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16/07/13

L-3/T-1/ARCH

Date : 25/07/2013

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-1 B. Arch. Examinations 2011-2012

Sub : HUM 315 (Logic and Philosophy)

Full Marks: 140

Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) "Logic is the science of reasoning" — Explain. (4)
(b) Discuss the importance of studying logic. (13 1/3)
(c) What are the uses of "Truth" and "Validity" in logic? (6)
2. (a) what is meant by deductive and inductive argument? Explain with example. (13 1/3)
(b) Form a valid argument whose premises and conclusion are false. How is it possible? (10)
3. (a) What is error in argument? (4)
(b) What are the differences between formal fallacy and informal fallacy? (6)
(c) Discuss any four types of fallacy. (13 1/3)
4. (a) What is analogy? (4)
(b) What is syllogism? (4)
(c) Discuss in detail the rules of syllogism. (15 1/3)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Define philosophy. (4)
(b) 'Philosophy is the study of the problems of religion by the method of science' — explain and evaluate this statement. (13 1/3)
(c) Explain 'metaphysics' and 'epistemology' as branches of philosophy. (6)
6. (a) 'Concepts without percepts are empty and percepts without concepts are blind.' — Discuss after Kant. (13 1/3)
(b) How can we apply philosophy in our daily life? (10)
7. (a) Discuss the relation between 'aesthetics' and 'architecture'. (13 1/3)
(b) Define rationalism, empiricism, materialism and idealism. (10)
8. (a) Who is Thales? Why is he called the father of philosophy? (10)
(b) 'Man is the measure of all things.' Why was it refuted by Plato? (13 1/3)

L-3/T-1/ARCH

Date : 25/07/2013

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-1 B. Arch. Examinations 2011-2012

Sub : **PLAN 319** (Theory and Practice of Planning)

Full Marks : 140

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

F. H. H.
16-09-13

SECTION - A

There are **FOUR** questions in this Section. Answer any **THREE**.

1. (a) What is spatial planning? Write down the purpose and objectives of it. (10 1/3)
(b) How can we plan for others? What are the techniques used in participatory planning process for public participation? (10)¹³
2. (a) How can an advocate planner help to restore the rights of distressed population? What do you understand by the term "Advocacy planning"? (12+3=15)
(b) What is planning and what should be the extent of it? (8 1/3)
3. (a) Write down the elements of a plan. What are the main two types of planning theory? Describe briefly. (4+6 1/3=10 1/3)
(b) Differentiate between blueprint planning and process planning. (13)
4. (a) Provide three examples of Action Area Plan. (3)
(b) Briefly describe the types of local plans and provide examples with each. (12)
(c) Provide a criticism on "traditional approach" of planning. (8 1/3)

SECTION - B

There are **FOUR** questions in this Section. Answer any **THREE**.

5. (a) What is a master plan? How does it differ from a structure plan? Describe the salient features of Dacca Master Plan, 1959. (13 1/3)
(b) What were the problems of Dhaka City in 1959? What were the major planning assumptions for preparing the plan? (10)
6. (a) What is DMDP? When was it executed and by whom? What are the objectives of this plan? (7)
(b) Name the components of the structure plan and the urban Area Plan. (7)
(c) What are the objectives of the Detailed Area Plan (DAP)? Name the current areas of DAP in Dhaka city. How will DAP guide the growth of Dhaka City? Describe with an example. (9 1/3)

Contd P/2

PLAN 319

- 7 (a) What is zoning? What are the objectives of zoning? What are the advantages of zoning? (13 1/3)
- (b) Describe the types of zoning used in practice of planning in detail. (10)
8. Write short notes on any four: (23 1/3)
- (a) Patrick Geddes and survey plan for Dacca.
 - (b) DMAIUDP
 - (c) RAJUK
 - (d) Strategic Planning Zones (SPZ)
 - (e) Urban area policies.
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Cyano 06/10/13

L-3/T-1/B.Arch.

Date : 06/10/2013

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-1 B. Arch. Examinations 2011-2012

Sub : ME 363 (Mechanical Equipment : Building Services)

Full Marks : 140

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION - A

There are **FOUR** questions in this Section. Answer any **THREE**.

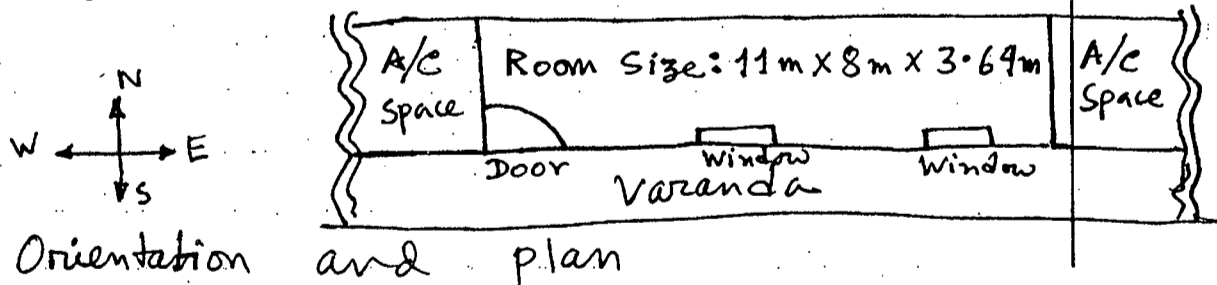
Necessary tables and charts are attached.

1. (a) What are the 3 essential requirements to start a fire? To extinguish combustion what are the standard methods? How is smothering achieved in fire-fighting? (8 1/3)
 (b) Mention the names of 5 types of first-aid fire extinguishers. Draw and label a portable type of fire extinguisher. (10)
 (c) What type of fire extinguisher should be used in case of fire in a power plant having oil fired boilers and there is no breathing apparatus available for fire-fighters? (5)

2. (a) What are the basic 4 factors in designing an elevator? Show with neat sketches the difference between 4 types of door opening of elevators. (10)
 (b) How can door opening time of an elevator be reduced? What is premature door opening? What is the limitation of a premature door opening? (7)
 (c) Define transfer time of an elevator. What are its 5 basis of considerations. (6 1/3)

3. (a) What are the advantages of escalator? How are escalators and ramps rated? "If escalators are the primary means of vertical transportation, they should be supplemented by one or more elevators" - Explain. (13 1/3)
 (b) With neat sketches show 5 various parallel and criss-cross types of escalator arrangements. (10)

4. Estimate the cooling load using CLTD method for a computer room of 40 students in Bangladesh (24°N Latitude) with following data: (23 1/3)



- 1 Door: 1.22 m x 2.13 m (height) x 25 mm thick plywood (Douglas Fir)
- 2 Windows: 1.83 m x 1.22 m (height) x 3 mm cellular glass
- Lights: 400 Watts / CLF = 0.07
- Neglect solar radiation and heat transfer through floor
- Roof : Without Suspended ceiling, 12.7 mm Gypsum board
- Walls : 254 mm brick with 12.7 mm plaster both sides, group B walls
- Roof type : No. 5, 25 mm wood with 50 mm insulation, without suspended ceiling
- Ventilation : 7.5 l/s per person, Infiltration : 0.5 air change per hour

Contd P/2

ME 363(ARCH)

SECTION – B

There are **FOUR** questions in this Section. Answer any **THREE**.

Assume any reasonable values if required.

5. (a) Mention some of the key applications of air-conditioning. (3 1/3)
- (b) Describe the standard vapor compression refrigeration cycle (with schematic diagram and corresponding P-h diagram) along with the effect of superheating and subcooling. (10)
- (c) A vapor compression system uses R-134a as its refrigerant. The system operates with a condensing temperature of 30°C and evaporating temperature of – 20°C. Estimate: (10)
- (i) COP of the system
- (ii) Refrigeration effect of the system if refrigerant flow rate = 0.1 kg/s.
- (iii) How much heat is rejected by the condenser?
6. (a) Distinguish between 'Air-cooler' and 'air conditioner'. (3 1/3)
- (b) Make brief comparisons between: (10)
- (i) window type and split type A/C
- (ii) condenser and cooling tower.
- (c) Draw a schematic diagram to show the key components of a central air-conditioning system, and mention the functions of AHU and FCU in such systems. (10)
7. (a) Write a short note on thermal comfort. (3 1/3)
- (b) Write short notes on : (10)
- (i) wet bulb temperature and dew-point temperature
- (ii) adiabatic mixing of two air streams.
- (c) Air enters a window type a/c at 1 atm, 30°C and 80% relative humidity at a ~~rode~~^{rate} of 10 m³/min, and it leaves as saturated air at 14°C. Determine the rate of heat and moisture removal from the air. (10)
8. (a) What are the methods commonly used in duct design? (3 1/3)
- (b) An-air flow rate of 2.0 m³/s passes through a rectangular duct, 0.5 m by 0.4 m. Calculate the pressure drop in 10 m of duct- (10)
- (c) Write short notes on: (10)
- (i) refrigerants
- (ii) automatic expansion values. ~~values~~
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BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-1 B. Arch. Examinations 2011-2012

Sub : **ARCH 341** (Art and Architecture-IV)

Full Marks : 140

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION - AThere are **FOUR** questions in this Section. Answer Q. No. 1 and any **TWO** from the rest.

1. (a) 'What is the first attempt of Slave dynasty's important building scheme? Graphically represent its stages. (15)
- (b) Briefly explain with sketches the method of constructing a hemispherical dome over a cubic base used in tomb of Iltutmish. (15)
2. (a) Describe Firoz Shah Kotla as the pioneer of Islamic cities on Indian Soil. (10)
- (b) Draw plan and section of Militant ^{places} of Firoz Shah Kotla. (10)
3. (a) Explain with sketches the architectural characteristics of Hauz Khas. (10)
- (b) Critically describe the architectural features of Tomb of Ghias-ud-din Tughlaq. (10)
4. (a) Write short notes on any **TWO** of the following: (20)
 - (i) Qutb Minar.
 - (ii) Sultan Ghari's Tomb.
 - (iii) Khirki Mosque.

SECTION - BThere are **FOUR** questions in this Section. Answer Q. No. 5 and any **TWO** from the rest.

5. (a) Draw plans of different levels of Humayun's tomb and discuss its main architectural features. (15)
- (b) Critically evaluate the articulation, architectural character and features applied in its plans, elevations and sections identifying their origin and local modifications of the 'Jahangiri Mahal'. (15)
6. (a) Critically describe Fatehpur Sikri in connection with the following aspects: (14)
 - (i) Concepts of Planning
 - (ii) Visual Unity and Diversity
- (b) "The Mughal garden attempted to capture natural beauty within a man-made framework." - Discuss with illustrations. (6)

ARCH 341

7. (a) State main planning features of Shahjahanabad. Critically judge the layers of different zones within Delhi fort. Use sketches. (12)
- (b) 'Tajmahal is a complete architectural experience' explain with sketches with reference to concept and zoning. (8)
8. (a) Write short notes on any two of the following: (10×2=20)
- (a) Akbar's all India Architecture.
 - (b) Dewan-i- khas at Fatehpur Sikri.
 - (c) Birbal's Palace at Fatehpur Sikri.
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10.09-13
S. S. H.

L-3/T-1/ARCH

Date : 08/07/2013

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-1 B. Arch. Examinations 2011-2012

Sub : **CE 321 (CE 365 NEW)** (Structure III : Mechanics of Solids)

Full Marks : 140

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **SEVEN** questions in this section. Answer any **FIVE**.

1. A simply supported beam of unsymmetrical I-section has to carry a uniformly distributed load of 2 kip/ft over a span length of 30 ft as shown in Fig. 1. Draw the bending stress distribution diagram of the beam section at the section of maximum bending moment. (14)
2. Draw the shear stress distribution diagram of the beam of Fig. 1 at the section of the maximum shear force. (14)
3. Determine the elastic moment capacity and the plastic moment capacity of the I-section of Fig. 2. Also calculate the shape factor. $F_y = 36$ ksi. (14)
4. A composite beam of wood and steel as shown in Fig. 3, is subjected to a bending moment of 120 kip-ft. Calculate the maximum bending stresses in steel and wood. $E_w = 1.5 \times 10^6$ psi and $E_s = 30 \times 10^6$ psi. (14)
5. A I-section of a beam is made of four wooden planks as shown in Fig. 4. The top flange is fastened to the web with nails and the bottom flange is fastened with glue. This beam has to carry maximum vertical shear force of 1000 lb. If shear capacity of each nail is 300 lb, determine the nail spacing with a factor of safety 2. Also determine the stress in the glued joint. (14)
6. Determine the maximum deflection and maximum rotation of the beam of Fig. 5 consider EI Constant. (14)
7. Determine the deflection and rotation at midspan of the beam of Fig. 6. $E = 10 \times 10^6$ psi, $I = 1500$ in⁴. (14)

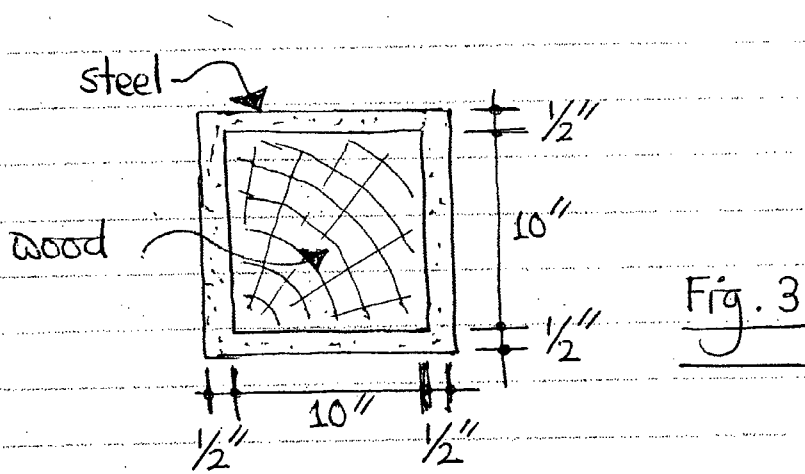
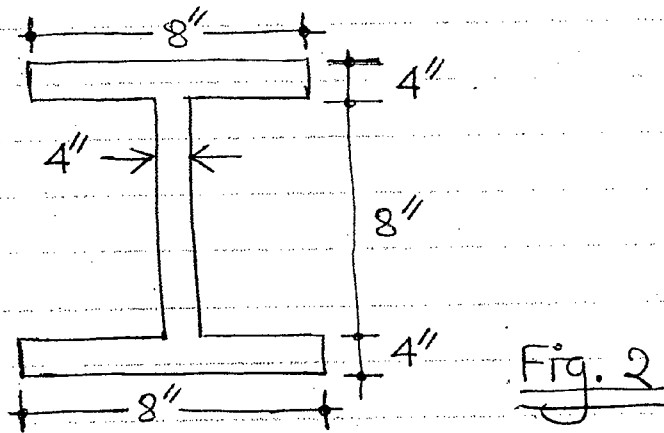
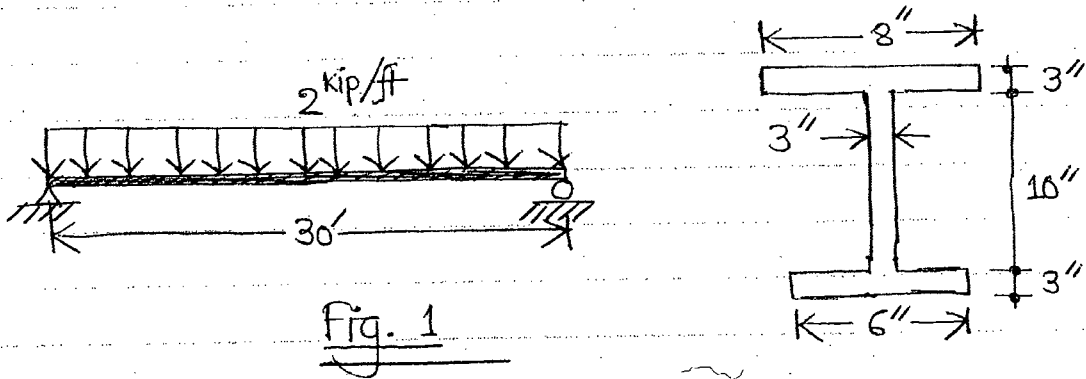
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CE 321 (CE 365 NEW)

SECTION - B

There are **SEVEN** questions in this section. Answer any **FIVE**.

8. Determine the equivalent state of stress on an element if the element is oriented 33.7° clockwise from the element shown in Figure 7. (14)
9. Using Mohr's circle of stresses, for the element shown in Figure 7. (14)
- (a) Find the principal stresses and show their directions on properly oriented element.
- (b) Find the maximum shear stress and associated normal stresses, if any. Show their proper orientation.
10. Determine the radius of the round column so that the round and square column (shown in Figure 8) has the same cross-sectional area and compute the largest load both of them can support before it either begins to buckle or the steel yields. Given, $E = 29,000$ ksi, $\sigma_y = 36$ ksi. (14)
11. Design the most efficient cross-section of a A-36 steel column 30' long and supporting a load of 250 kips. The column is fixed at both ends. Use AISC/ASD method. Necessary formula and charts are provided in Appendix - A. (14)
12. A fixed ended beam supports a uniformly distributed load of 3 kip/ft. Find the equation of the deflection by using fourth-order differential equation. Also, calculate deflection at midspan. Given: The flexural rigidity, $EI = 30,000$ kip-ft². See Figure 9. (14)
13. Calculate the deflection at A and rotation at A and B of the beam shown in Figure 10. Given: $EI_{AB} = EI_{CD} = 20,000$ kip-ft², $EI_{BC} = 40,000$ kip-ft². (14)
14. Find the deflection and angular rotation of the free-end of a cantilever beam shown in Figure 11. (14)
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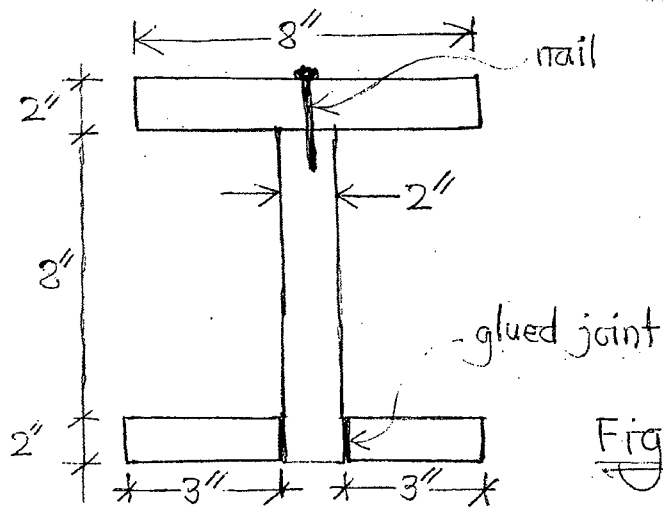


Fig. 4

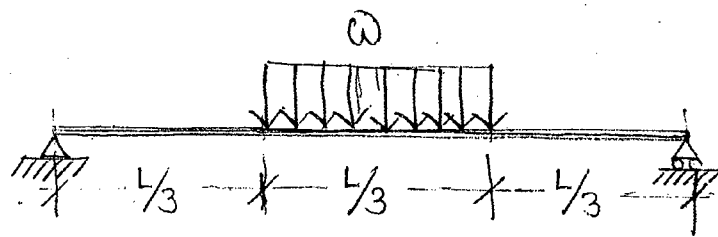


Fig. 5

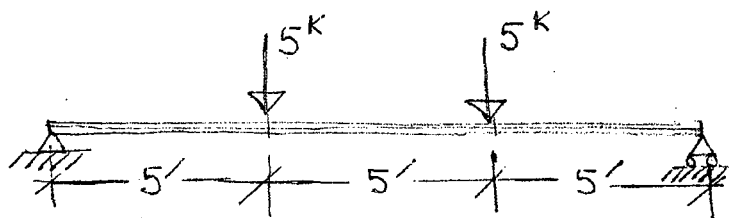


Fig. 6

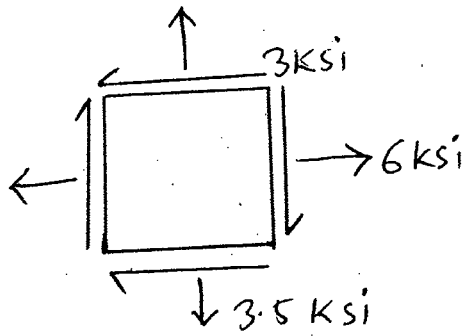


FIGURE . 7

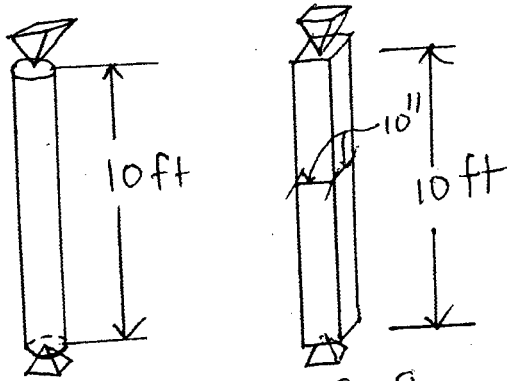


FIGURE . 8

$I_{\text{circular}},$
 $\bar{I}_x = \bar{I}_y = \frac{1}{4} \pi r^4$

$I_{\text{square}},$
 $\bar{I}_x = \bar{I}_y = \frac{b^4}{12}$

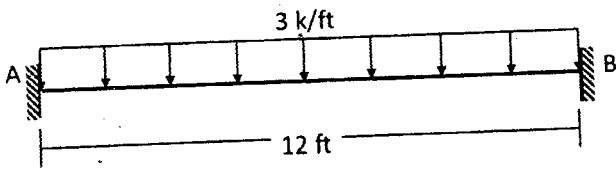


FIGURE . 9

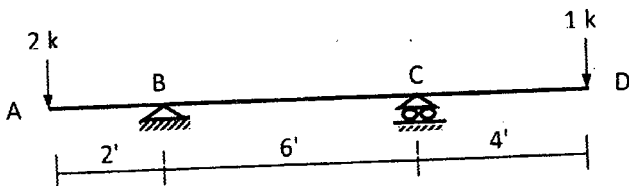


FIGURE. 10

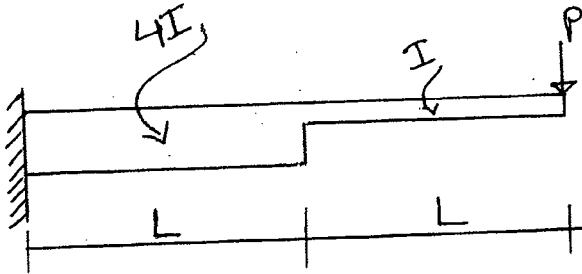


FIGURE . 11

APPENDIX -A

Formula:

AISC/ASD formulas for allowable stresses, F_a on axially loaded compression member

$$F_a = \left\{ \begin{array}{l} \frac{F_y \left[1 - \frac{1}{2} \left(\frac{KL/r}{C_c} \right)^2 \right]}{\frac{5}{3} + \frac{3}{8} \left(\frac{KL/r}{C_c} \right) - \frac{1}{8} \left(\frac{KL/r}{C_c} \right)^3} \quad ; \frac{KL}{r} \leq C_c \\ \frac{12\pi^2 E}{23 \left(\frac{KL}{r} \right)^2} = \frac{149000}{\left(\frac{KL}{r} \right)^2} \quad ; \frac{KL}{r} \geq C_c \end{array} \right.$$

Where,

$$C_c = \pi \sqrt{\frac{2E}{F_y}}$$

CE 321 (CE 365 NEW)

APPENDIX -A

Chart for W-section:

Section	Area (in ²)	I _x (in ⁴)	r _x (in)	I _y (in ⁴)	r _y (in)
W12X26	7.65	204	5.17	17.3	1.51
W12X22	6.48	156	4.91	4.66	0.848
W12X19	5.57	130	4.82	3.76	0.822
W12X16	4.71	103	4.67	2.82	0.773
W12X14	4.16	88.6	4.62	2.36	0.753
W10X112	32.9	716	4.66	236	2.68
W10X100	29.3	623	4.60	207	2.65
W10X88	26.0	534	4.54	179	2.63
W10X77	22.7	455	4.49	154	2.60
W10X68	19.9	394	4.44	134	2.59
W10X60	17.7	341	4.39	116	2.57
W10X54	15.8	303	4.37	103	2.56
W10X49	14.4	272	4.35	93.4	2.54
W10X45	13.3	248	4.32	53.4	2.01
W10X39	11.5	209	4.27	45.0	1.98
W10X33	9.71	171	4.19	36.6	1.94
W10X30	8.84	170	4.38	16.7	1.37
W10X26	7.61	144	4.35	14.1	1.36
W10X22	6.49	118	4.27	11.4	1.33
W10X19	5.62	96.3	4.14	4.29	0.874
W10X17	4.99	81.9	4.05	3.56	0.845
W10X15	4.41	68.9	3.95	2.89	0.810
W10X12	3.54	53.8	3.90	2.18	0.785
W8X67	19.7	272	3.72	88.6	2.12
W8X58	17.1	228	3.65	75.1	2.10
W8X48	14.1	184	3.61	60.9	2.08
W8X40	11.7	146	3.53	49.1	2.04
W8X35	10.3	127	3.51	42.6	2.03
W8X31	9.13	110	3.47	37.1	2.02
W8X28	8.25	98.0	3.45	21.7	1.62
W8X24	7.08	82.7	3.42	18.3	1.61
W8X21	6.16	75.3	3.49	9.77	1.26
W8X18	5.26	61.9	3.43	7.97	1.23
W8X15	4.44	48.0	3.29	3.41	0.876
W8X13	3.84	39.6	3.21	2.73	0.843
W8X10	2.96	30.8	3.22	2.09	0.841
W6X25	7.34	53.4	2.70	17.1	1.52
W6X20	5.87	41.4	2.66	13.3	1.50
W6X15	4.43	29.1	2.56	9.32	1.45
W6X16	4.74	32.1	2.60	4.43	0.967
W6X12	3.55	22.1	2.49	2.99	0.918
W6X9	2.68	16.4	2.47	2.20	0.905
W6X8.5	2.52	14.9	2.43	1.99	0.890
W5X19	5.56	26.3	2.17	9.13	1.28
W5X16	4.71	21.4	2.13	7.51	1.26
W4X13	3.83	11.3	1.72	3.86	1.00