L-3/T-2/URP **Date : 09/06/2014**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 BURP Examinations 2011-2012

Sub : **PLAN 393** (Operations Research and Systems Analysis)

Full Marks: 210 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) Find out the optimal solution for the following problem. **(10)**

Maximize, $z = 2e^{3x_1+1} + 2e^{2x_1+3}$

Subject to the constraints

$$x_1 + x_2 = 5$$
$$x_1, x_2 \geq 0$$

(b) Solve the following game by graphical method assuming that the payoffs are for player A. **(25)**

		Player B			
		B_1	B_2	B_3	B_4
Player A	A_1	19	6	7	5
	A_2	7	3	14	6
	A_3	12	8	18	4
	A_4	8	7	13	–1

2. (a) Develop the branch and bound tree for the following problem and determine the optimum solution. **(15)**

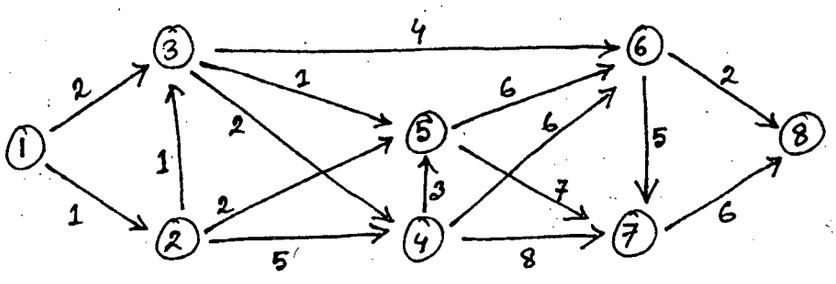
Maximize, $z = 2x_1 + 2x_2$

Subject to, $5x_1 + 7x_2 \leq 35$

$4x_1 + 9x_2 \leq 36$

$x_1, x_2 \geq 0$ and integer .

(b) Determine the shortest path (s) from Node 1 to Node 8 using Dijkstra's algorithm. **(20)**



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3. A consulting firm has narrowed down the search for an urban planner to three candidates: X, Y and Z. The final selection is based on three criteria: personal interview (i), Experience (e) and References (r). The firm uses Matrix A (given below) to establish the preferences among the three criteria. After interviewing the three candidates and compiling the data regarding their experiences and references, the matrices A_i, A_e and A_r are constructed. Which one of these three candidates should be selected? Assess the consistency of the data. **(15+20=35)**

$$A = \begin{array}{c|ccc} & i & e & r \\ i & 1 & 2 & 1/4 \\ e & 1/2 & 1 & 1/5 \\ r & 4 & 5 & 1 \end{array} ; \qquad A_i = \begin{array}{c|ccc} & X & Y & Z \\ X & 1 & 3 & 4 \\ Y & 1/3 & 1 & 1/5 \\ Z & 1/4 & 5 & 1 \end{array}$$

$$A_e = \begin{array}{c|ccc} & X & Y & Z \\ X & 1 & 1/3 & 2 \\ Y & 3 & 1 & 1/2 \\ Z & 1/2 & 2 & 1 \end{array} ; \qquad A_r = \begin{array}{c|ccc} & X & Y & Z \\ X & 1 & 1/2 & 1 \\ Y & 2 & 1 & 1/2 \\ Z & 1 & 2 & 1 \end{array}$$

4. For constructing a flyover, the cement supplier company needs to transport cement from three production plants to four different construction sites. The associated per unit transportation cost of cement is provided in the following matrix. Find the initial feasible solution using Vogel's approximation method and calculate the minimum cost of transporting cement for the supplier. **(35)**

		Construction Sites				
		(i)	(ii)	(iii)	(iv)	Supply
Production Plant	(a)	19	30	50	10	7
	(b)	70	30	40	60	9
	(c)	40	8	70	20	18
	Demand	5	8	7	14	

SECTION – B

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

5. (a) You are given the following data for a linear programming problem where the objective is to maximize the profit from allocating three resources to two nonnegative activities. **(20)**

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Contd... Q. No. 5(a)

Resource	Resource Usage per Unit of Each Activity		Amount of resource available
	Activity 1	Activity2	
1	2	1	10
2	3	3	20
3	2	4	20
Contribution per unit	$20	$30	

Contribution per unit = profit per unit of the activity.

(i) Formulate a linear programming model for this problem.

(ii) Use the graphical method to solve this model that you developed in the previous question.

(b) Work through the simplex method (in tabular form) step by step to solve the following problem. **(15)**

Maximize $z = x_1 + 2x_2$

Subject to

$$x_1 + 3x_2 \leq 8$$

$$x_1 + x_2 \leq 4$$

and

$$x_1 \geq 0,\ x_2 \geq 0.$$

6. Consider the following problem.

Maximize $z = 3x_1 + 5x_2$

Subject to

$$x_1 \leq 4$$

$$2x_2 \leq 12$$

$$3x_1 + 2x_2 = 18$$

and

$$x_1 \geq 0,\ x_2 \geq 0.$$

(a) Construct an artificial problem from the real problem. **(15)**

(b) Using the 'Big M' Method, construct the complete first simplex tableau for the simplex method and identify the corresponding initial (artificial) BF solution. **(15)**

(c) Identify the initial entering basic variable and the leaving basic variable. **(5)**

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

Maximize $z = 2x_1 + 4x_2 + 3x_3$

Subject to

$$x_1 + 3x_2 + 2x_3 = 20$$
$$x_1 + 5x_2 \geq 10$$
$$\text{and } x_1 \geq 0,\ x_2 \geq 0,\ x_3 \geq 0$$

(i) Construct the basis matrix B for the optimal BF solution, invert B manually, and then use this B^{-1} to solve the optimal solution.

(ii) Demonstrate the problem using revised simplex method.

(b) Using matrix manipulation, prove the following equation: **(15)**

$$\boxed{X_B = B^{-1}b}$$

Where,

X_B = vector of basic variable

B = basis matrix

b = column vector

8. (a) Consider the following problem. **(15)**

Maximize $z = 3x_1 + 5x_2$

Subject to

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

and

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

Construct the primal-dual table and the dual problem for this model.

(b) Shannon's Chocolates produces semisweet chocolate chips and milk chocolate chips at its plants in Wichita, KS and Moore, OK. The Wichita plant produces 3000 pounds of semisweet chips and 2000 pounds of milk chocolate chips each day at a cost of $1000, while the Moore plant produces 1000 pounds of semisweet chips and 6000 pounds of milk chocolate chips each day at a cost of $1500. Shannon has an order from Food Box Supermarkets for at least 30,000 pounds of semisweet chips and 60,000 pounds of milk chocolate chips. **(20)**

(i) How should Shannon schedule its production so that it can bill the order at minimum cost?

(ii) What is the minimum cost?

(iii) Using duality theory formulate the dual form of the problem and solve the dual problem in matrix form.

L-3/T-2/URP **Date : 12/05/2014**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 BURP Examinations 2011-2012

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

Full Marks: 210 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) Explain 'converted traffic' and 'induced traffic' with example. **(10)**

   (b) "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)**

2. (a) Write short notes on the following terms **(10)**

   (i) Model calibration

   (ii) Goodness of fit test.

   (b) The following correlation matrix contains the simple correlation coefficients between pairs of variables. Discuss the question of which explanatory variables 'X' should be included in a linear multiple regression model. **(10)**

	Y	X_1	X_2	X_3	X_4
Y	1	0.32	0.92	0.95	0.62
X_1		1	0.25	0.19	0.03
X_2			1	0.99	0.29
X_3				1	0.33
X_4					1

   (c) Briefly discuss the stages involved in transport planning. **(15)**

3. (a) Briefly discuss the issues to be considered prior to network assignment. **(15)**

   (b) A three zone city has the following trip generation data. **(20)**

	Production (trips/day)	Attraction (trips/day)
Zone 1	500	400
Zone 2	600	800
Zone 3	200	100

The impedance has been calibrated as follows:

Origin \ Destination	Travel time (min)		
	Zone 1	Zone 2	Zone 3
Zone 1	0	10	20
Zone 2	10	0	15
Zone 3	20	15	0

Distribute the trips given that the exponential constant is 2.

Contd P/2

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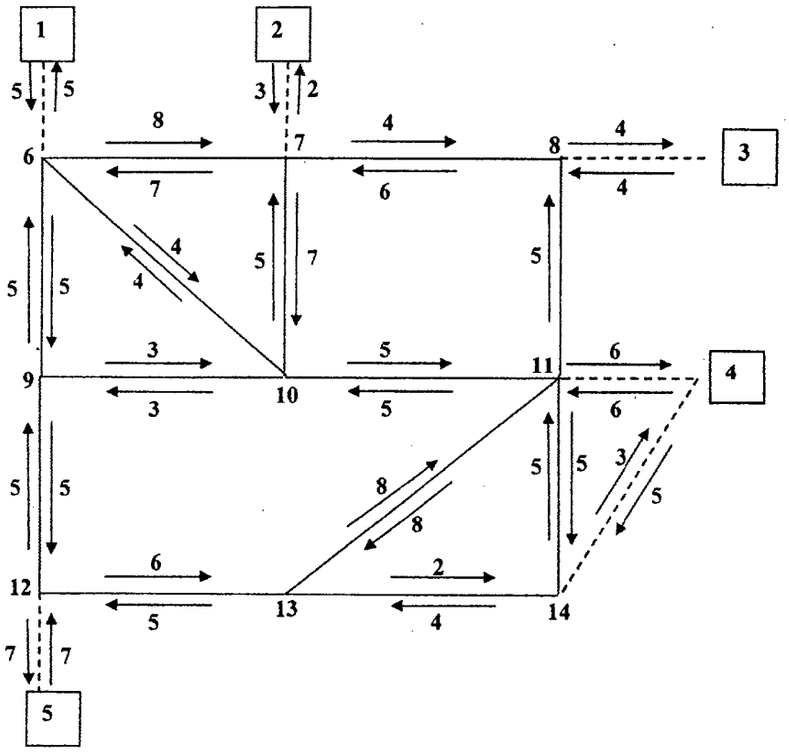
4. (a) What are the advantages of synthetic methods over growth factor methods of trip distribution? **(10)**

(b) For an urban scale travel analysis zone which modal split model is more appropriate to apply? Why? **(5)**

(c) Applying minimum tree algorithm, find the shortest path from node 1 to node 4. **(20)**



SECTION – B

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

5. (a) "According to a recent study, traffic congestion in Dhaka eats up Tk. 19,555 crore a year"– as a transport planner what TDM strategies would you apply to reduce traffic congestion and increase transport system efficiency of Dhaka city? **(15)**

(b) A new bypass is recommended to be constructed in a city. The length of the bypass will be 6.2 km and the length of the road through the city is 6.4 km. The cost of the project is likely to be Tk. 8,500,000. The speed of traffic through the city is 47.6 KPH. The predicted traffic after completing the bypass is 8,600 veh/day, out of which 60% will use the bypass. It is computed that if the bypass is not constructed the speed through the city will further drop to 45.1 KPH due to increased traffic, and the speed through the bypass is expected to be 78 KPH and that through the city will be 52.4 KPH. The travel costs at the three speeds are as below: **(20)**

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Contd... Q. No. 5(b)

Speed (KPH)	Travel costs per vehicle/km (Tk.)
45.1	1.14
52.4	1.02
78	0.90

It is expected that, the construction of the bypass will bring down the accident rate from 1.78 per million vehicle km on the existing route to 0.64 per million vehicle km on the bypass. The cost of an accident can be taken as Tk. 17,000. The maintenance cost per km is Tk. 12,000. Calculate the First Year Rate of Return and interpret the result.

6. (a) What issues and options are given emphasis in 'Parking Policy for DMDP area' regarding the supply of parking for NMT and public transport? **(10)**

(b) "Though ideally cities developing a Mass Rapid Transit (MRT) system will have different combinations of road and rail-based MRT, but experience shows that most of the developing cities will probably focus on one choice for an MRT system"– Which factors govern the choice? Briefly state. **(18)**

(c) What are the methodologies for monetary evaluation of passengers' travel time? According to you which methodology is most appropriate and why? **(7)**

7. (a) Discuss the process of evaluation of alternative transportation strategies in 'Strategic Transport Plan (STP) for Dhaka'. **(15)**

(b) "There are a number of controversial issues which arise when accident costing is done"– Briefly describe those issues. **(15)**

(c) Why time is undoubtedly an economic commodity? **(5)**

8. (a) "Motor vehicle emissions are influenced not only by engine operating characteristics but also by a wide variety of transportation system characteristics" – Explain the statement. **(15)**

(b) Write short notes on the following: (any four) **(4×5=20)**

(i) Factors contributing to road accidents
(ii) Comparison of various methods of economic evaluation of transport plans
(iii) Level of service of MRT systems
(iv) Role of organisations in STP
(v) Techniques to integrate NMT in overall transportation system of Dhaka city
(vi) Integrated policy issues of National Land Transport Policy

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L-3/T-2/URP **Date : 19/05/2014**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 BURP Examinations 2011-2012

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

Full Marks: 210 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) Between Growth Pole Policies and Growth Centre Policies, which one do you think is more appropriate in the context of Bangladesh? Justify your answer. **(10)**

   (b) State the different tiers of economy and explain their evolution for a region through sector/stages theory. **(13)**

   (c) What do you understand by the term "agglomeration economies"? Explain agglomeration economies due to polarization. **(12)**

2. (a) What are the types of regional planning processes which aim at (i) eradication of major inequalities among the region and (ii) establishment of relationship between different factors within regions? Differentiate between them. **(10)**

   (b) In the theory of "Least Cost Approach" what are the costs that Weber considered and how can they help in determining industrial location? **(18)**

   (c) In regional policy options, how do you think the "central control of Macropolicies" can help to aid the distressed regions of a country? **(7)**

3. (a) How do the previous theories of industrial location lead towards the theory of "Profit Maximization"? Discuss with necessary illustrations. **(10)**

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

   (c) What do you understand by "Central Place"? Discuss the basic concepts associated with central place theory. **(13)**

4. (a) Discuss the main features of "Industrial policy 2005". **(18)**

   (b) How do you think regional planning can integrate urban and rural development? **(6)**

   (c) To develop a balanced settlement pattern what land management policies would you suggest for Bangladesh? **(6)**

   (d) Do you think the theory of Lösch overcomes the drawbacks of Weber's theory? Justify your answer. **(5)**

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SECTION – B

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

5. (a) "All planning involves a sequential process which can be conceptualized into a number of stages." What are these stages in planning? **(15)**

   (b) What are the distinctions between

   (i) Physical Planning and Economic Planning **(10)**

   (ii) Allocative Planning and Innovative Planning **(10)**

6. (a) Define Functional Region **(10)**

   (b) What methods are used for delineating functional region? **(5)**

   (c) Using the data given below show the delineation of functional regions around the cities with the help of a diagram. **(20)**

City	Population	Distance (in Mile)
A	60,000	A to B = 40
B	40,000	A to C = 60
C	20,000	B to C = 20

7. (a) What is the difference between basic and non-basic activities? **(10)**

   (b) The following table shows the national and regional employment in thousand by sectors in 2010. The region has a population of 240,000. **(25)**

Sectors	National Employment		Regional Employment	
	Number (000)	Percent	Number (000)	Percent
Agriculture	168	51.22	50	62.50
Manufacturing	100	30.48	15	18.75
Services	60	18.30	15	18.75
Total	328	100.00	80	100.00

Identify the basic employment in the region. If basic employment increases by 100 percent what would be the size of the population in the region?

8. Write short notes on any five of the following: **(5×7=35)**

   (a) Subjective and Objective view of regions

   (b) Formal Region

   (c) Weighted Index Method of regionalization

   (d) Flow Analysis for delineating functional region

   (e) National Share Component

   (f) Differential Shift Component

   (g) Proportionality Shift/Industry Mix Component.

L-3/T-2/URP **Date : 26/05/2014**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 BURP Examinations 2011-2012

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

Full Marks: 210 Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

SECTION – A

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

1. (a) What are the advantages of concrete over other building materials? **(3)**

   (b) What features make 'steel' a suitable material for reinforcement of concrete? **(4)**

   (c) Describe, with necessary diagram, the behavior of reinforced concrete beam when the load is gradually increased from zero to the magnitude that will cause the beam to fail. **(14)**

2. (a) A rectangular beam section has the dimension b = 10 inch, h = 25 in and d = 23 inch. and is reinforced with 4#7 bars. Determine the stresses caused by a bending moment M = 100 ft-kips. Given: f_c' = 4000 psi; f_y = 60000 psi; modulus of rupture = 475 psi; n = 8. Use WSD method. **(15)**

   (b) What are the fundamental assumptions relating to flexure in bending of homogenous beam? **(6)**

3. Find the cross-section of concrete and area of steel required for simply supported rectangular beam with a span of 16 ft that is to carry a computed dead load of 1.25 kip/ft and service live load of 2.25 kips/ft. Given: f_c' = 4000 psi, f_y = 60,000 psi. Use USD method. **(21)**

4. A floor system consists of 4 in concrete slab supported by continuous T beams with 30 ft span, 47 in on centers. Web dimensions are given as b_w = 12 in and d = 22 in. Find the amount of tensile steel required at midspan to resist a factored moment of 9500 in-kips if f_y = 60000 psi and f_c' = 3000 psi. Use USD method. **(21)**

5. A simply supported rectangular beam 14 in wide having an effective depth of 25 in carries a total factored load including its self weight of 8 kip/ft on a 24 ft clear span. It is reinforced with 8 in^2 of tensile steel which continues uninterrupted into the support. Using vertical U-stirrup, design the web reinforcement. Given: f_c' = 4000 psi and f_y = 60000 psi. **(21)**

Contd P/2

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6. A 15 in concrete wall supports a dead load of 15 k/ft and a live load of 12 k/ft. The allowable bearing capacity of soil q_a = 12 ksf at the bottom level of footing which is 4 ft below grade. Design the footing with f_c' = = 3 ksi and f_y = 40 ksi. **(21)**

7. (a) With sketches show the different types of reinforced concrete slab that are commonly used. **(4)**

(b) What are the ACI code criterion for tie and spiral spacing in column? **(4)**

(c) Why temperature and shrinkage reinforcement is used in slab? **(2)**

(d) A 16 × 20 in column is reinforced with six No. 9 bars. Find the axial load that will stress the concrete to 1200 psi. Also, find the ultimate capacity of this column as per ACI equation. **(11)**

SECTION – B

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

Properties of W12 sections are attached. Symbols used have usual meaning.

8. Define compact and non-compact sections. Determine plastic moment capacity of the hollow beam section (wall thickness 3/4") as shown in Figure 1(a). What will be the decrease of plastic moment of the same hollow section if wall thickness is decreased to 1/2" as shown in Figure 1(b). Consider bending about horizontal axis and f_y = 50 ksi. **(21)**

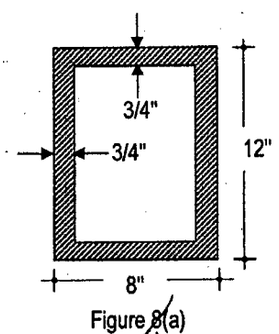

Figure 8(a)

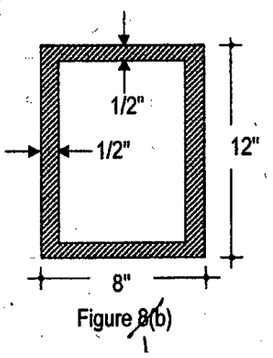

Figure 8(b)

9. Design a W12 section for a steel column (length = 15 feet) to support an axial dead load of 100 kip and a live load of 150 kip. Support conditions about X-axis and Y-axis bending are shown in Figure 2 (Properties of W12 sections are attached). Follow AISC/LRFD method and use ASTM A36 steel. Given that **(21)**

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

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

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Contd... Q. No. 9

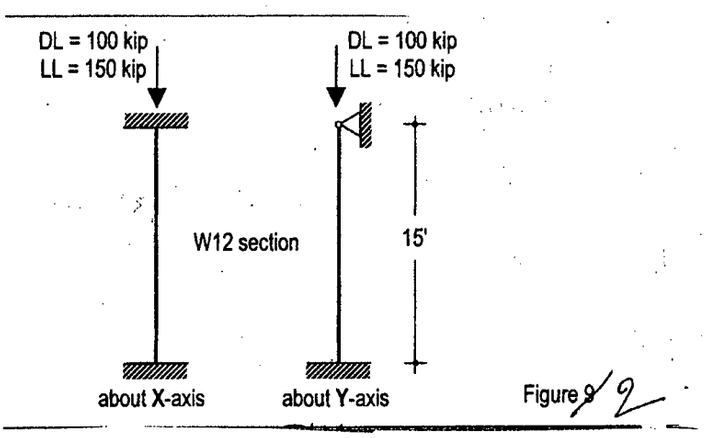

Figure 9/2

10. Two plates (15″ × 1/2″) are attached at the two sides of flanges of a W12 × 65 section to form a built-up column section (see Figure 3). Determine the maximum value of live load that can be safely applied on the column if dead load = 130 kip. Follow AISC/LRFD method and use ASTM A 36 steel. Assume both ends of the column are pinned/hinged having a length of 15 feet. Given that, **(21)**

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

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

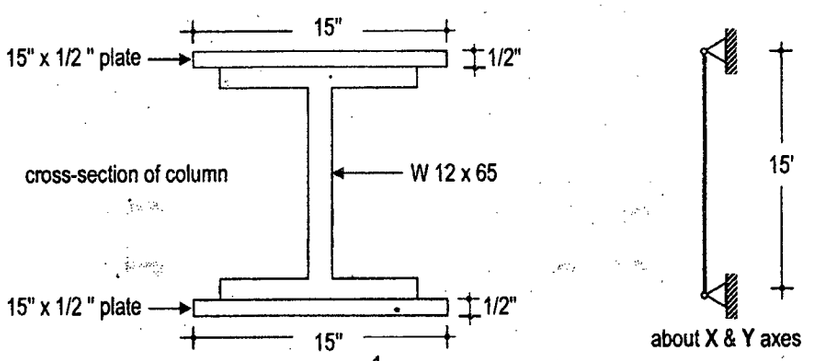

Figure 10/3

11. Design a W12 beam section on a simple span of 30 feet to support a dead load of 230 lb./ft (excluding beam self-weight) and live load of 300 lb./ft (see Figure 4). Self-weight of the beam section is not to exceed 35 lb./ft and deflection under service load is limited to $\frac{1}{300}$ of span length. Follow AISC/LRFD method and use ASTM A 36 steel. Check whether your designed beam section is compact or non-compact (Properties of W12 sections are attached). Given: **(21)**

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Contd... Q. No. 11

	Width-thickness ratio (λ)	λ_p	λ_r
flange	$\frac{b_f}{2t_f}$	$0.38\sqrt{\frac{E}{F_y}}$	$0.83\sqrt{\frac{E}{(F_y-10)}}$
web	$\frac{h_w}{t_w}$	$3.76\sqrt{\frac{E}{F_y}}$	$5.70\sqrt{\frac{E}{F_y}}$

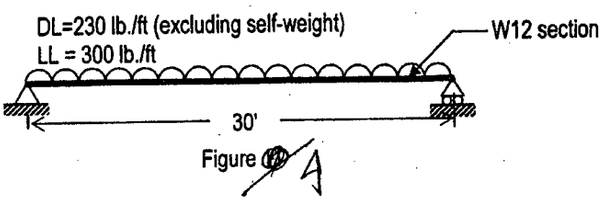

Figure 4

12. Investigate the capacity in block shear of the channel section [C 10 × 20; A_g = 5.88 inch^2; t_{web} = 0.379 inch] attached to a gusset plate with A 325 bolts (see Figure 5). Bolts are 3/4″ in diameter in standard holes. Also, determine the net area of the channel effective in tension and hence calculate the capacity of the channel section in tension. Follow AISC/LRFD method and use ASTM A 36 steel. Given: **(21)**

$$\varphi R_n = \begin{cases} 0.75\left(0.6F_y A_{gv} + F_u A_{nt}\right) \\ 0.75\left(0.6F_u A_{nv} + F_y A_{gt}\right) \end{cases}$$

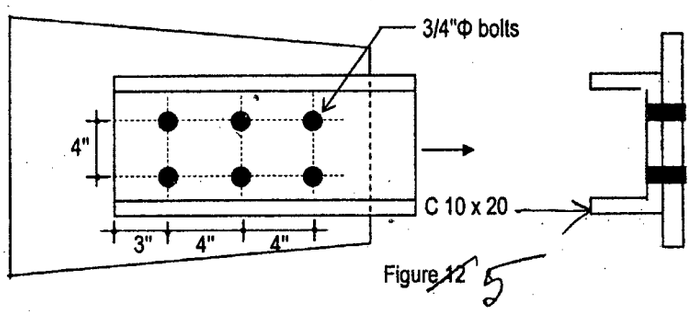

Figure 5

13. Determine the number of bolts required in a bearing-type connection to connect two channel sections [2 C 10 × 20; t_{web} = 0.379 inch] to a gusset plate (1″ thick) with A 325 bolts (see Figure 6(a)) to transmit a dead load = 90 kip and live load = 150. Bolts are 3/4″ in diameter in standard holes and threads are excluded from shear planes. Use three bolts per row and draw a neat sketch of final design. Follow AISC/LRFD method and use ASTM A 36 steel. What will be length (L_1 and L_2) of fillet weld (using E60XX electrode) at two sides of channel (see Figure 6(b)) to transmit the same amount of load? (Use Tables 1 and 2.) **(21)**

Contd P/5

CE 363/URP

Contd... Q. No. 13

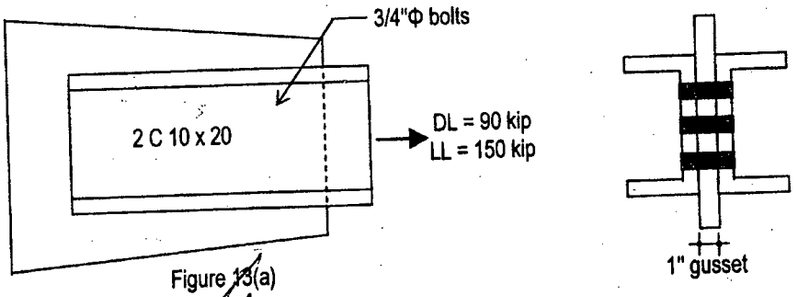

Figure 13(a)

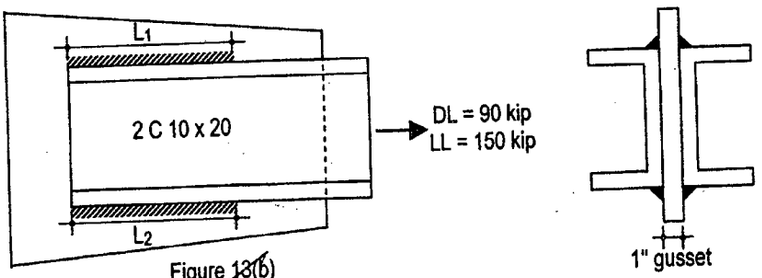

Figure 13(b)

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

Contd P/6

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14. Determine decompression moment and cracking moment for the cantilever prestressed concrete beam section as shown in Figure 7. Given, initial prestress (f_{si}) = 100 ksi, prestressing steel (A_{sp}) = 3 inch^2 (total); prestressing loss = 10%, f_c' = 6000 psi, $f_r = 7.5\sqrt{f_c'}$ and moment of inertia of the beam section = 10406.28 inch^4. Draw stress distribution at these moments. Also, determine the prestressing force required to produce a top fiber stress of –2 ksi (compression) at section near support, when external load acting on the beam is 2.5 kip/ft (including self-weight) on a cantilever span of 10 feet. **(21)**

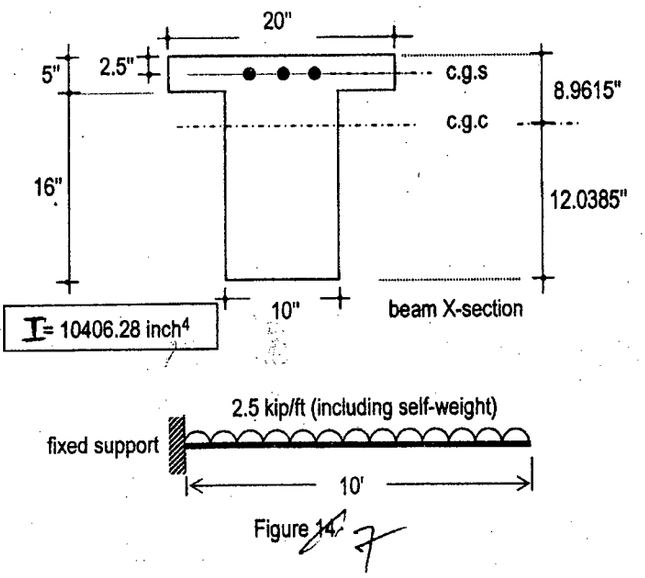
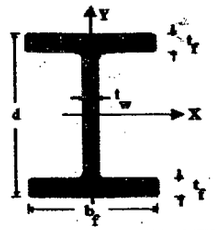


Figure 14



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

L-3/T-2/URP **Date : 02/06/2014**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 BURP Examinations 2011-2012

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

Full Marks: 210 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) What do you understand by 'Integrated Rural Development'? What are the major aspects of 'Comprehensively Integrated Rural Development Model'? **(3+7=10)**

   (b) Why is the 'Integrated Rural Development' needed? **(15)**

   (c) Briefly discuss the way of people's participation in rural development. **(10)**

2. (a) What do you know about 'Growth Center'? Explain the reasons why the spatial impact of growth center is important. **(4+8=12)**

   (b) How can the government plan subsidy with respect to the farmers' financial status? Describe the scope of integrated rural development in fisheries and livestock development. **(3+20=23)**

3. (a) Define 'Land Reform' and its objectives. Explain the reasons why 'Rapid rural Appraisal' is important. **(7+8=15)**

   (b) What are the major differences between participatory rural appraisal and rapid rural appraisal? **(12)**

   (c) Rural growth, in terms of economic prosperity is transmitted by two sets of opposing forces. Briefly describe those forces. **(8)**

4. (a) Differentiate Sixth Five Year Plan (2011-2015) from Fifth Five Year Plan (1997-2002) on the variation of sectoral strategies. **(11)**

   (b) Name the past independence period rural development program jointly conducted by GOB and WB, which focused on growth center approach. What were the study recommendations? **(8)**

   (c) Why V-AID program achieved limited success? Discuss the major achievements of Comilla experiment on rural development. **(5+7=12)**

   (d) What do you know about the major functions of Krishi Shomobay Shomittee (KSS)? **(4)**

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PLAN 331

SECTION – B

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

5. (a) Make a comparison of the rural road network classification formulated by Planning Commission, RHD and LGED. **(8)**

(b) "The higher the road density or the larger the road network within a region, the more likely that road conditions of that region will be poor," – justify the statement. According to Road Condition Survey (1993), classify the conditions of Rural Road. **(7+5=12)**

(c) Describe the potentiality of 'Rural Market' as growth centre in Bangladesh and classify 'Rural Market'. **(8)**

(d) "Density of growth centre is positively correlated with level of agricultural production." – Do you agree? Justify your answer. **(7)**

6. (a) Differentiate between the direct and indirect methods of measuring internal migration. **(11)**

(b) On December 31, 2001 nationwide census has been conducted for country A with a population of 23,54,674. From that date to December 31, 2011; 1,50,000 babies were born and 50,000 people died. After 10 years, in the census year (2011), population of that country is 1,25,50,263. For the final census year, total number of immigrants and emigrants for that country is 5,000 and 3,000 respectively. Mid-year population of the country is 1,10,73,328. Calculate the amount of net internal migration during the 10-year period and also calculate the net international migration rate for the final census year. **(9)**

(c) 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? Discuss in short. **(7)**

(d) Conceptualize rural development from the perspective of the three approaches taken for rural poor people. **(8)**

7. (a) Discuss the role of decentralization process on rural people's accessibility to capital assets. **(12)**

(b) Which methods are most suitable to determine the diversified livelihood strategies of rural households? **(8)**

(c) Categorize vulnerability of rural people based on various risk factors. Are the concepts of vulnerability and poverty similar? Discuss with examples. **(6+3=9)**

(d) Discuss the role of combined gross enrolment ratio and GDP per capita as the indicators of Human Development Index (HDI). **(6)**

Contd P/3

PLAN 331

8. (a) Define the 'Virtuous circle model' to explain the flow of goods between urban and rural areas as an essential category of rural-urban interactions/linkages. **(9)**

(b) Draw a methodological framework to investigate rural-urban linkages. **(7)**

(c) According to UFRD approach, define the role of urban centres to promote rural area development. What are the major limitations in practical application of this approach? **(6+5=11)**

(d) Suppose a region's relative Poverty Line (PL) is derived as 35% of its average expenditure or income. Absolute PL for the region is set as BDT 3,000/month/HH. Monthly average income or expenditure for that region is BDT 15,000/HH. From the following table identify both absolute and relative poor households (HHs). Assume the 11 HHs given in the following table as representative sample. **(8)**

HH Serial No.	Income or expenditure/day (BDT)
HH 01	99
HH 02	137
HH 03	190
HH 04	122
HH 05	78
HH 06	189
HH 07	132
HH 08	200
HH 09	187
HH 10	174
HH 11	198

Also assume that total population of that region is 20,000. Calculate the total number of absolute and relative poor HHs for HH size 4.9. Also calculate the head-count ratio and Poverty Gap (PG) for that region.
