Helwan University **Faculty OF ENGINEERING** **Structural Depart.**		**3rd Year Arch.** **Final Exam - 2021** **Time Allowed: 3:00 hrs.**

DESIGN OF STEEL STRUCTURES

OPEN BOOK EXAM **100 % = 70 Marks** **Page 1/1**

- Material of construction is Steel 37. - Any missing data may be reasonably assumed.

Question (1): **(65 %)**

a- Design a tension member two angles back to back to carry a total force equal to 8 ton and its length 3.6 m. **(15 %)**

b- Check the safety of the compression member one angle 100 x 10 with length 1.8 m to carry a design force 6.0 ton . **(25 %)**

c- Design a simple beam with length 3 m , and (Mx) = 5 m.t , use IPE section. **(25 %)**

Question (2): **(40 %)**

An industrial building is to be constructed over an area shown in Fig. (1) with clear height equal 8.0 m. columns must be on the parameter only. Choose a suitable steel system, and Draw the layout {elevation, plan and side view} of the steel Show all necessary elements and bracing

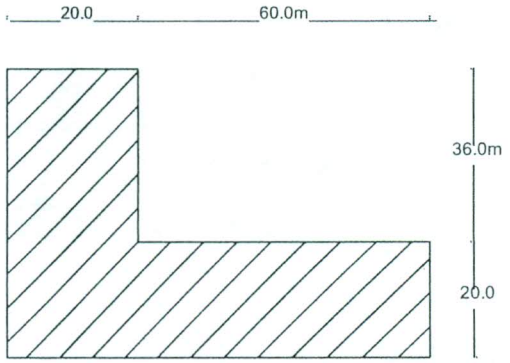

Fig. (1)