **H** is:
(A) 60 kN.m (B) 376 kN.m (C) 40 kN.m (D) 80 kN.m
- The maximum positive bending moment in the beam is at a distance of from the support **A**:
(A) 8 m (B) 14 m (C) 3 m (D) 22 m
- The maximum positive bending moment in the beam is:
(A) 162 kN.m (B) 90 kN.m (C) 108 kN.m (D) 324 kN.m

Please turn over

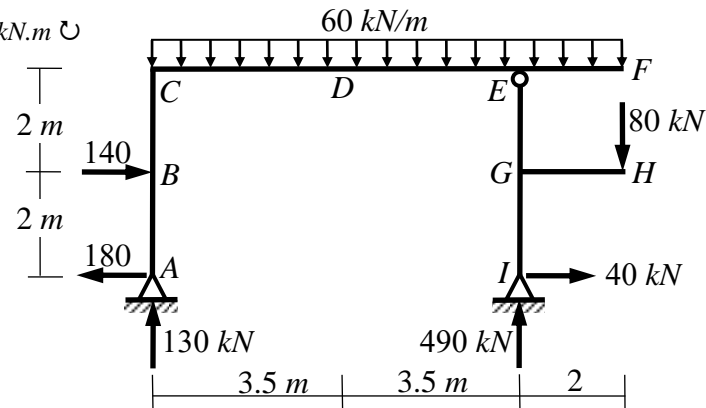
22. For the shown circular arch, the normal force at **A** is:
 (A) 4 kN (B) -36 kN (C) -26 kN (D) 10 kN
23. The shear force at **A** is:
 (A) zero (B) 36 kN (C) -5 kN (D) 10 kN
24. The bending moment at **A** is:
 (A) -48 kN.m (B) -108 kN.m (C) -60 kN.m (D) -168 kN.m
25. The normal force at **B** is:
 (A) -10 kN (B) -8 kN (C) 10 kN (D) -5 kN
26. The shear force at **B** is:
 (A) -10 kN (B) 18 kN (C) -5 kN (D) 8 kN
27. The bending moment at **B** is:
 (A) 30 kN.m (B) -12 kN.m (C) -15 kN.m (D) 15 kN.m



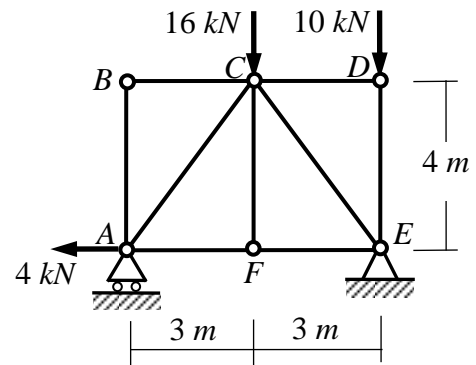
28. For the shown frame, the value of the force in the link member **BD** is:
 (A) 73.6 kN (B) 54 kN (C) 104 kN (D) 79.2 kN
29. The horizontal reaction at the hinged support **B** is:
 (A) 79.2 kN ← (B) 73.6 kN ← (C) 25 kN → (D) 25 kN ←
30. The vertical reaction at the hinged support **B** is:
 (A) 79.2 kN ↓ (B) 79.2 kN ↑ (C) 104 kN ↑ (D) 73.6 kN ↑
31. The horizontal reaction at the fixed support **A** is:
 (A) 79.2 kN → (B) 48.6 kN → (C) 25 kN → (D) 73.6 kN ←
32. The vertical reaction at the fixed support **A** is:
 (A) 94 kN ↑ (B) 54 kN ↑ (C) 30.4 kN ↑ (D) 79.2 kN ↑
33. The moment reaction at the fixed support **A** is:
 (A) 244 kN.m ⤵ (B) 424 kN.m ⤵ (C) 50 kN.m ⤵ (D) 175 kN.m ⤵



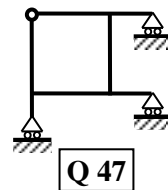
34. The normal force in the left column at **B** is:
 (A) -540 kN (B) -140 kN (C) -180 kN (D) -130 kN
35. The normal force in the right column above **G** is:
 (A) -490 kN (B) -80 kN (C) -410 kN (D) 80 kN
36. The normal force in the beam at **D** is:
 (A) 180 kN (B) -140 kN (C) 40 kN (D) 130 kN
37. The shear force in the left column at **A** is:
 (A) 180 kN (B) 130 kN (C) zero (D) 140 kN
38. The shear force in the beam at **D** is:
 (A) 130 kN (B) -80 kN (C) 40 kN (D) -40 kN
39. The bending moment in the right column just above **G** is:
 (A) 240 kN.m (B) 490 kN.m (C) 180 kN.m (D) -80 kN.m
40. The maximum positive bending moment in the left column is:
 (A) 280 kN.m (B) 520 kN.m (C) 720 kN.m (D) 440 kN.m
41. The maximum positive bending moment in the beam is:
 (A) 581 kN.m (B) 528 kN.m (C) 440 kN.m (D) 608 kN.m



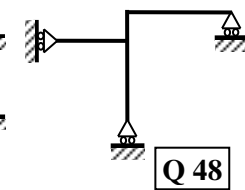
42. For the shown truss, the vertical reaction at the hinged support **E** is:
 (A) 10 kN ↑ (B) 18 kN ↑ (C) 16 kN ↑ (D) 14 kN ↑
43. The force in the member **AB** is:
 (A) zero (B) 8 kN T (C) 8 kN C (D) 16 kN C
44. The force in the member **CD** is:
 (A) zero (B) 10 kN T (C) 10 kN C (D) 26 kN C
45. The force in the member **AF** is:
 (A) zero (B) 8 kN T (C) 10 kN T (D) 4 kN T
46. The force in the member **CE** is:
 (A) 16 kN C (B) 10 kN T (C) 14 kN C (D) 10 kN C



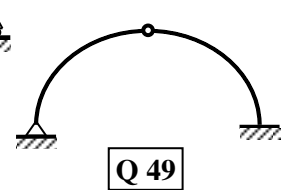
47. The shown structure in Q 47 is:
 (A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree
48. The shown structure in Q 48 is:
 (A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree
49. The shown structure in Q 49 is:
 (A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree
50. The shown structure in Q 50 is:
 (A) Unstable (B) Stat. Det. (C) Stat. Ind. to the 1st degree (D) Stat. Ind. to the 2nd degree



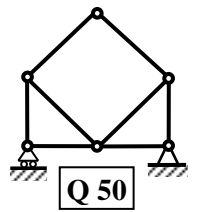
Q 47



Q 48



Q 49



Q 50