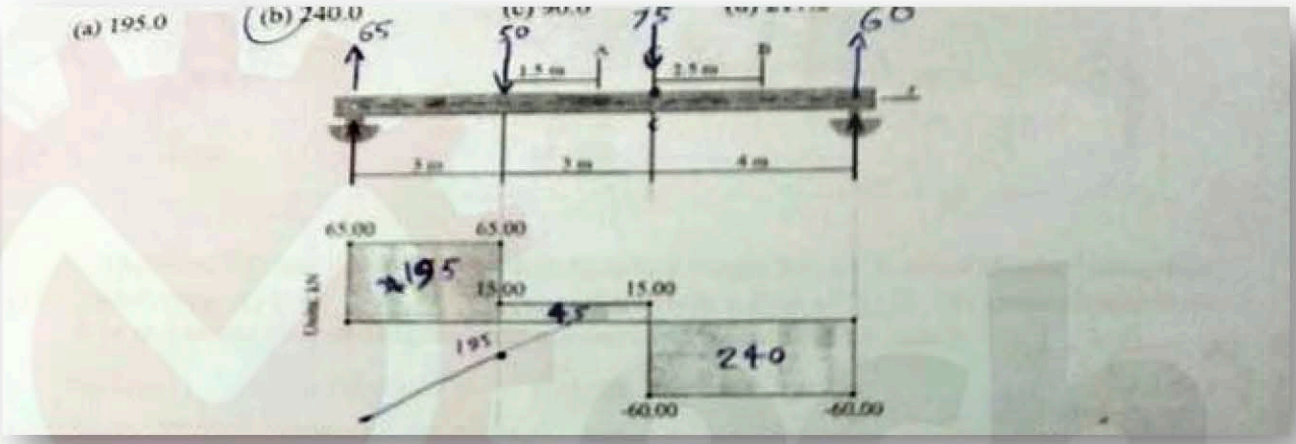
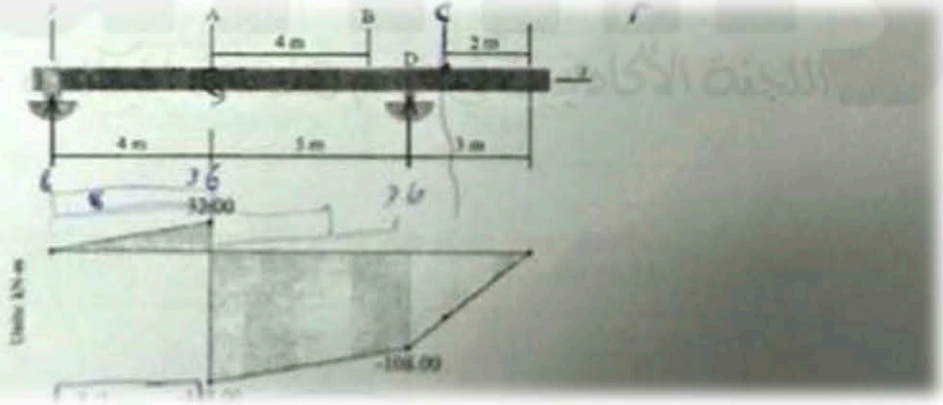
1) Given the shear force diagram for a simply supported beam subjected to a loading (not shown) , the bending moment in KN.m at point C is :

(a)195 (b) 240 (c) 90 (d) 217.5 **Answer : (b)**



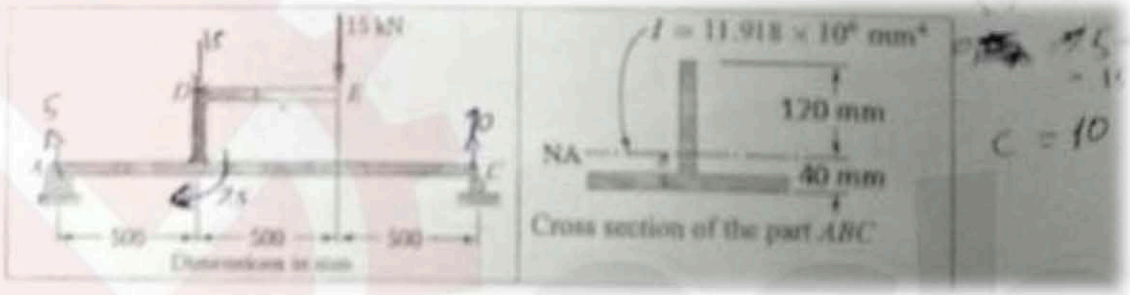
2) Given the bending moment diagram for a simply supported beam subjected to a loading (not shown), the shear force in KN at point C is :

(a) 28 (b) 36 (c) 8 (d) 16 **Answer : (b)**



3) the maximum bending tensile stress in MPa in the part ABC of the structure shown is :

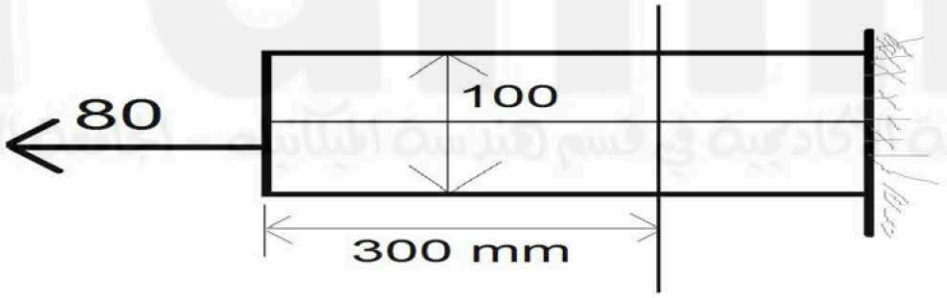
(a) 50 (b) 13.9 (c)33.6 (d)100.7 **Answer : (c)**



4) The horizontal force P=80 kN acts at the end of the plate with d =50 mm. The plate has thickness of 100 mm. The compression stress in MPa acting along section a-a is :

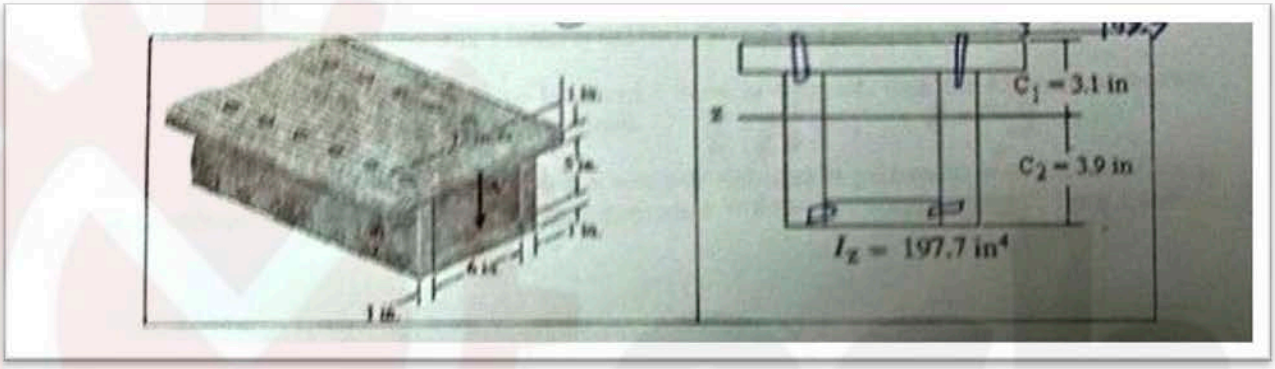
(a) 10 (b) 50

(c) 20 (d) 100 **Answer : (c)**



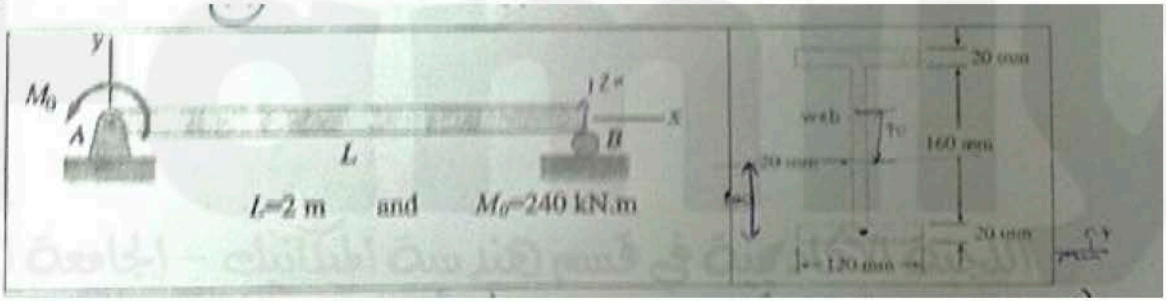
5) The box beam is constrcted from four boards that are fastened together using nalls spaced along the beam every 3 in> If each nail can resist a shear of 50 Ib. The greatest shear force V in Ib that can be applied to the beam without causing failure of the nails is :

(a) 211 (b) 317 (c) 323 (d) 485



6) The maximum shear stress in MPa in the web of the beam shown is :

(a) 45.78 (b) 36.62 (c) 24.42 (d) 30.52 **Answer : (b)**



7) Beam A of steel with B , is simply connected ,carries a uniformly distributed load w N/M oner its entire length. Beams B of Brass with E/2 , is cantilever carries a uniformly distributed load w/4 N/M , over its entire length. The two beams are of same length and have same cross-sectional area. If σ_A and σ_B denote the maximum bending stresses developed in beams A and B respectively , then

(a) $\sigma_A/\sigma_B=1$ (b) $\sigma_A/\sigma_B<1$ (c) $\sigma_A/\sigma_B>1$

(d) σ_A/σ_B depends on the shape of cross section

*** Solution in last page**

Questions (8-12) (True/False)

8) when the shear force along a section in zero , bending moment is maximum or minimum.

9) the transverse shear stress acting in a beam of rectangular cross-section, subjected to a transverse shear load is uniform.

10) the bending shear stress induced in a beam is uniform through out the cross section.

11) if the bending moment along the length of a beam is constant , then the beam cross section will not experience any shear stress.

12) In a simply supported beam carrying a connected load at mid-spam, both the shear force and bending moment diagrams are trianglular in nature without any change in sign.

Solution of Question 7 :