SECTION – A
There are FOUR questions in this section. Answer any THREE.

1. (a) Write short notes on the following types of cement:
   (i) Pozzolana cement
   (ii) Rapid hardening cement
   (iii) Quick setting cement.
   (b) What are the characteristics of artificial cement?
   (c) Describe functions of various ingredients of cement.
   (d) What do you mean by shallow and deep foundation?

2. (a) Describe Hoffman's Kiln with its operations.
   (b) What is frogmark of a brick? What are the factors that affect the quality of bricks?
   (c) What are the factors affecting physical properties of steel?

3. (a) What is workability of concrete? What are the factors affecting workability?
    Describe a method to measure the workability of concrete.
   (b) What is bleeding of concrete?
   (c) What do you mean by bulking of sand?
   (d) Write down the uses of plastics in building constructions.

4. (a) Write short notes on the following:
    (i) Liquid limit
    (ii) Shear resistance
    (iii) Void ratio
    (iv) Plasticity index
    (v) Relative density
    (vi) Permeability
    (vii) Porosity of soil.
   (b) What are the uses of sand?
   (c) Write down the factors which control foundation design for optimal cost.
SECTION – B

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

5. (a) Write short notes on the following types flood control on rivers:
   (i) Channel conveyance
   (ii) Levees
   (iii) Reservoirs
   (iv) Floodways

(b) What are the six broad categories of structural system in NEHRP Recommended Seismic Provisions? (5)

(c) Write down the characteristics and qualities of good building stones. (6½)

(d) Write down four names of iron ores. (2)

6. (a) Write down 7 names of non-ferrous metals of greatest engineering and industrial importance. (3½)

(b) What do you mean by end bearing pile and friction pile? (3)

(c) Describe fabrication of plastics. (12½)

(d) What are veneer, plywood and reconstructed wood? (4½)

7. (a) Draw a typical section of timber and describe all of its parts. (12)

(b) Write down the full meanings of the following abbreviations: (6)
   (i) BNBC
   (ii) ASTM
   (iii) UBC
   (iv) ACI
   (v) AASHTO
   (vi) NEHRP

(c) Write down the advantages of concrete over other engineering materials. (5½)

8. (a) What are the factors controlling properties of concrete? (5½)

(b) Write down the properties of good sand. (6)

(c) Write short notes on the following tests of cement:
   (i) Compressive strength test
   (ii) Fineness test
   (iii) Setting time test (12)
SECTION - A

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

1. (a) "Urban planning is not about images but is a way to make a difference; it is a framework that helps transform a vision into reality using space as key resource for development and engaging stakeholders along the way." Explain. **(20)**
   (b) Explain the major land use components of a town. **(15)**

2. (a) Town centre is the focus of an urban area. For appropriate scale of development in town centres, care should be given to a number of factors. What are those factors? Explain briefly. **(5+20=25)**
   (b) Why does an urban planner need to know land use classification system? **(10)**

3. "Land is not only a functional space devoted to various uses but also a setting for activity system" — Explain with relevant examples. **(35)**

4. (a) Draw a neat diagram and explain basic principles of Clarence Perry's neighbourhood unit concept. **(5+18=23)**
   (b) Explain the advantages and disadvantages of mixed land use and segregated land use. **(12)**

SECTION - B

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

5. (a) Briefly discuss Sir Patrick Geddes' principles for town planning. **(9)**
   (b) Why health became a major concern of urban planning after industrial revolution? **(8)**
   (c) Briefly discuss locational requirement for employment areas. **(18)**

Contd .......... P/2
PLAN 211/URP

6. (a) What do you understand by the term "urban spatial structure"? (8)
(b) What does Burgess mean by "invasion and succession" of rings mentioned in concentric zone theory? (8)
(c) Explain Huff's Gravity Model and its application. (13)
(d) Distinguish between the terms "Conservation" and "Preservation". (6)

7. (a) Compare the characteristics of 'Shopping Center' and 'Shopping District'. (6)
(b) According to your assessment, which characteristics of contemporary commercial development in Dhaka is detrimental from environmental perspective? (20)
(c) Discuss the features of an industrial park. (9)

8. (a) Explain the words of John Raskin "They are not ours. They belong to partly to those who built them and partly to all generations of mankind who are to follow us". (5)
(b) As a planner which intervention method and management tools would you apply to conserve a historic site in old Dhaka. (15)
(c) Discuss the importance of open space from socio-economic and environmental perspectives. (15)
SECTION - A

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

1. (a) How a skillful planner can secure additional valuable building sites through proper use of cul-de-sac? (4)
   (b) What aspects should be considered regarding the shape and dimension of plot and road alignment in layout planning? (18)
   (c) In sub-division planning, why should the site have an optimum size? (5)
   (d) As a planner, which type of water supply system will you recommend for a residential development and why? (8)

2. (a) "Partial segregation in small groups may be advantages compared to complete segregation of different socio-economic groups in a neighborhood unit" — Do you agree with this statement? Justify your answer. (7)
   (b) Briefly describe with illustration the community lay-out pattern that originated from the well-known Radburn Plan. (8)
   (c) Name the sub-division patterns those can create maximum length of road-per-plot and least amount of road-per-plot respectively. Write down the disadvantages of these two patterns. (12)
   (d) If the water supply system and sewerage system, both fails to work simultaneously under certain circumstances, which supply system should get priority to be resolved first? Explain your answer. (8)

3. (a) Discuss the importance of 'Urban Rain Water Harvesting' in the context of Dhaka city, with necessary diagrams. (12)
   (b) What are the types of recharge well? Describe the construction method of recharge well. (5+4=9)
   (c) Describe the storage tank of rain water harvesting system. What aspects should be considered regarding the placement and capacity of storage tank? (14)
PLAN 217/URP

4. Write short notes (any Five): (5×7=35)
   (a) Basic design requirements of 'T' and 'Y' cul-de-sac
   (b) Site characteristics of sub-division planning
   (c) Varun Filter system
   (d) Loop street pattern
   (e) Advantages of private community sewerage system
   (f) Downspout.

SECTION – B

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

5. Write short notes on the following (any five). (5×7=35)
   (i) Site planning checklist,
   (ii) Types of Sites and Areas,
   (iii) Difference between Traditionally Designed Parking and Efficiently Designed Parking,
   (iv) The need for Children's Outdoor Play Area,
   (v) Surveillance by Design and Planning,
   (vi) Noise and Detailed Area Planning,
   (vii) Bio-swale and Sustainable Urban Drainage.

6. "For every site there is an ideal use and for every use there is an ideal site." — Do you agree with this statement? State reason(s). How would you select a site for a specific function? (10+25=35)

7. What is a Detailed Area Plan (DAP)? On what basis DAPs for different areas are to be drawn and what is the logic for this basis? (5+30=35)

8. What are the principal functions of streets? Describe the importance of well-planned and well-designed streets. (15+20=35)
 SECTION – A

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

1. (a) What do you understand by urbanization, urbanism and over urbanization? (9)
   (b) What is meant by mega city? Describe the factors that have led to the growth of cities. (16)
   (c) Briefly discuss the evaluation of mega city. (10)

2. (a) What do you know about capitalism? Write down the positive and negative consequences of capitalism. (15)
   (b) Show how the technological developments have changed our social and family life. (10)
   (c) What are the socio-cultural factors that influence population growth? Describe in detail. (10)

3. (a) What do you mean by environment? Discuss different types of environment. (8)
   (b) Briefly discuss the potential consequences of global warming. (15)
   (c) Write down the human activities and their impact on the environment. (12)

4. Write short notes on any THREE of the following: (35)
   (a) Green revolution
   (b) Regional form of government
   (c) Fatalism
   (d) Modernization theory.

Contd .......... P/2
There are FOUR questions in this section. Answer any THREE.

5. (a) What is sociological imagination? Explain the significant roles of sociological imagination for understanding social relationships. (10)
   (b) Make a comparison between functionalism and conflict perspective of sociology. (15)
   (c) Evaluate the relationship between sociology and other branches of social science. (10)

6. (a) Explain anticipatory socialization and re-socialization with suitable examples. (10)
   (b) Discuss G. H. Mead's socialization model and its distinct stages. (15)
   (c) Do you think that traditional gender roles are being perpetuated through our family? Show arguments in favour of your answer. (10)

7. (a) What do you mean by deviance? Describe the factors affecting deviance in a society. (15)
   (b) Discuss the changing role of present family in Bangladesh. (10)
   (c) Describe the types of initiative the government should take to reduce rural-urban migration in Bangladesh. (10)

8. Write short notes on any THREE of the following: (35)
   (a) Organized crime
   (b) Role-status conflict
   (c) Print media
   (d) Community.
L-2/T-1/URP

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1  BURP Examinations 2013-2014

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) Distinguish between the four levels of measurement in statistics with suitable example of each measurement.
(b) The following table shows data on the daily travel distances of non-resident students coming to the Architecture and Planning Faculty of BUET.

<table>
<thead>
<tr>
<th>Distance (in km)</th>
<th>No. of Students</th>
<th>Distance (in km)</th>
<th>No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 0.5</td>
<td>50</td>
<td>2.5 – 3</td>
<td>78</td>
</tr>
<tr>
<td>0.5 – 1</td>
<td>100</td>
<td>3 – 3.5</td>
<td>54</td>
</tr>
<tr>
<td>1 – 1.5</td>
<td>60</td>
<td>3.5 – 4</td>
<td>90</td>
</tr>
<tr>
<td>1.5 – 2</td>
<td>80</td>
<td>4 – 4.5</td>
<td>33</td>
</tr>
<tr>
<td>2 – 2.5</td>
<td>110</td>
<td>4.5 – 5</td>
<td>45</td>
</tr>
</tbody>
</table>

(i) Describe the dataset with the help of mean, mode and standard deviation.
(ii) Using the previous findings, what can you say about the skewness of the distribution?

2. (a) Knowing only the mean is not enough to get a good understanding of the characteristics of a dataset, a measure of dispersion is also required. — Explain the statement.
(b) Using relevant example, explain why standard deviation is a better measure compared to variance.
(c) A survey is conducted in 52 regions to find a pattern in the gross value of agricultural productivity. The value is represented in terms of monetary value of produced crops. The following table shows the frequency distribution of the collected data.

<table>
<thead>
<tr>
<th>Value of Agricultural Products (in million Taka)</th>
<th>Frequency</th>
<th>Value of Agricultural Products (in million Taka)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 – 12</td>
<td>3</td>
<td>30 – 36</td>
<td>9</td>
</tr>
<tr>
<td>12 – 18</td>
<td>4</td>
<td>36 – 42</td>
<td>7</td>
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<tr>
<td>18 – 24</td>
<td>13</td>
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</tr>
<tr>
<td>24 – 30</td>
<td>14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Determine the inner and outer Fences of the distribution and find the presence, if any, of the mild and extreme outliers.
3. (a) It is found that the home to work trip of a person is divided into four segments with a total distance of 8 km. She travels the first segment of 1.5 km in 20 minutes, the second 3 km in 50 minutes, the third 1 km in 10 minutes and the remaining distance in 1.20 hours. What is her average speed of travel from home to work in meter per second?

(b) Within a sample of population 95% are aged between 17 years and 55 years. Assuming that the ages are distributed normally, find:

(i) the mean age of the population.

(ii) the standard deviation of age.

(iii) Is it possible that a person with age 72 years is present in this sample? Explain your answer.

(c) Discuss the advantages and disadvantages of using mean and median to determine the central tendency of a distribution.

4. (a) The average income of households in a city increases by 4% in Year 1, then 5% in Year 2 and 8% in Year 3. But in Year 4, it decreased by 2%. Determine the average rate of increase or decrease of income over the four years.

(b) What information is carried by the values of skewness and kurtosis of a dataset? Use diagram(s) to explain your answer.

(c) Data collected for a research results in the following table showing the distribution of weekly working hours of 200 service holders of a ward in Dhaka city.

<table>
<thead>
<tr>
<th>Working Hours</th>
<th>Percentage of Service Holders (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 23</td>
<td>12</td>
</tr>
<tr>
<td>23 - 31</td>
<td>16</td>
</tr>
<tr>
<td>31 - 39</td>
<td>28</td>
</tr>
<tr>
<td>39 - 47</td>
<td>34</td>
</tr>
<tr>
<td>47 - 55</td>
<td>10</td>
</tr>
</tbody>
</table>

Comment on the peakedness of this distribution. Interpret any value you have obtained.

(d) Define OGIVE curve and briefly explain its importance.
PLAN 291/URP

SECTION – B

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

5. (a) List all possible outcomes in rolling two dice simultaneously. (10)
   (b) What is the probability of getting a total of 7 in rolling two dice simultaneously? (5)
   (c) What is the probability of getting a total of 6 or less in rolling two dice simultaneously? (5)
   (d) What is the probability of getting more than 5? (5)
   (e) What is the probability of getting a total of 5 or an odd number? (10)

6. There are 400 workers in a factory. 148 workers take a bus only to go to the factory, 64 workers take a rickshaw only to go to the factory, 52 workers take both a rickshaw and a bus to go to the factory. Rest of the workers (136) 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? (5)
      (ii) the worker takes a rickshaw? (5)
      (iii) the worker takes a bus or rickshaw? (5)
      (iv) the worker takes both rickshaw and bus? (5)
      (v) the worker takes a rickshaw given that the worker takes a bus? (5)

7. (a) A market research company has discovered that 30 percent of the people who earn between Tk. 40,000/= and Tk. 60,000/= per month have bought a car during the past five years. In a sample of 10 people earning between Tk. 40,000/= and Tk. 60,000/= per month–
      (i) what is the probability that between 4 and 6 people have bought a car within the past five years? (10)
      (ii) what is the probability that at least one person has bought a car within the past five years? (10)
   (b) During the rush hours cars arrive at a city centre car park at the rate of 35 every 60 minutes.
      (i) what is the probability of exactly 5 arrivals over a 10 minute time period? (8)
      (ii) what is the probability of exactly one arrival over a 10 minute time period? (7)

8. The households in a ward in Dhaka city have a mean monthly income of Tk. 18,000/= and a standard deviation of Tk. 2,000/=.
   (a) What proportion of households has income more than Tk. 14,000/=? (10)
   (b) What proportion of households has income between Tk. 17,000/= and Tk 21,000/=? (10)
   (c) What is the minimum income above which fall 25 percent of the highest income households? (15)
### Areas under the Normal Curve

**Example:**

If \( z = 1.96 \), then

\[
\Phi(z) = 0.4750.
\]

<table>
<thead>
<tr>
<th>( z )</th>
<th>0.00</th>
<th>0.01</th>
<th>0.02</th>
<th>0.03</th>
<th>0.04</th>
<th>0.05</th>
<th>0.06</th>
<th>0.07</th>
<th>0.08</th>
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<tbody>
<tr>
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<td>0.0067</td>
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<td>0.0202</td>
<td>0.0269</td>
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<td>0.0441</td>
<td>0.0508</td>
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<td>0.1195</td>
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<td>0.4162</td>
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<td>0.5293</td>
<td>0.5343</td>
<td>0.5393</td>
<td>0.5443</td>
</tr>
</tbody>
</table>

Here, \( \Phi(z) \) represents the cumulative probability up to \( z \) standard deviations above the mean. The table provides the area under the normal curve for various values of \( z \).