8/12/14

L-3/T-2/URP Date : 08/12/2014

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 BURP Examinations 2012-2013

Sub : **PLAN 345** (Transportation Policy and Planning)

Full Marks : 210 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**.

1. (a) What is post facto evaluation for transportation projects? Who are the stakeholders affected by a transportation development project? Which are the criteria used for evaluating transportation alternatives? **(11)**

   (b) Describe the approaches regarding how the Measures of Effectiveness (MOE) will be used in evaluating transportation alternatives. **(11)**

   (c) DTCA (Dhaka Transportation Co-ordination Authority) is considering three improvement plans for a heavily congested route within DCC area. The improvement is expected to achieve three objectives: improve travel speeds, increase safety and reduce operating expenses for drivers. The annual value of savings compared with existing conditions for each criterion and additional construction and maintenance costs are given below. If the economic life of the road is considered to be 35 years and the discount rate is 5%, which alterative scheme for the study route should be selected? Solve the problem by using a suitable economic evaluation method. **(13)**

Alternative	Construction cost (BDT)	Annual savings in accident (BDT)	Annual travel time benefits (BDT)	Annual operating saving (BDT)	Annual additional maintenance cost (BDT)
Scheme 01	1,75,000	3500	3000	500	1500
Scheme 02	2,40,000	5000	6500	1200	2300
Scheme 03	3,15,000	8000	7400	2800	3200

2. (a) Name the Transport System Management (TSM) supply side techniques for efficient use of road spaces. **(7)**

   (b) What is Mobility Management? Explore the relationship between Mobility Management and TSM actions. **(2+4=6)**

   (c) Define the circling problem as a result of inefficient parking management. Describe the strategies to tackle this problem. **(3+7=10)**

   (d) Define the following (any three) **(4×3=12)**

   (i) Distance-based pricing
   (ii) Vehicle trip reduction
   (iii) Car-free planning
   (iv) Vehicle restrictions

Contd P/2

PLAN 345

3. (a) Define 'sunk cost' and 'salvage value'. **(5)**

   (b) (i) In 20 years the residual or salvage value of an elevated expressway will be BDT 2,00,00,000 (2 crore). Determine the present value using an interest rate of 6%. **(8)**

   (ii) The user benefits for a certain highway are estimated to be an uniform BDT 70,00,000/year. Determine the present worth of those benefits assuming an interest rate of 8% and an analysis period of 25 years. **(8)**

   (c) Discuss the ways of controlling highway air pollution through minimizing motor vehicle emission by appropriate planning, design and operation of highway facilities. **(14)**

4. (a) Describe the strategic policies of National Land Transport Policy (2004) and policies on supply of parking spaces and its implication as set out in Parking Policy (2002) for DMDP area. **(15)**

   (b) What are the methodologies for monetary evaluation of passengers' travel time? Which methodology is most appropriate according to you? Explain. **(8)**

   (c) What are the important traffic factors and roadway factors affecting vehicle operating costs (VOC)? **(5)**

   (d) "Willingness to pay" for travel depends upon the individual and the situation. Explain with appropriate examples. **(7)**

SECTION – B

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

5. (a) 'Transportation modeling has taken a paradigm shift in the last decade if compared to the models used in 1950s' – Do you agree? Explain briefly. **(10)**

   (b) Distinguish between home-based and non home-based trips with examples. **(10)**

   (c) Briefly describe the factors affecting trip generation in an urban area. **(15)**

6. (a) Link flows and inter zonal flows are fundamentally related to two different stages of four stage transportation modeling. What are those stages? Briefly describe the basic requirements to be fulfilled to initiate modeling in these stages. **(3+12=15)**

   (b) Define 'choice specific' and 'choice abstract' modeling. Briefly describe the reasons choice abstract models being popular in modal split stage. **(6+9=15)**

   (c) Define 'induced traffic'. **(5)**

7. (a) "Congestion price imposed on roads as a travel demand management tool should reflect the social cost of traffic congestion" – Explain the statement with graphical illustration. **(25)**

   (b) Briefly discuss the advantages of synthetic methods over growth factor and average growth factor method in trip distribution stage. **(10)**

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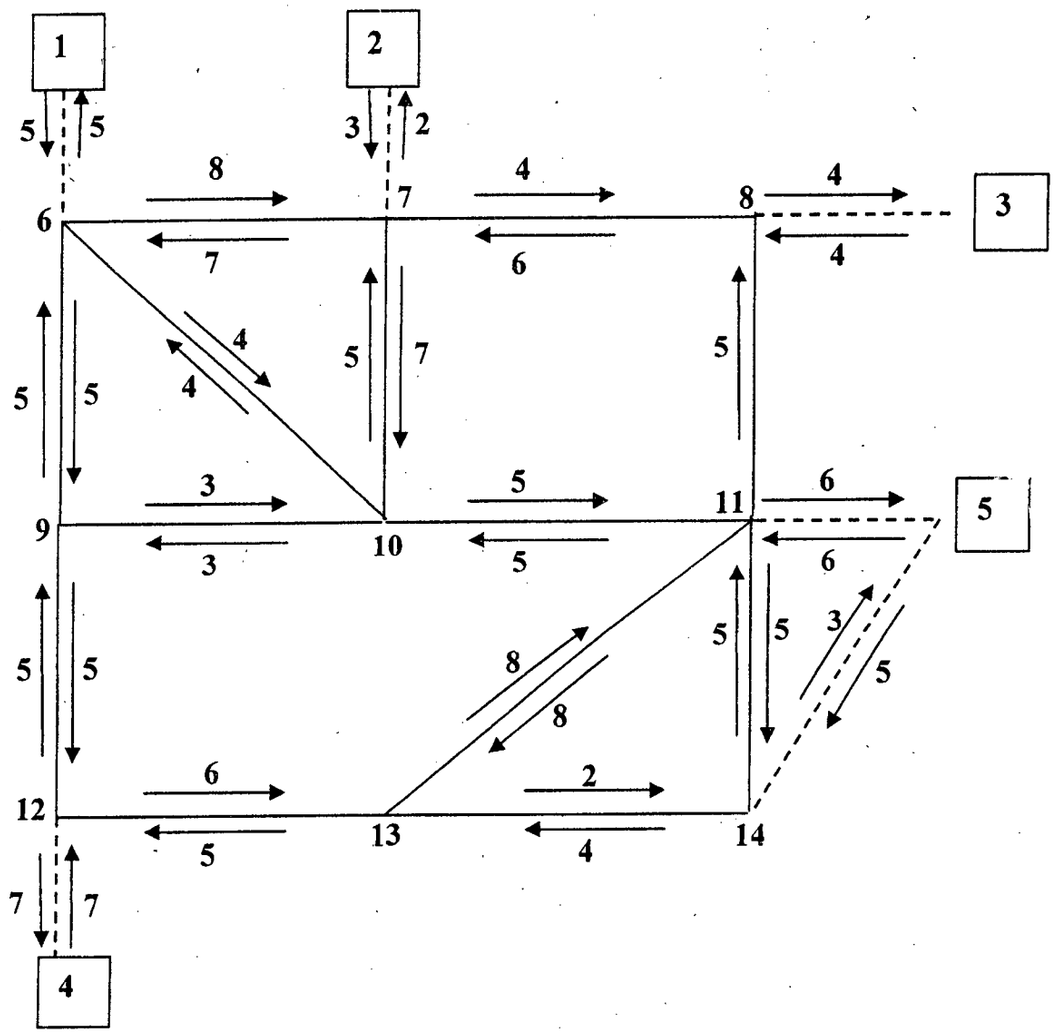
PLAN 345

8. (a) Distinguish between 'choice rider' and 'captive rider'. **(5)**

(b) Determine the shortest path from node 1 to 5 applying minimum tree algorithm. Suppose, this single route alone is not enough to assign 3000 trips from node 1 to 5. Now find any two other routes from node 1 to 5 and estimate the trips to be assigned among these three routes. **(30)**



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15/12/14

L-3/T-2/URP **Date : 15/12/2014**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 B.URP. Examinations 2012-2013

Sub : **PLAN 393** (Operation Research and System Analysis)

Full Marks : 210 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**.

1. Solve the following game graphically. The pay-offs are for player A. **(35)**

	B1	B2	B3	B4	B5
A_1	6	–6	–3	1	–8
A_2	8	–4	–1	6	–5
A_3	–7	2	–3	–4	7
A_4	–5	5	0	–1	8

2. An individual is in the process of buying a car and has narrowed his choices down to three brands: Audi, Aston Martin and Lamborghini. The deciding factors include purchase price (pp), maintenance cost (mc), cost city driving (CD), and cost of rural driving (RD). The following table provides the relevant data for three years of operation. **(35)**

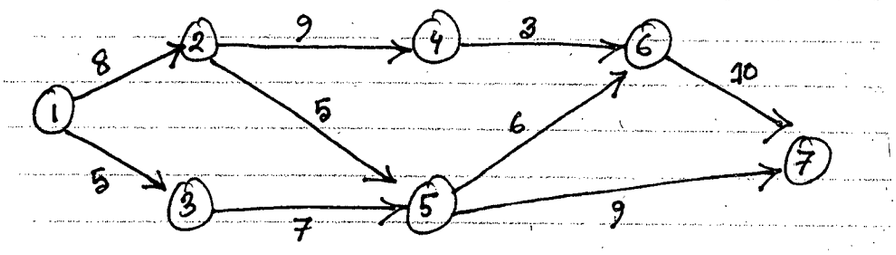
Car Brand	PP($)	MC($)	CD($)	RD($)
Audi	6,000	1,800	4,500	1,500
Aston Matrin	8,000	1,200	2,250	750
Lamborghini	10,000	600	1,125	600

Use the cost matrix to develop necessary comparison matrices. Assess the consistency of the matrices and determine his choice of car brand.

3. (a) Suppose, government has the scope to invest in three sectors, namely, science and technology, agriculture and vocational education. The value of investment will change depending on the international market demand. There is a 10% chance that the market will go down, 50% chance that it will remain moderate, and 40% chance that it will perform well. The following table provides the percentage change in the investment value under three conditions. Identify the most secure sector that yields more benefit for the government. **(15)**

	Percent Return on Investment		
Alternatives	Down Market(%)	Moderate Market (%)	Up Market(%)
Science and Technology	+5	+7	+8
Agriculture	–10	+5	+30
Vocational Education	+2	+7	+20

(b) Determine the shortest route between node 1 and every other nodes for the following network. **(20)**



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PLAN 393

4.

Distribution Centre					
Production Centre		D	E	F	G
	A			50	20
	B	55			
	C	30	35		25

Check whether the above distribution is the optimized allocation for the following cost matrix. If not, then find out the optimum allocation and determine the optimum cost. **(35)**

Distribution Centre						
Production Centre		D	E	F	G	Supply
	A	6	1	9	3	**70**
	B	11	5	2	8	**55**
	C	10	12	4	7	**90**
	Demand	**85**	**35**	**50**	**45**	**215**

SECTION – B

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

5. The Fagersta Steelworks currently is working two mines to obtain its iron ore. This iron ore is shipped to either of two storage facilities. When needed, it then is shipped on to the company's steel plant. The diagram (Diagram-1) below depicts this distribution network, where M1 and M2 are the two mines, S1 and S2 are the two storage facilities, and P is the steel plant. The diagram also shows the monthly amounts produced at the mines and needed at the plant, as well as the shipping cost and the maximum amount that can be shipped per month through each shipping lane.

   Management now wants to determine the most economical plan for shipping the iron ore from the mines through the distribution network to the steel plant.

   (a) Formulate a linear programming model for the problem. **(20)**

   (b) Solve this model by the Simplex Method. (please see the attached diagram-1) **(15)**

6. Suppose that the following constraints have been provided for a linear programming mode.

$$-x_1 + 3x_2 \le 30$$
$$-3x_1 + x_2 \le 30$$

and $x_1 \ge 0, \quad x_2 \ge 0$

   (a) Demonstrate that the feasible region is unbounded. **(8)**

   (b) If the objective is to maximize $z = x_1 - x_2$, does the model have an optimal solution? If so, find it. If not, explain why not. **(10)**

   (c) Repeat part (b) when the objective is to maximize $z = -x_1 + x_2$. **(10)**

   (d) For objective functions where this model has no optimal solution, does this mean that there are no good solutions according to the model? Explain. What probably went wrong when formulating the model? **(7)**

Contd P/3

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7. (a) Solve the following problem by revised simplex method: **(20)**

Maximize $z = 4x_1 + 3x_2 + 6x_3$

Subject to

$$3x_1 + x_2 + 3x_3 \leq 30$$
$$2x_1 + 2x_2 + 3x_3 \leq 40$$

and $x_1 \geq 0,\ x_2 \geq 0,\ x_3 \geq 0$

(b) Write down, the standard form of 'primal' and 'dual' problem. **(15)**

8. (a) Consider the following problem. **(20)**

Maximize $z = -x_1 - 2x_2 - x_3$

Subject to

$$x_1 + x_2 + 2x_3 \leq 12$$
$$x_1 + x_2 - x_3 \leq 1$$

and $x_1 \geq 0,\ x_2 \geq 0,\ x_3 \geq 0$

(i) Construct the dual problem.

(ii) Use duality theory to show that the optimal solution for the primal problem has $z \leq 0$.

(b) Applying the artificial - variable technique, solve the following problem: **(15)**

$z = 3x_1 + 5x_2$

Subject to

$$x_1 \leq 4$$
$$2x_2 \leq 12$$
$$3x_1 + 2x_2 = 18$$

and $x_1 \geq 0,\ x_2 \geq 0$

PLAN 393

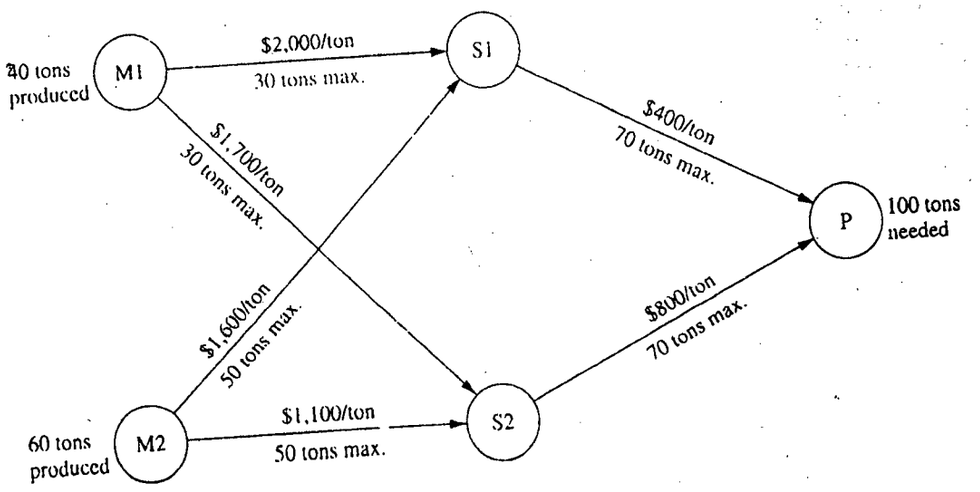


Diagram - 1

L-3/T-2/BURP **Date : 06/01/2015**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 B.URP Examinations 2012-2013

Sub : **CE 363** (Elements of Civil Engineering Structures)

Full Marks : 210 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. For the RCC beam section shown in Figure 1, determine the maximum and minimum amount of steel permitted by ACI code. Also, determine the neutral axis depth 'c', depth of equivalent rectangular stress block 'a' and ultimate moment capacity ($M_{ultimate}$) of the beam sections shown in Figure 2 and Figure 3. Given: $f'_c = 4$ ksi, $f_y = 60$ ksi. **(21)**

2. Determine plastic section modulus and plastic moment capacity of the I-beam section as shown in Figure 4. Also, determine the plastic section modulus and plastic moment capacity of T-beam section where bottom flange is omitted (see Figure 5). Consider bending about horizontal axis and $f_y = 50$ ksi. **(21)**

3. Determine the size of the four columns rectangular combined footing as shown in Figure 6 where "property line" is located 4 feet from centerline of right columns. What will be size of the same combined footing if "property line" is located adjacent to left columns as shown in Figure 7. Given, soil allowable bearing capacity ($q_{allowable}$) = 5 ksf and column size = 18" × 18". Draw a neat sketch of final size in each case. Column loads are mentioned in figure. **(21)**

4. A W 12 × 79 section is selected as a steel column (length = 15 feet). Support conditions about X-axis & Y-axis buckling are shown in Figure 8. What will be the maximum value of axial live load (in kip) that can be safely placed on column in addition to an axial dead load of 200 kip? Suppose, you are using the same W 12 × 79 section as a beam section on 15 feet simple span (see Figure 9). Assuming that the W 12 × 79 section is a compact one - what will be the maximum value of live load (in kip/ft) that can be safely carried by the beam if the beam has to carry a dead load of 2.25 kip/ft (excluding self-weight)?

$$\sigma_{cr} = 0.658^{\lambda_c^2} F_y; \quad \text{when, } 0 \le \lambda_c \le 1.5$$

$$\sigma_{cr} = \frac{0.877}{\lambda_c^2} F_y; \quad \text{when, } \lambda_c \ge 1.5$$

Properties of W12 sections are attached at the end. Follow AISC/LRFD method & use ASTM A 36 steel. **(21)**

Contd P/2

CE 363

5. Determine the maximum value of axial load "$P_{ultimiate}$" and that the bearing-type connection (see Figure 10) can transmit in tension. Bolts (A 325) are 7/8" in diameter in standard holes and threads are excluded from shear planes. Follow AISC/LRFD method and use ASTM A 36 steel. Properties of C sections are attached at the end **(21)**

6. Determine the fillet weld length (L_1 and L_2) needed on the two sides of the angle to connect it with gusset plate (see Figure 11). If it is desired to provide weld on three sides of the angle (see Figure 12), what will be the weld length (L_3 and L_4). Follow AISC/LRFD method and use E60XX electrode. Properties of L sections are attached at the end. **(21)**

Table 1: Minimum size of fillet weld

Minimum fillet weld size (inch)	Maximum thickness of part (inch)
1/8	To ¼ inclusive
3/16	Over ¼ to ½
1/4	Over ½ to ¾
5/16	Over ¾ to 1½
3/8	Over 1½ to 2¼
1/2	Over 2¼ to 6
5/8	Over 6

Table 2: Maximum size of fillet weld

Maximum fillet weld size (inch)	Minimum thickness of part (inch)
Thickness of material	Less than ¼ inch
(Thickness of material – 1/16 inch)	¼ inch & over ¼ inch

7. For the pre-stressed concrete beam section as shown in Figure 13, determine the equation of tendon's eccentricity profile (assumed to be parabolic). Also, determine concrete top fiber and bottom fiber stresses for the following cases- **(21)**

   (i) at mid-span section due to initial pre-stress only

   (ii) at a section 10 feet from left support due to effective pre-stress + self-weight + superimposed dead load + live load.

   Draw stress distribution at these two loading stages.

   Given, initial pre-stress (f_{si}) = 100 ksi, pre-stressing steel (A_{sp}) = 3 inch^2 (total); pre-stressing loss = 10% and f'_c = 6000 psi.

Contd P/3

CE 363

SECTION – B

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

Assume reasonable value for any missing data.

8. (a) How the location of neutral axis indicates weather the beam should be analysed considering T-beam or rectangular beam? Explain with figures. **(5)**

(b) Mention the code requirements for the determination of effective width of a T-beam. **(5)**

(c) A rectangular beam carries a service load of DL = 1.5 k/ft excluding self weight of the beam and LL = 2.5 k/ft. The beam has a simply supported span of 15 ft and the cross section of the beam is limited to 12" × 18" (Fig. 14). Given, $f_c' = 3$ ksi and $f_y = 40$ ksi. Design the beam for flexure at mid span section. Is it singly or doubly reinforced beam? **(25)**

9. (a) Write down the minimum thickness for RC beams and one-way slabs for different end conditions as per ACI code. **(7)**

(b) Explain temperature and shrinkage reinforcements and discuss their necessity in reinforced concrete design with reference to slabs. **(8)**

(c) A 6.5" thick slab (One-way) is supported on RC beams as shown in Fig. 15. The calculated dead load on the slab is 130 psf (including self weight) and the slab is subjected to working live load of 80 psf. Calculate the critical design moments and show the necessary reinforcements in sketches. Use USD method. Given, $f_c' = 3{,}000$ psi, $f_y = 60{,}000$ psi. **(20)**

10. (a) A rectangular beam carries a service dead load of 1.6 k/ft including self weight of the beam and live load of 1.2 k/ft. The beam has a simply supported span of 30 ft and cross section of the beam is limited to 12" × 32" (Fig 16). **(28)**

Given, $f_c' = 4$ ksi, $f_y = 60$ ksi.

(i) Design the beam for flexure at mid-span section.

(ii) What will be the size and spacing of stirrups at 5' distance from left support?

(b) Do you think addition of bars in the compression zone of a singly reinforced beam will always increase the moment capacity of that particular section? Justify your answer. **(7)**

11. (a) Design a circular spiral column of a building with 2.5% reinforcement to support dead load 700 kip and live load 400 kip at ground floor level. Design also spiral reinforcement. Use USD method. Given, $f_c' = 35{,}00$ psi and $f_y = 60{,}000$ psi. **(18)**

(b) A 24" × 42" column carries a working dead load of 800 kip and live load of 500 kip. Allowable bearing capacity of soil is 5.0 ksf. Design a square footing by USD method for the column with 6' below grade. Given, $f_c' = 4{,}000$ psi and $f_y = 60{,}000$ psi. **(17)**

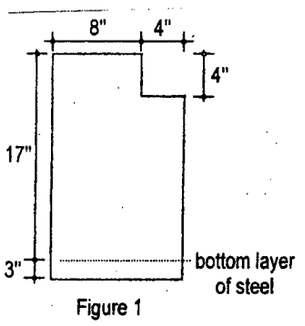


Figure 1

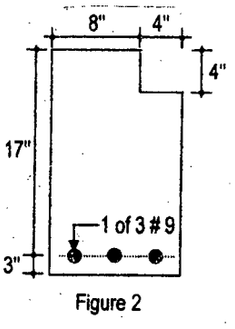


Figure 2

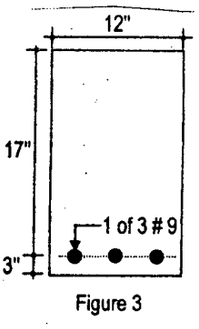


Figure 3

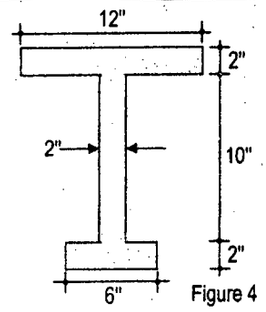


Figure 4

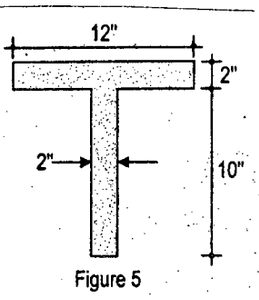


Figure 5

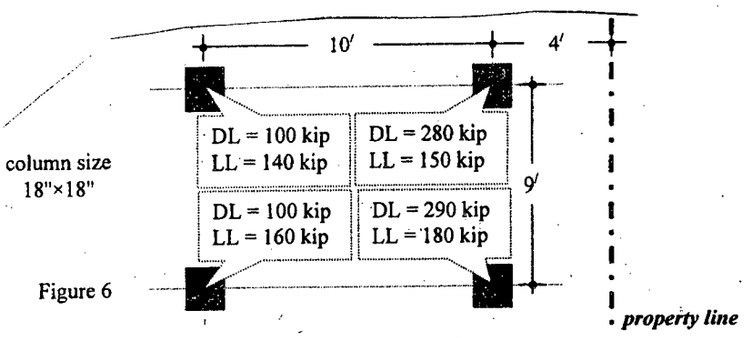


Figure 6

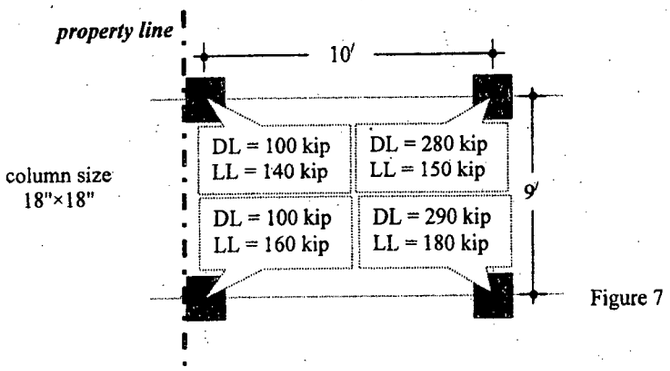


Figure 7

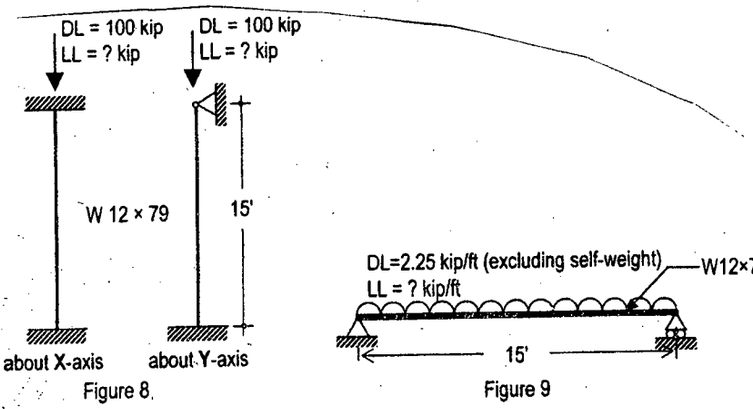


Figure 8

Figure 9

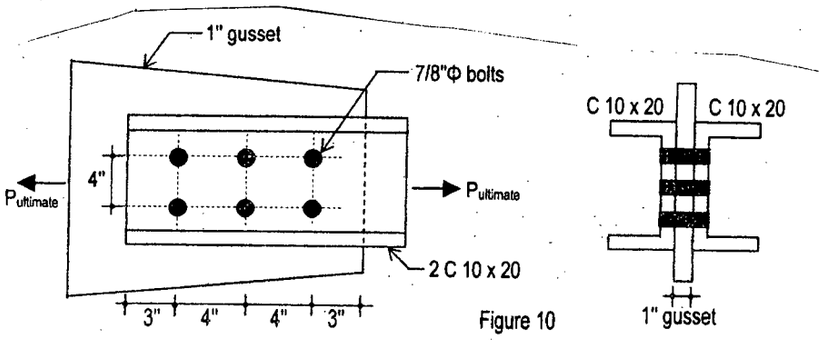


Figure 10

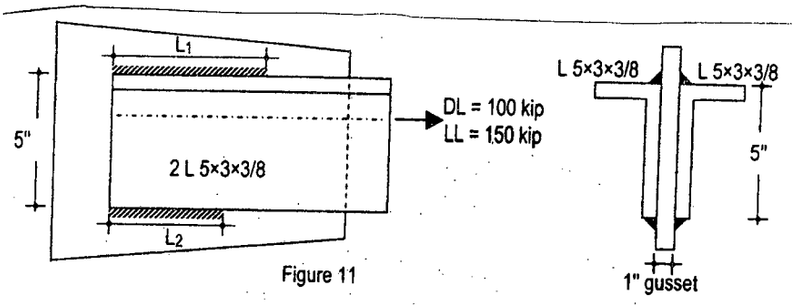


Figure 11

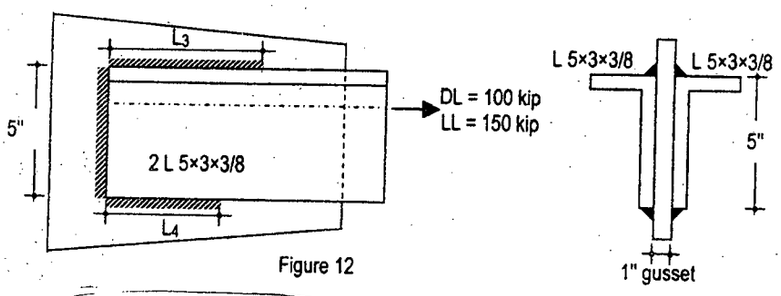
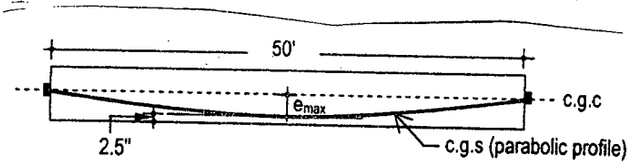
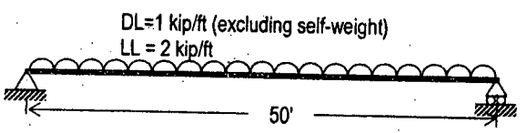
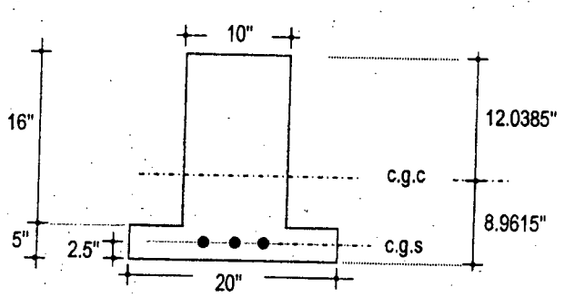


Figure 12

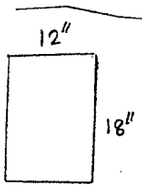




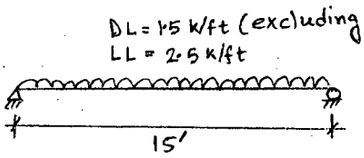


beam X-section (at mid-span)

Figure 13

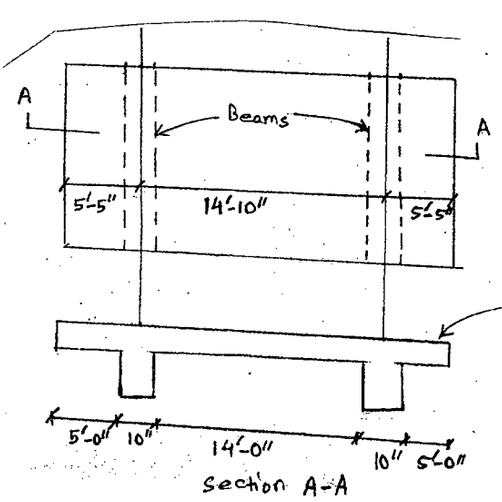


Cross section



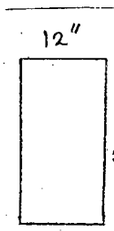
f'_c = 3 ksi; f_y = 40 ksi

Fig. 14 ~~for problem 2(c)~~

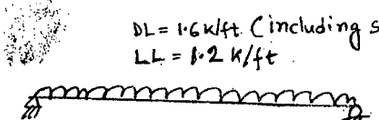


Section A-A

~~Fig. 2 for problem 2(c)~~ Fig. 15



Cross section

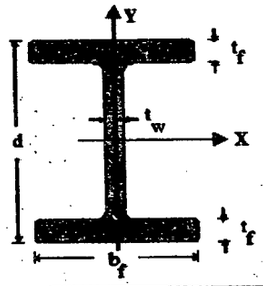


f'_c = 4 ksi; f_y = 60 ksi

~~Fig. 3 for problem 3(a)~~

Fig. 16

THERE'S ALWAYS A SOLUTION IN STEEL.

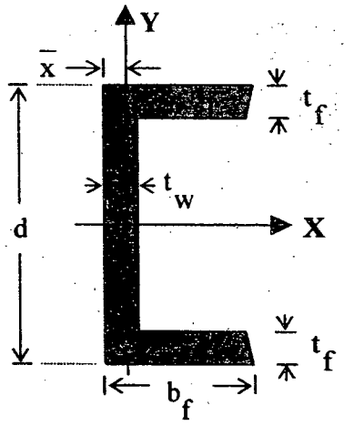


Wide Flange Section (W Shapes)

Dimensions & Properties

Designation	Area (A)	Depth (d)	Web Thickness (t_w)	Flange Width (b_f)	Flange Thickness (t_f)	Nominal weight per foot	Axis X - X			Axis Y - Y		
							I	S	r	I	S	r
	$inch^2$	inch	inch	inch	inch	lb.	$inch^4$	$inch^3$	inch	$inch^4$	$inch^3$	inch
W 12×96	28.2	12.71	0.550	12.160	0.900	96	833	131	5.44	270	44.4	3.09
W 12×87	25.6	12.53	0.515	12.125	0.810	87	740	118	5.38	241	39.7	3.07
W 12×79	**23.2**	**12.38**	**0.470**	**12.080**	**0.735**	**79**	**662**	**107**	**5.34**	**216**	**35.8**	**3.05**
W 12×72	21.1	12.25	0.430	12.040	0.670	72	597	97.4	5.31	195	32.4	3.04
W 12×65	19.1	12.12	0.390	12.000	0.605	65	533	87.9	5.28	174	29.1	3.02
W 12×58	17.0	12.19	0.360	10.010	0.640	58	475	78.0	5.28	107	21.4	2.51
W 12×53	15.6	12.06	0.345	9.995	0.575	53	425	70.6	5.23	95.8	19.2	2.48
W 12×50	14.7	12.19	0.370	8.080	0.640	50	394	64.7	5.18	56.3	13.9	1.96
W 12×45	13.2	12.06	0.335	8.045	0.575	45	350	58.1	5.15	50.0	12.4	1.94
W 12×40	11.8	11.94	0.295	8.005	0.515	40	310	51.9	5.13	44.1	11.0	1.93
W 12×35	10.3	12.50	0.300	6.560	0.520	35	285	45.6	5.25	24.5	7.47	1.54
W 12×30	8.79	12.34	0.260	6.520	0.440	30	238	38.6	5.21	20.3	6.24	1.52
W 12×26	7.65	12.22	0.230	6.490	0.380	26	204	33.4	5.17	17.3	5.34	1.51
W 12×22	6.48	12.31	0.260	4.030	0.425	22	156	25.4	4.91	4.66	2.31	0.847
W 12×19	5.57	12.16	0.235	4.005	0.350	19	130	21.3	4.82	3.76	1.88	0.822
W 12×16	4.71	11.99	0.220	3.990	0.265	16	103	17.1	4.67	2.82	1.41	0.773
W 12×14	4.16	11.91	0.200	3.970	0.225	14	88.6	14.9	4.62	2.36	1.19	0.753

THERE'S ALWAYS A SOLUTION IN STEEL.



American Standard Channel (C Section) Properties

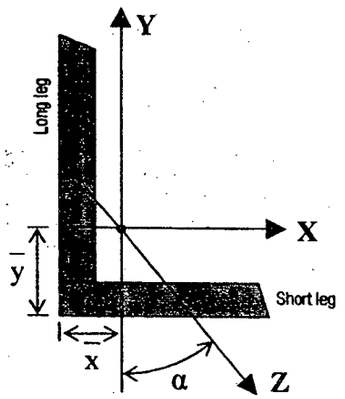
Designation	Area (A)	Depth (d)	$\bar{x}$	Web	Flange		Nominal weight per foot	Axis X - X			Axis Y - Y		
				Thickness (t_w)	Width (b_f)	Average thickness (t_f)		I	S	r	I	S	r
	$inch^2$	inch	inch	inch	inch	inch	lb.	$inch^4$	$inch^3$	inch	$inch^4$	$inch^3$	inch
C 12×30	8.82	12	0.674	0.510	3.170	0.501	30	162	27.0	4.29	5.14	2.06	0.763
C 12×25	7.35	12	0.674	0.387	3.047	0.501	25	144	24.1	4.43	4.47	1.88	0.780
C 12×20.7	6.09	12	0.698	0.282	2.942	0.501	20.7	129	21.5	4.61	3.88	1.73	0.799
C 10×30	8.82	10	0.649	0.673	3.033	0.436	30	103	20.7	3.42	3.94	1.65	0.669
C 10×25	7.35	10	0.617	0.526	2.886	0.436	25	91.2	18.2	3.52	3.36	1.48	0.676
C 10×20	**5.88**	**10**	**0.606**	**0.379**	**2.739**	**0.436**	**20**	**78.9**	**15.8**	**3.66**	**2.81**	**1.32**	**0.692**
C 10×15.3	4.49	10	0.634	0.240	2.600	0.436	15.3	67.4	13.5	3.87	2.28	1.16	0.713
C 9×20	5.88	9	0.583	0.448	2.648	0.413	20	60.9	13.5	3.22	2.42	1.17	0.642
C 9×15	4.41	9	0.586	0.285	2.485	0.413	15	51.0	11.3	3.40	1.93	1.01	0.661
C 9×13.4	3.94	9	0.601	0.233	2.433	0.413	13.4	47.9	10.6	3.48	1.76	0.962	0.669

■ Single Angle ■ Equal Legs and Unequal Legs ■

Angles (L Section)

Equal legs and unequal legs

Properties



Designation	Weight per foot	Area (A)	Axis X - X				Axis Y - Y				Axis Z - Z	
			I	S	r	$\bar{y}$	I	S	r	$\bar{x}$	r	tan α
inch	lb.	$inch^2$	$inch^4$	$inch^3$	inch	inch	$inch^4$	$inch^3$	inch	inch	inch	
L 5×3×5/8	15.7	4.61	11.4	3.55	1.57	1.80	3.06	1.39	0.815	0.796	0.644	0.349
L 5×3×1/2	12.8	3.75	9.45	2.91	1.59	1.75	2.58	1.15	0.829	0.750	0.648	0.357
L 5×3×7/16	11.3	3.31	8.43	2.58	1.60	1.73	2.32	1.02	0.837	0.727	0.651	0.361
L 5×3×3/8	**9.8**	**2.86**	**7.37**	**2.24**	**1.61**	**1.70**	**2.04**	**0.888**	**0.845**	**0.704**	**0.654**	**0.364**
L 5×3×5/16	8.2	2.40	6.26	1.89	1.61	1.68	1.75	0.753	0.853	0.681	0.658	0.368
L 5×3×1/4	6.6	1.94	5.11	1.53	1.62	1.66	1.44	0.614	0.861	0.657	0.663	0.371

L-3/T-2/URP **Date : 16/01/2015**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 BURP Examinations 2012-2013

Sub : **PLAN 331** (Rural Development Planning I)

Full Marks : 210 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 **TRHEE**.

1. (a) What do you understand by rural development? Why is rural development planning necessary in Bangladesh? **(10)**

   (b) What are the objectives of Integrated Rural Development (IRD)? **(15)**

   (c) Why is people's participation needed in rural development? Briefly explain. **(10)**

2. (a) Define growth center. Briefly explain the impact of growth center. **(4+8=12)**

   (b) Describe the models that explain the spatial impact of growth center. **(23)**

3. (a) Define the relevant extent of land reform, agrarian reform and rural development. What are the objectives of land reform? **(8+5=13)**

   (b) What do you understand by land subdivision and fragmentation? What are its disadvantages? **(12)**

   (c) Discuss the range and variety of people's participation. **(10)**

4. (a) How is rural area defined in Bangladesh and around the world? What are the predominant characteristics of rural people? **(6+8=14)**

   (a) What are the scopes of IRD in Agriculture and Forestry sector? **(14)**

   (c) Briefly explain the Product Oriented IRD Model. **(7)**

SECTION – B

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

5. (a) Assume that a rural area is surrounded by three urban centers (A, B and C). Spatial distances from the rural area of these 03 urban centers are 30, 35 and 24 km respectively. These centers are providing some facilities like services, community facilities, infrastructures etc. According to UFRD approach among the 3 centers which will be given more emphasis to promote development in that rural area. In real world what arc the problems associated with selecting the key town centre? Discuss in short. **(8)**

Contd P/2

PLAN 331

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(b) Why is it difficult to delineate boundary between urban and rural areas? Discuss this in the context of a region/city/urban areas economic base and ecological footprint concepts. **(9)**

(c) Discuss briefly the rural market typology. **(5)**

(d) In Rural Development Policies, (two and five year plans) the focus of Government of Bangladesh (GoB) shifted from agriculture to non-agriculture and non-farm activities. What is your opinion about the statement? Justify. **(13)**

6. (a) Classify the diversified incomes of rural community under three broadly defined categories. **(13)**

(b) Is there any scope for external intervention in support of rural livelihood diversification? **(7)**

(c) How can the multiple livelihood strategies be achieved through decentralization? **(6)**

(d) Differentiate among livelihood, Partnership and Effectiveness analysis with respect to Sustainable Rural Livelihood (SRL). **(9)**

7. (a) Write in short the post-independent rural development programs in Bangladesh. **(20)**

(b) In the following table country wise Human Development Index (HDI) indicator values are given. Calculate the HDI for each country and identify low and high development countries. **(15)**

Country list	Life expectancy (years)	Adult literacy rate (%)	Primary, Secondary and Tertiary enrolment in education (%)	Per capita GDP (USD)
A	56	43	68	7,500
B	59	58	72	10,000
C	65	98	77	13,500
D	72	85	78	20,000
E	62	80	75	22,000

8. (a) With the help of 'Minimum Requirements Technique' is it possible to determine whether a rural area possesses self-sufficient local economies in comparison with other surrounding areas? Explain. **(7)**

(b) Categorize Rural Poverty based on deprivation from access to regular meal. **(5)**

(c) Identify the assets considered in sustainable Rural Livelihood (SRL) approach. Name only the aspects in which SRL approach differ from previous donor efforts. **(8+7=15)**

(d) Suppose a region has a population of 20 million in year 2011. After two years in 2013, population has been found as 22.25 million. Number of Emigrants found as 0.25 million/year. Calculate the number of immigrants for that region. Also find out the net migration rate for that area. Mid year population (after one year of the two year time period) of the area was found as 21 million. Assume that migration was the sole reason of population change for that particular period (2011-2013) in the region. **(8)**

L-3/T-2/BURP Date : 11/01/2015

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 BURP Examinations 2012-2013

Sub : **PLAN 333** (Regional Development Planning)

Full Marks : 210 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**.

1. (a) Explain what do you understand by planning at regional level. In your answer, include the scope and importance of this level of planning. **(7)**

(b) Using the following information of distance among three towns and their population, determine the catchment areas of town A, B, and C. Illustrate your findings with the help of a neat diagram. **(20)**

	Distance (miles)			Population
Town	**A**	**B**	**C**	**(in thousand)**
A	-	20	30	45
B	20	-	60	56
C	30	60	-	70

(c) "Minimum Requrement Method may result in erroneous estimation of the level of basic activities in a region, if the number of comparison regions increases"- Explain. **(8)**

2. (a) What factors might cause incorrect delineation of formal and functional regions? Also discuss about the possible remedies to address the problems. **(10+5=15)**

(b) The following table shows the employment data for five sectors of four regions (A, B, C and D) for the year 2014. Use these data to answer the following questions.

Sectors	Regional Employment			
	Region A	Region B	Region C	Region D
Construction	1,676	2,230	1,687	2,700
Manufacturing	3,985	12,360	6,200	6,100
Transportation	900	6,266	890	1,800
Information	342	2,677	780	590
Education	202	280	101	600

(i) Find the employment multiplier for Region A. **(15)**

(ii) Considering that the region has a population of 90,000 in 2014, what would be the total regional population after 10 years if basic employment is expected to increase by 6,900 in this period? **(5)**

3. (a) Regions can be defined from a number of perspectives - it can be viewed as a subjective or objective phenomenon, and can also be categorized as formal or functional. Breifly explain these different perspectives. **(12)**

(b) Explain in detail the four major divisions in a regional input-output matrix. **(15)**

(c) Discuss the techniques available for flow analysis to delineate functional regions. **(8)**

Contd P/2

PLAN 333

4. (a) Describe in detail the limitations of economic base theory. **(15)**

(b) The total regional growth can be divided into shift and share components. Explain each of these components. **(10)**

(c) The following table shows hypothetical shift-share components of employment data for five activity sectors of a district to explain its growth between 2001 and 2011.

	Employment		
Activity Sector	***N***	***P***	**Net Shift**
Agriculture	25,640	-4,086	-10,258
Industry	449	131	-1,251
Construction	524	2,568	3,451
Business	4,481	1,121	757
Service	692	-1,050	-172

(i) Determine the total growth in employment in this district for the period 2001 to 2011. **(2)**

(ii) What is the contribution of local factors in the total employment growth of this district? **(8)**

SECTION – B

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

Terms have their usual meaning.

5. (a) Name the regional planning processes which (i) establish the relationship between different factors of regions, and (ii) eradicate major inequality among regions. Differentiate between these two types of regional planning processes. **(2+8=10)**

(b) In practice, what are the problems faced while identifying the profit maximizing location for industries. Explain briefly. **(25)**

6. (a) Write down the major difference(s) between the approaches of 'central place theory' and 'growth pole theory'. **(4)**

(b) How the Central Place Theory can play important role in regional planning? How does the "K-value" affect the concept of hierarchy in Central Place Theory? **(5+15=20)**

(c) Between "Growth Pole Policies" and "Growth Center Policies" which one do you think is more appropriate in the context of Bangladesh? Justify your answer. **(11)**

7. (a) How promoting medium and small sized enterprises can be useful in promoting regions while planning? **(15)**

(b) In regional policy options how policies to "reallocate capital" can help to aid the distressed regions of the country? **(10)**

(c) What policy options do you suggest for management of lands while planning for regions. **(10)**

Contd P/3

PLAN 333

8. (a) Once demand cone is formed in theory of Lösch, how do you think the features of the conic can help in understanding the market? Discuss with necessary illustrations. **(12)**

   (b) Describe the evolution of industrial policies of Bangladesh with respect to different political principles. **(20)**

   (c) Name the agglomeration economies caused by polarization. **(3)**
