Q 1 A beam simply-supported at both the ends , of length *l* carries two equal unlike couples M at two ends. If the flexural rigidity EI = constant, then the central defection of beam is given by

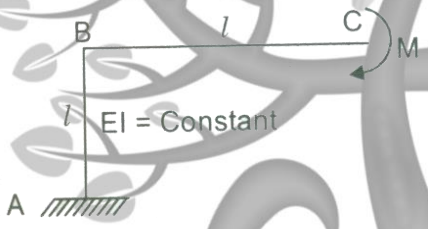
a. **M l^2 / 4 EI**

b. **M l^2 / 16 EI**

c. **M l^2 / 64 EI**

d. **M l^2 / 8 EI**

Q 2 **What is the horizontal deflection of free end C of the frame shown in the given figure**



a. **M l^2 /2 EI**

b. **M l^2 / EI**

c. **3 M l^2 / 2 EI**

d. **2M l^2 / EI**

Q 3 **A simply supported beam of span L and flexural rigidity EI carries a unit point load at its centre. The strain energy in the beam due to bending is**

A. $\frac{L^3}{48EI}$ **B.** $\frac{L^3}{192EI}$

C. $\frac{L^3}{96EI}$ **D** $\frac{L^3}{16EI}$

Q 4 **Which of the following pairs is not correctly matched ?**

a. **Lame's constants : Thick cylinder**

b. **Macaulay's method : Deflection of beam**

c. **Euler's method : Theory of column**

d. **Eddy's theorem : Torsion of shafts**

Q 5 **The maximum deflection of a fixed beam carrying a central load W is equal to**

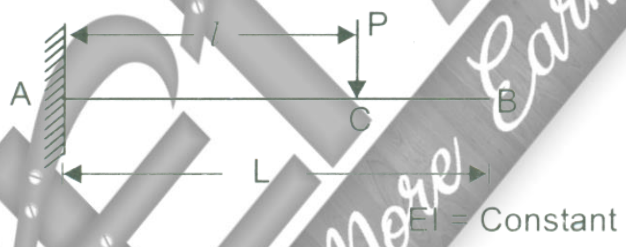
A. $\frac{WL^3}{48EI}$

B. $\frac{WL^3}{96EI}$

C. $\frac{WL^3}{192EI}$

D. $\frac{5}{384}\frac{WL^3}{EI}$

Q 6 **A cantilever carries a load P at C as shown in the given figure, the deflection at B is**



A. $\frac{Pl^2}{2EI}(L-l)$ **B.** $\frac{Pl^2}{3EI}(L-l)$

C. $\frac{Pl^2}{2EI}\left(L+\frac{l}{3}\right)$ **D.** $\frac{Pl^2}{2EI}\left(L-\frac{l}{3}\right)$

Q 7 **A simply supported rectangular beam of span 'L' and depth carries a central load 'W' the ratio of maximum deflection to maximum bending stress is**

a. **L^2 / 6 ED**

b. **L^2 / 8 ED**

c. **L^2 / 48 ED**

d. **L^2 / 12 ED**

Q8

An overhang beam of uniform EI is loaded as shown in the

above figure. The deflection at the free end will be.

A. $\frac{PL^3}{81EI}$ B. $\frac{PL^3}{27EI}$

B. $\frac{4PL^3}{81EI}$ **D.** $\frac{2PL^3}{27EI}$

Q 9 **Match List – I(Actual beam) with List – II (Conjugate beam) on the basis of analogy and select the correct answer;**

List –I	List -II
A. Curvature	1. Shear
B. Deflection	2. Load
C. Slope	3. Moment

Codes :

a. **A – 2, B – 1, C – 3**

b. **A – 2, B – 3, C – 1**

c. **A – 3, B – 1, C – 2**

d. **A – 1, B – 3, C – 2**

Q 10 **In a cantilever of span 'L' , subjected to a concentrated load of 'W' acting at a distance of 1 /**

3 L from the free end. The deflection under load will be

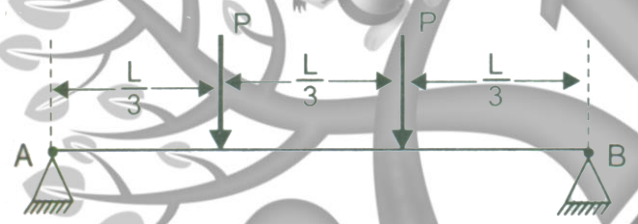
a. **$WL^3 / 3 EI$**

b. **$WL^3 / 81 EI$**

c. **$14 WL^3 /81 EI$**

d. **$8 WL^3 / 81 EI$**

Q 11 **A simply supported beam of uniform flexural rigidity is loaded as shown in the given figure. The rotation of the end 'A' is**



a. **$PL^2 / 9 EI$**

b. **$PL^2 / 6 EI$**

c. **$PL^2 / 18 EI$**

d. **$PL^2 / 12 EI$**

Q 12 **A simply supported beam 'A' carries a point load at its midspan. Another identical beam 'B' carries the same magnitude of load but is uniformly distributed over the entire span. The ratio of the maximum deflections of beams 'A' and 'B' will be**

a. **8 /3**

b. **2 /3**

c. **3 /5**

d. **8 /5**

Q 13 **The maximum deflection of simply supported beam occurs at zero**

a. **Bending moment location**

b. **Shear force location**

c. **Slope location**

d. **Shear force location and also zero bending moment location**

Q 14 **Which of the following is /are determined at a point of a given beam by moment area method?**

1. **Shear force**
2. **Bending moment**
3. **Slope**
4. **Deflection**

Select the correct answer using the codes given below:

a. **1 and 2**

b. **3 alone**

c. **4 alone**

d. **3 and 4**

Q15 **The strain energy in a member is proportional to**

a. **Total strain multiplied by the volume of the member**

b. **Product of stress and the corresponding strain**

c. **Product of strain and young's modulus of the material**

d. **The maximum strain multiplied by the length of the member**

Q 16 **A simply supported beam of span 'L' is subjected to a concentrated load W at midspan . The strain energy due to bending in the beam would be**

a. **$W^2 L^3$ / 48 EI**

b. **$W^2 L^3$ / 96 EI**

c. **$W^2 L^3$ / 24 EI**

d. **$W^2 L^3$ / 96 EI**

Q 17 **A mild steel bar of uniform cross-section 'A' and length L is subjected to an axial load 'W' the strain energy stored in the bar would be**

a. **WL / 2 AE**

b. **W^2 L / 4 AE**

c. **WL / 4 AE**

d. **$W^2 L / 2 AE$**