BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1   BURP Examinations 2012-2013

Sub : **CE 209** (Construction Materials)

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) What are the roles of hydraulic structures? Draw a typical Runoff hydrograph.   **(7⅓)**

   (b) Write down different types of fixed bridges and explain the load bearing mechanism of Arch bridge.   **(6)**

   (c) Define the following terms: **(10)**

       (i)   Converted timber

       (ii) 10 year 24 hr rainfall

       (iii) Time of concentration

       (iv) Bituminous materials.

2. (a) Write down the differences between Flexible pavement & Rigid Pavement.   **(5)**

   (b) Draw a typical cross-section of a flexible pavement with necessary detailing and describe each component.   **(8⅓)**

   (c) Differentiate between: **(10)**

       (i)   Hard wood & Soft wood

       (ii) Plywood & timber

       (iii) Natural & Water seasoning

       (iv) Brown Rot & White Rot.

3. (a) Draw a flow diagram of different types of foundation. What is the function of a pile cap?   **(6)**

   (b) Describe different types of natural defects of timber.   **(6)**

   (c) What is creosoting? Write down the types and application of this method of preservative.   **(2⅓)**

   (d) Differentiate between: **(9)**

       (i)   Reinforced concrete construction and Composite construction,

       (ii) Load bearing structure and Frame structure,

       (iii) Pre-Cast pile & Cast in Situ pile.

CE 209/URP

4. (a) Briefly explain the basic soil properties. **(7)**

(b) Given, a dense soil mass has a wet unit weight of 130 lb/cu ft and a specific gravity of 2.65. Calculate dry unit weight, void ratio, degree of saturation, relative density and moisture content of the dense soil mass. Assume, e_{max} is 0.86, e_{min} is 0.48 and porosity is 27.2%. **(10)**

(c) Graphically and theoretically explain the relation between rainfall and runoff. **($6\frac{1}{3}$)**

SECTION – B

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

5. (a) Write down the chemical composition of good brick. **(7)**

(b) What are the ingredients of raw materials from which cement is manufactured? What are the chemical compounds present in cement? **(7)**

(c) How many types of cements are there? Briefly describe their applications in construction industry. **($9\frac{1}{3}$)**

6. (a) Describe classification of lime. Define calcination and slaking of lime. **(10)**

(b) Define fine aggregate and coarse aggregate used in concrete. Fineness modulus of a sand sample is zero, draw gradation curve of this sand. Is this sand good for making concrete? **($13\frac{1}{3}$)**

7. (a) Draw typical gradation curve of a well, poor, uniform and gap graded aggregate. **($14\frac{1}{3}$)**

(b) What are the factors responsible for hydraulicity of lime? Mention the composition of different types of hydraulic lime. **(9)**

8. (a) What are the laboratory tests of brick? **(4)**

(b) Differentiate between Intermittent and Hoffman's Kiln. **(4)**

(c) What are the uses of lime? **(4)**

(d) Write down the classification of brick. **(4)**

(e) Describe four moisture conditions of aggregate. Why apparent specific gravity is greater than bulk specific gravity? **($7\frac{1}{3}$)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1   BURP Examinations 2012-2013

Sub : **HUM 179** (Sociology)

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 is value neutrality? Explain how sociologists think themselves away from the familiar routines of daily lives through sociological imagination.   **(15)**

    (b) How do conflict viewers respond to the functionalist theoretical perspective of sociology?   **(20)**

2. (a) Define social norms. Explain why culture is considered as a normative system of a society.   **(10)**

    (b) 'Ethnocentrism is a habit to judge other ways of life by the standards of our own group' — Explain.   **(10)**

    (c) How does socialization shape human behaviour? Critically evaluate the roles of family and peer group as the agents of socialization.   **(15)**

3. (a) Critically discuss dependency theory in the context of Bangladesh.   **(10)**

    (b) 'Globalization process is intensifying world wide social relations and interdependences' — Explain.   **(15)**

    (c) What do you understand by poverty? Differentiate between absolute poverty and relative poverty.   **(10)**

4. Write short notes on any <u>THREE</u> of the following: **(35)**

    (a) System of social stratification.

    (b) Karl Marx theory of class differences.

    (c) Types of socialization.

    (d) Dominant ideology.

HUM 179/URP

SECTION – B

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

5. (a) How do you define natural greenhouse and man-made green house? **(8)**

(b) Define physical environment. Briefly discuss how the socio-economic development depends on physical environment. **(15)**

(c) What are the negative impacts of global warming? **(12)**

6. (a) Briefly discuss the classification of cities according to urban sociologists. **(7)**

(b) What do you mean by cities' city? What problems do megacities have and how can those problems be tackled? Illustrate your answer with examples. **(20)**

(c) Discuss the major pollution issues in Dhaka city. **(8)**

7. (a) What do you mean by deviance and juvenile delinquency? Briefly describe sociological perspective of deviance. **(20)**

(b) Discuss the causes of juvenile delinquency in a society. **(15)**

8. Write short notes on any <u>THREE</u> of the following: **(35)**
   (a) The impacts of industrial revolution
   (b) The impacts of capitalism
   (c) The functions of a family
   (d) The sources of social change.

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1   BURP Examinations 2012-2013

Sub : **PLAN 211** (Urban Planning Principles)

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) Define open space. What are the criteria that open space must fulfill?   **(6)**

   (b) Briefly discuss the categories of open space that serves local or neighborhood areas.   **(10)**

   (c) Explain the importance of open space from environmental and social point of view.   **(19)**

2. (a) Draw a neat diagram and explain the "Multiple Nuclei Theory".   **(10)**

   (b) Who identified the dimensions of good city form? Briefly discuss the dimensions.   **(12)**

   (c) What do you understand by sustainable development? Discuss the underlying principles of sustainable development.   **(13)**

3. (a) Planning for commercial and employment centers is a challenge to find a fit among three aspects.   **(5)**

   (b) Explain the basic categories of office space. Which factors are considered during evaluation and planning of a site for shopping center development?   **(8+12=20)**

   (c) Illustrate Huff's "Gravity Model" with example.   **(10)**

4. (a) What are the differences between "Le Ville Radieuse" and "Broadacre City"? Discuss the elements of Le Corbusier's "Visionary Plan".   **(4+6=10)**

   (b) What are the differences between the terms Conservation and Preservation?   **(8)**

   (c) What do you understand by "Adaptive Reuse" for conservation of historic sites? How can government ensure sound political and institutional framework for conserving heritage sites?   **(5+12=17)**

PLAN 211

SECTION – B

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

5. (a) Define 'Urban Planning' in your own word. **(5)**

   (b) Define 'Floor Area Ratio' (FAR). Briefly analyze the role of FAR as a density control tool with special reference to Dhaka city. **(5+15=20)**

   (c) Briefly describe the principles of designing an urban centre with special reference to pedestrian movement and vehicular movement. **(10)**

6. (a) Why is a system of hierarchical road network important in urban area? Briefly discuss the functions of different hierarchies of road network. **(5+15=20)**

   (b) As an urban planner you are assigned to plan an industrial area in a new urban area adjacent to a river. Which industrial location policy (concentration or dispersion) do you think suitable for the industrial area that will be mainly comprised of manufacturing and service industries? **(15)**

7. (a) Define 'occupancy density'. Briefly describe how occupancy rate can be derived to determine desirable density of an urban area. **(5+20=25)**

   (b) Briefly describe the issues pertaining to the organization and distribution of different urban land uses with special reference to the principles of urban land use planning. **(10)**

8. Write short notes on the following (Any five) **(5×7=35)**
   - (i) Smart growth,
   - (ii) Urban sprawl,
   - (iii) Urban agglomeration,
   - (iv) Urban gentrification,
   - (v) Urban deferred,
   - (vi) New urbanism.

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA
L-2/T-1   BURP Examinations 2012-2013
Sub : **PLAN 217** (Site and Area 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) What are the factors considered in sub-division planning? Among these factors, which is the important one for selling plot and why it is important?   **(7+8=15)**

    (b) As a planner, how can you overcome the practical disadvantages of a cul-de-sac development?   **(5)**

    (c) How a common courtyard with a small access street can play an important role for creating a good housing design? Explain with necessary sketches.   **(15)**

2. (a) What aspects should be considered during sub-division planning in order to minimize future drainage problem?   **(4)**

    (b) Describe simple grid iron pattern. Write down the names of two layout patterns that are slightly different from pure grid iron pattern and also show a comparative scenario between these two layout patterns.   **(7+10=17)**

    (c) "The public sewerage system has benefit over the private sewerage system" — Justify this statement.   **(6)**

    (d) What aspects should be considered during the placement of water supply system?   **(8)**

3. (a) What do you understand by Rain Water Harvesting? What are the potential uses of harvested rain water?   **(8)**

    (b) What is First Flush device? How does the First Flush device operate as a manual system and semi-automatic system? Describe with necessary sketches.   **(4+15=19)**

    (c) What are the types of Filter unit in Rain Water Harvesting system?   **(4)**

    (d) How much rain can be collected from a 550 sq.m rooftop catchment area with annual rainfall of 1250 mm?   **(4)**

4. Write short notes (any Five):   **(5×7=35)**

    (a) Cluster Pattern Development,

    (b) Four important design principles of site planning,

    (c) Connection types of sewerage system,

    (d) Methods of Rain Water Harvesting,

    (e) Recharge structure of Rain Water Harvesting,

    (f) Concept of house grouping.

PLAN 217/URP

SECTION – B

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

5. (a) "Analysis of a site should consider all existing features, both natural and man-made to determine those inherent qualities that give a site its personality" — Illustrate the quoted sentence in your own words and sentences. **(20)**

    (b) What is the first task while designing a plan for a site? Discuss it using an example with pictorial depiction. **(15)**

6. (a) What are the sensuous forms and criteria of a site perception? Explain each of them. **(12)**

    (b) In the perspective of site and area planning, spatial character varies with proportion and scale. Write down the differences and relation between 'proportion' and 'scale'. **(8)**

    (c) Write down the objectives of designing a shopping centre. Discuss the design criteria of shopping centres. **(15)**

7. (a) Justify the following sentence "Temperature and pressure differences affect local air movement and the microclimate of a site." In this context, describe elaborately the distribution and characteristics of air movement of different kinds of sites. **(15)**

    (b) Why trees are the main elements of landscaping a site? Describe the beneficial effects/impacts of trees in modifying the microclimate of a site. **(15)**

    (c) Name the ground surface materials of landscaping a site. **(5)**

8. (a) What do you understand by grading? Illustrate with a neat diagram the process of 'cut' and 'fill' in a site. **(9)**

    (b) Discuss and show with a neat diagram the drainage system of a site. **(10)**

    (c) Write short notes on any four of the followings: **(4×4=16)**

    (i) Albedo

    (ii) Shading

    (iii) Behavioral support

    (iv) Vista

    (v) Maze.

ENTRA

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1   BURP Examinations 2012-2013

Sub : **PLAN 291** (Statistics for Planners 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) Compare the merits and limitations of mean, median and mode with examples.   **(10)**

    (b) The following table shows the distribution of delay time of people travelling by existing public bus services along Mirpur road during their daily work trips:

Delay time (in minutes)	Frequency
10-20	40
20-30	79
30-40	50
40-50	44
50-60	30
60-70	28
70-80	20
80-90	9

    Construct a percentage Ogive to find–

    (i) How many people experience delay time of more than 32 minutes but less than or equal to 1 hour during their work trip daily?   **(10)**

    (ii) Government has decided to implement Bus Rapid Transit (BRT) system along Mirpur road if 25% of the people experience more than 50 minutes of delay during their work trip. Will the government implement BRT system then? Verify the result from both the curve and the formula.   **(15)**

2. (a) "The measurement units of the variance does not make any sense" — Explain the statement.   **(5)**

    (b) Differentiate between cross-section and time series data with examples.   **(5)**

PLAN 291

Contd... Q. No. 2

(c) Humanities department of BUET has conducted a survey in different departments on the performance of the students of batch 2011 and batch 2012 on 'Economics' course. The following table shows the survey results of two departments:

Total score (in 100)	40-50	50-60	60-70	70-80	80-90	90-100
URP Department	3	8	14	18	10	2
Civil Department	10	15	20	30	25	10

(i) Which department shows greater variability in the distribution of scores? **(10)**

(ii) What is the combined mean and standard deviation of scores obtained by all the students of two departments? Also interpret the results. **(15)**

3. (a) The length of time spent in a parking space (parking duration) by vehicles has been recorded at 'New Market' area on a typical day. It is found that 20 cars spent 15 minutes, 35 cars spent 30 minutes, 50 cars spent 1 hour and 80 cars spent 2 hours. Find out the average parking duration (in hr) of vehicles in the parking spaces on that day. **(6)**

(b) Discuss different levels of measurements with appropriate examples. **(12)**

(c) A user opinion survey has been conducted on 5000 persons about the walking environment in 'Ramna park' at morning. The mean age of the respondents is 40 years and the standard deviation is 12 years. Using Chebyshev's theorem, determine the approximate percentage of the respondents who belong to the age of 16 to 64 years. **(10)**

(d) The following table gives the distribution of one day cricket match scores by Bangladesh Cricket Team: **(7)**

Total scores	No. of one day matches
50-90	20
90-130	30
130-170	55
170-210	80
210-250	40
>250	10

Find out the score that Bangladesh Cricket Team made most often.

PLAN 291

4. (a) The following table shows the distribution of hours spent in a week on studying during preparatory leave before final exam by BUET students:

Total hours (in a week)	No. of students
10-20	18
20-30	20
30-40	30
40-50	22
50-60	10

   (i)   Calculate the first four moments about the mean for the above distribution.   **(15)**

   (ii) If the moment co-efficient of skewness for the perfectly symmetrical curve is zero, comment on the measures of skewness for the given distribution.   **(5)**

   (iii) Classify the above distribution from the viewpoint of peakedness.   **(5)**

   (b) What is meant by 'mild outlier' and 'extreme outlier'? Explain with examples.   **(6)**

   (c) A group of seven fiends, just have received their grades of statistics examination. Six of the students reveal that they received grades of 3.5, 3.25, 3.75, 4, 3.75 and 4 respectively, but the seventh student is reluctant to disclose her grade. After some calculations she announces that the group averaged 3.60 on the examination. What is her score?   **(4)**

SECTION – B

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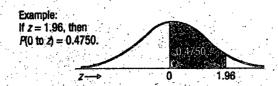

5. There are 200 workers in a factory. 74 workers take a bus only to go to the factory, 32 workers take a rickshaw only to go to the factory, 26 workers take both a rickshaw and a bus to go to the factory. Rest of the workers (68) go to the factory on foot.

   (a) Draw a Venn Diagram to present the above information   **(10)**

   (b) If one worker is selected at random what is the probability that

   (i)   the worker takes a bus, that is, $P(B)$?   **(5)**

   (ii) the worker takes a rickshaw, that is, $P(R)$?   **(5)**

   (iii) the worker takes a bus or a rickshaw, that is, $P(B \cup R)$?   **(5)**

   (iv) the worker takes both, that is, $P(B \cap R)$?   **(5)**

   (v)   the worker takes a rickshaw given that the worker takes a bus, that is, $P(R|B)$?   **(5)**

4
=/=

6. The probability that expectant parents will have a girl is $\frac{1}{2}$ or 0.50. Likewise, the probability they will have a boy is 0.50. For families with five children, what is the probability

    (a) of having three girls and two boys?   **(10)**

    (b) that all the children are girls?   **(10)**

    (c) of having at least one girl?   **(15)**

7. The mean grade of a class test was 6.7 out of 10 and the standard deviation was 1.2. Assuming the grades to be normally distributed, determine

    (a) percentage of students scoring less than 6   **(10)**

    (b) percentage of students scoring between 6 and 7   **(10)**

    (c) the minimum grade (score) of the highest 10% of the class.

8. (a) A study is made of how long families in a slum have lived at their current location. A random sample of 40 families revealed a mean of 35 months, with a sample standard deviation of 6.3 months. Construct a 95% confidence interval for the mean time that the families have lived at the present location.   **(17½)**

    (b) A sample poll of 100 voters chosen at random from all voters in a given ward of Dhaka indicated that 55% of them were in favour of a particular candidate. Find the 95% confidence interval for the proportion of all the voters in favour of this candidate.   **(17½)**

Areas under the Normal Curve

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990