FAQ

1.Find the reactions at the support for the simply supported beam of span 5.5 m with loads 10kN, 15kN and 5kN at 2m, 3.5m and 4.5m from the left support.

Take clockwise moment about left support A, $\Sigma M_A=0$

$10x2+15x3.5+5x4.5-R_Bx5.5=0$

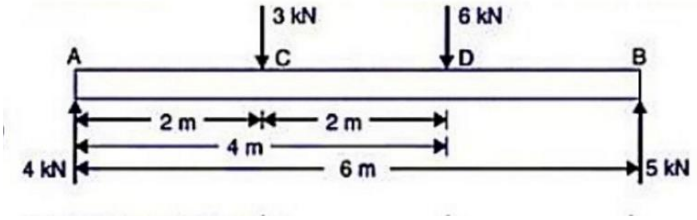
$R_B=17.3kN$

$R_A=30- R_B=13.7kN$

2.Write about the variation of shear force and bending moment diagrams with respect to loads?

S.No	Point load	UDL	UVL
Shear force	Constant	linear	parabolic
Bending moment	Linear	parabolic	cubic

3.Calculate the shear force and draw shear force diagram and bending moment diagram for the given simply supported beam?



Reaction: $R_A=4kN$ and $R_B=5kN$

Shear force calculation:

At A, $F_A=R_A=4kN$

At C, $F_C=R_A-3=1kN$

At D, $F_D=1-6=-5kN$

At B, $F_B=-5kN$

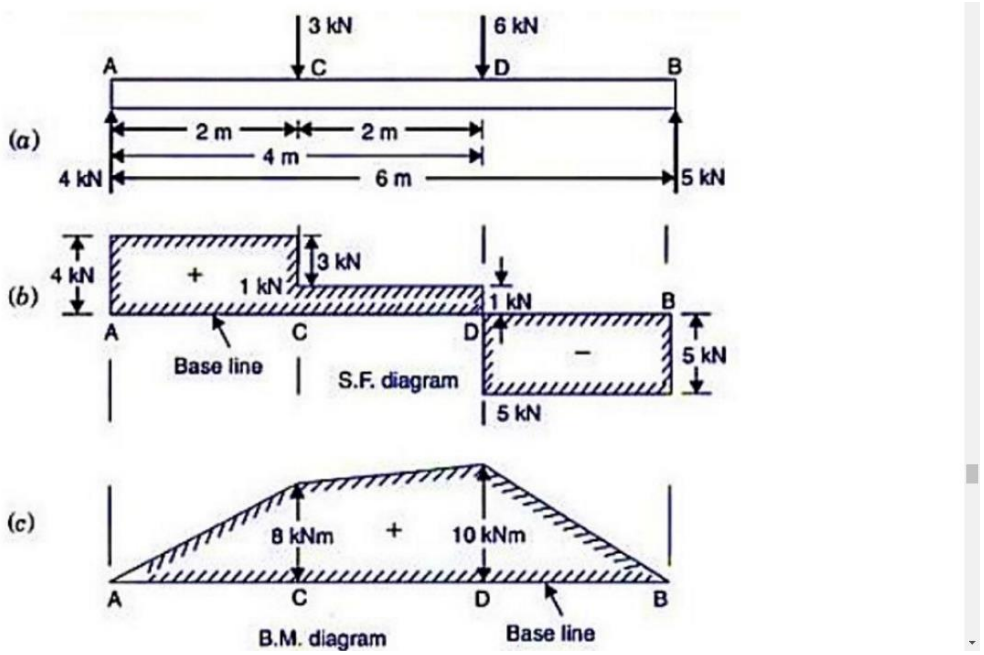
Bending moment calculation:

At A, $M_A=0$

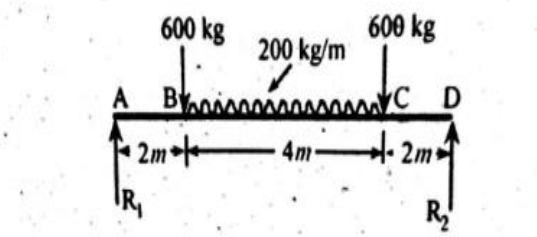
At C, $M_C=R_Ax2=4x2=8kNm$

At D, $M_D=R_Ax4-3x2=4x4-3x2=10kNm$

At B, $M_B=0$



4.Draw the shear force and bending moment diagram for given simply supported beam?



Reactions: $R_1=R_2=W/2=$ (600+600+200x4)/2=1000kg

Shear force calculation:

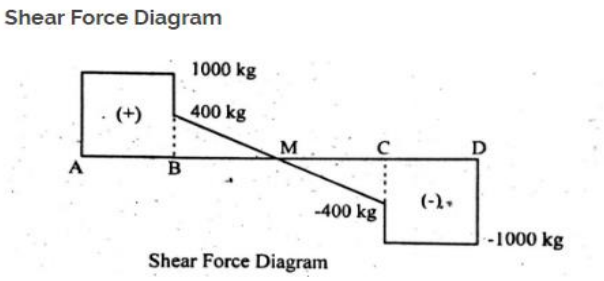
At A, F_A=1000kg

At B, F_B=1000-600=400kg

At C, F_C (left) =400-(200x4) =-400kg

F_D (right) =-400-600=-1000kg

At D, F_D=-1000



Bending moment calculation:

At A, $M_A=0$

At B, $M_B=1000x2=2000kgm$

At C, $M_C=1000x2=2000kgm$

At D, $M_D=0$

Maximum BM will be at midpoint where SF is zero.

M_{max} =1000x4-600x2-200x2(2/2) =2400kgm