PRACTICE SHEET-2

Questions based on Types of Beam

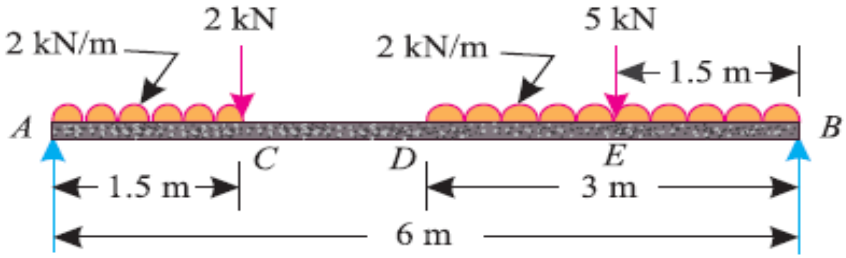
1. A simply supported beam AB of span 4 m is carrying a point loads of 5, 2 and 3 kN at 1, 2 and 3 m respectively from the support A. Calculate the reactions at the supports A and B.

[**Ans.** 5.5 kN and 4.5 kN]

2. A simply supported beam of span 6 m is carrying a uniformly distributed load of 2 kN/m over a length of 3 m from the right end B. Calculate the support reactions.

[**Ans.** R_A = 1.5 kN, R_B = 4.5 kN]

3. A simply supported beam AB of span 6 m is loaded as shown in Fig. Determine the reactions at A and B.

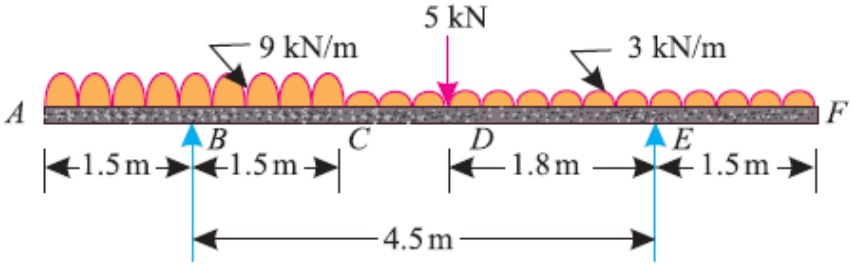


[**Ans.** 6.875 kN, 9.125 kN]

4. A beam AB 6 m long rests on two supports 4 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 1 kN/m over the entire length of the beam. Determine the reactions at the two supports.

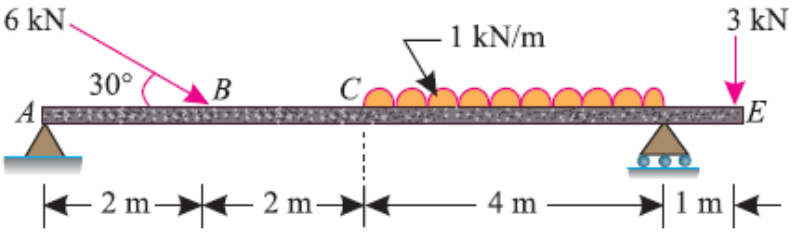
[Ans. R_A = 1.5 kN, R_B = 4.5 kN]

5. A beam ABCDEF of 7.5 m long and span 4.5 m is supported at B and E. The beam is loaded as shown in Fig. Find the support reactions at the two supports.



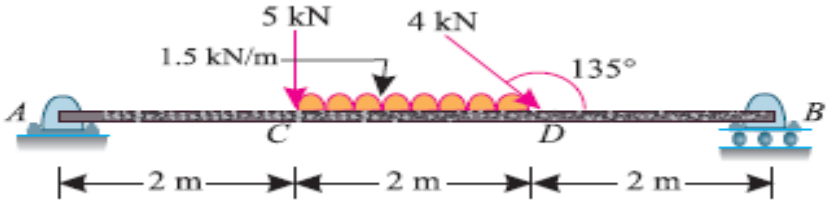
[**Ans.** R_B = 29.33 kN, R_E = 12.57 kN]

6. A beam ABCDE hinged at A and supported on rollers at D, is loaded as shown in Fig. Find the reactions at A and D.



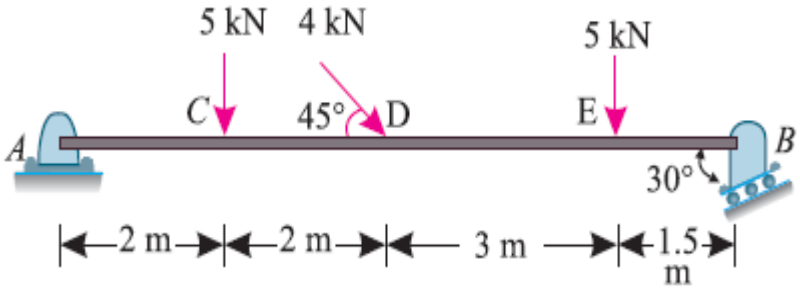
[**Ans.** R_A = 5.94 kN, R_D = 7.125 kN, ϕ = 61°]

7. A beam AB of 6 m span is loaded as shown in Fig. Determine the reactions at A and B.



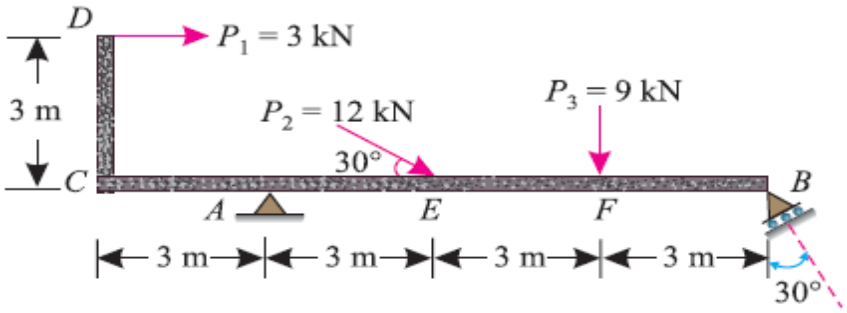
[**Ans.** R_A = 6.44 kN R_B = 5.05 kN ϕ = 26.1° **]**

8. A beam AB 8.5 m long is hinged at A and supported on rollers over a smooth surface inclined at 30° to the horizontal at B. The beam is loaded as shown in Fig. 12.21. Determine the reactions at A and B.



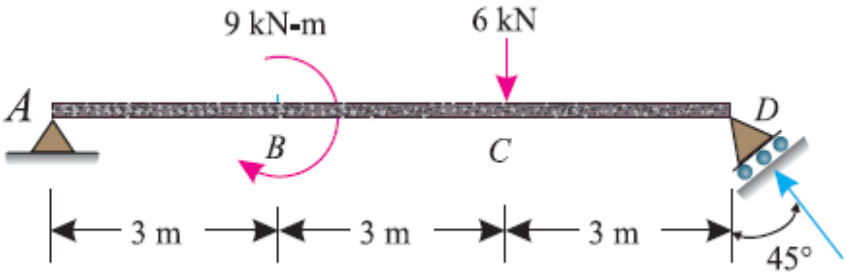
[**Ans.** R_B = 7.65 kN R_A = 6.28 kN ϕ = 9.1° **]**

9. A beam has hinged support at A and roller support at B as shown in Fig. The beam is subjected to loads as shown. Determine analytically the reactions at A and B.



[**Ans.** R_B = 10.4 kN R_A = 10.16 kN ϕ = 53.8°]

10. Fig. shows as beam ABCD simply supported on a hinged support at A and at D on a roller support inclined at 45° with the vertical. Determine the horizontal and vertical components of reaction at support A. Show clearly the direction as well as the magnitude of the resultant reaction at A.



[**Ans.** R_A = 5.1 kN ϕ = 78.7° R_D = 7.07 kN]