with examples.

Date: 06/05/2023

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 BURP Examinations 2021-2022

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

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 questions. 1. (a) Discuss the objectives of urban planning in the New Urban Agenda era. (12)(b) What do you understand by the term 'sustainable development'? How can urban planning be a powerful tool for achieving SDG 11? Explain briefly. (5+18=23)2. (a) From your perspective, why does an urban planner need knowledge of activity systems? Interpret briefly. (17) (b) Discuss the three sets of land use values. (12) (c) Identify the key differences between the terms 'Land Use' and 'Land Cover'. (6) 3. (a) Illustrate the hierarchy of city centers with examples. (10) (b) Describe the principles of designing an urban center with special reference to pedestrian movement and vehicular traffic. (5+5=10)(c) As a planner, what principles would you consider for an industrial park development? Analyze briefly. (15) 4. (a) Interpret the classification of industries according to the locational characteristics and effects on the environment with relevant examples. (10) (b) You are assigned to prepare a manual for transit-oriented development in Dhaka city. As TOD is a context-specific planning approach, what would be your suggestions for implementing TOD around the stations of MRT Line 6? Explain. (15)(c) Compare the features of "rectangular pattern" and "linear pattern" of city forms

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(10)

PLAN 211/URP

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<u>SECTION – B</u>

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

5.	(a) Illustrate the salient features of "sector theory" and identify its similarities with	
	"concentric zone theory"	(10)
	(b) "Urban planning and public health needs to be integrated" — defend this statement.	(12)
	(c) Interpret the concept of "sponge city" and discuss its potential to be adopted in	
	urban areas of Bangladesh.	(13)
6.	(a) Kevin Lynch reasserted the human role in the interpretation of the city — explain	
	this statement and discuss the elements of city image. (3-	-15=18)
	(b) Critically discuss the conservation of wettands of Dhaka in the light of policies,	
	plans and acts.	(17)
7.	(a) Relate the characteristics of Multiple Nuclei theory with the urban structure of	
	Dhaka city.	(12)
	(b) Examine the role of an urban planner to promote the objectives of "Healthy City".	(18)
	(c) Appraise the concept— "Land Ethics" introduced by Aldo Leopold.	(5)
8.	(a) As a resident of Dhaka city, examine the assumptions of Huff's Gravity model from	
	your experience.	(12)
	(b) Compare the scenarios where following conservation tools can be applied:	(15)
	(i) Restoration	
	(ii) Adaptive reuse	
	(iii) Replication	
	(c) Distinguish between the characteristics of Neighbourhood shopping center and	
	Regional shopping center.	(8)

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Date: 11/04/2023

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 BURP Examinations 2021-2022

Sub: **PLAN 217** (Site and Area 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 questions.

1. (a) Give definition of "site and area planning". Outline the design steps followed in site (10+10=20)and area planning. (b) Demonstrate the criteria for selecting an industrial district. (15) 2. (a) Interpret air movement of different types of sites. (20)(b) Briefly explain the noise control measures in the perspective of site and area planning. (15) 3. (a) "Every natural and man-made site (unique to some extent) is a connected web of things and activities"- Explain the quoted sentence in your own words. (20)(b) Briefly explain the principles of planning shopping centres with its common configurations. (15) 4. Explain the following topics: (a) Landscape component (15)(b) Grading (10)(c) Drainage (10)

<u>SECTION – B</u>

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

5. (a) "Though a cul-de-sac pattern provides a pleasant look, this pattern is discouraged in sub-division planning" --- Illustrate this statement with an appropriate example. (10)(b) Explain why a new development in a neighborhood is needed to be consistent with the existing design and should not take the form of an isolated project. (10)(c) Discuss the conditions for designing the separate and the combined sanitation system in a residential area. (8) (d) Discuss the terms 'plot' and 'plot frontage' with necessary diagrams. Also, discuss the concept of 'block' with an example. (7)

PLAN 217/URP

6. (a) Identify the core theme of a neighborhood design. As an urban planner, how will you apply this theme to maintain the accessibility standard to ensure safety in a neighborhood?

(b) Explain why housing diversity has a significant influence on a good neighborhood design.

(c) Develop a diagram showing the mechanics of grouping of wells, an option of water supply in a residential community. Prepare a checklist of the basic consideration for the design of a storage tank used for storing both rainwater and potable water. (5+3=8)(d) Among the three (03) types of solar system which one can be related to serve the purpose of a 15 storied high-rise building (1st - 7th floor commercial, 8th - 15th floorresidential).

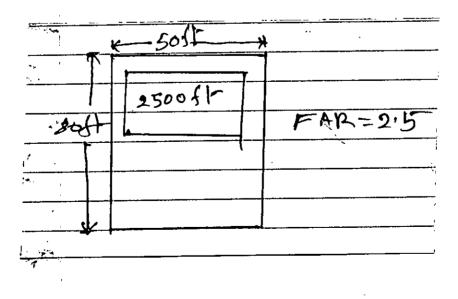
7. (a) Illustrate the characteristics of the sub-division pattern that groups the units into cluster of a greater density using an appropriate diagram.

(b) Outline the basic design criteria for the arrangement of electric line in a residential area.

(c) Develop an elaboration of neighborhood planning practices in "The Central Austin Combined Planning Neighborhood area".

- 8. (a) Illustrate different types of drainage system. Prepare a comparative scenario between the two major aspects of rainwater harvesting.
 - (b) Develop some strategies to create variation in house grouping in curve streets.

(c) Discuss the term "Neighborhood Area Networking". "The infrastructure of internet is global, but from the users' perspective, it is always local in nature" - Taking example from the residential areas of Old Dhaka, interpret this statement. (4+8=12)(d)A plot owner wants to construct a building having four (04) floors over the plot area of 4000 sq.ft. The Floor Area Ratio (FAR) is 2.5. Compute the covered area of the building, if all the floors are constructed having same area. The plan view of the plot is given here: (7)



(i)

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(12)

(10)

(5)

(15)

(10)

(10)

(8)

(8)

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Date: 28/03/2023

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 BURP Examinations 2021-2022

Sub: PLAN 291 (Statistics for Planner 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 THREE questions.

(a) What do you understand by statistical estimation? Describe the terms estimation, 1. estimator, and estimate, with relevant examples. (10)(b) Fifty-four randomly selected rural households were asked about their monthly family hygiene budget. The sample produce a mean of Tk. 351 and a standard deviation of Tk. 62. Develop a 98% confidence interval for the corresponding population mean. (12) (c) In a survey of 3210 MRT-6 passengers, 65% of them are male, and 35% are engaged in a formal job. The analysis of the data reveals that 42% of the respondents previously used bus for this route. Now, compute a 95% confidence interval for the corresponding population who have previously used the bus for this route. (13)2. (a) Describe the difference between probability sampling methods and nonprobability sampling methods with relevant examples. (10)(b) Describe why the width of the confidence interval matters and how the width of the confidence internal could be narrowed down. (10) (c) Consider a disease with a 0.5% incidence rate. A medical test is used to confirm this disease. The test has a 9% false positive (test positive ever though they don't have the disease) rate, and a 3% false negative (testing negative given that they has a disease) rate. A randomly selected participant tests positive. What is the probability that this person actually has the disease? Calculate the probability that this person actually has the disease, if the person is tested for positive for the second time. (15)3. (a) Differentiate between the sample distributor and sampling distribution with appropriate examples. (10)(b) What do you understand by Human Development Index? Describe the types of index numbers with relevant examples. (12)(c) RAJUK claims that 68% of Dhaka's residents believe that their newly gazetted planning document would solve many of the existing major problems. Assuming that their claim is true, what is the probability that in a random sample of 2000 residents, more than 70% would have their belief? (13)4. (a) Explain the importance and conditions of the central limit theorem. (10)(b) A study on 12,020 households found that on average each household produces 6.7 kg of solid waste daily with a standard deviation of 1.8 kg. Calculate the probability that a randomly selected family would generate between 5 to 9 kg of solid waste daily. Assume that the daily amount of solid waste generation per family is normally distributed. (12)

<u>PLAN 291</u>

(c) Assume the arrival of customers at a WASA water ATM booth follows a Poisson distribution with a constant rate of 12 customers per hour. If the ATM booth is out of service for 10 minutes, calculate the probability that more than one customer arrived for water during that time. How many customers may the authority expect during the above mentioned 10 minutes? (10

<u>SECTION – B</u>

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

5. (a) Explain the following terms: population, sample, variable and data.

(b) Calculate the mode for the following distribution.

Class	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80
Frequency	4	4	13	5	6	5	2	1

6. (a) Explain with example the levels of measurement.
(b) The following table shows the distribution of the number of hours worked each week (on average) for a sample of 100 university students. Calculate the mean, mean deviation variance and standard deviation

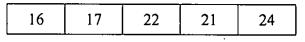
deviation, variance, and standard deviation.

Hours worked	Number of
per week	students
0 – 9	25
10 –19	13
20 – 29	40
30 - 39	18
40 – 49	4

- 7. You have the following data set.
 - (a) Prepare the frequency table by using four classes.
 - (b) Sketch frequency histogram, frequency polygon and ogive for the following data.

11	16	9	22	21	12
13	14	10	23	22	17
18	12	9	18	29	22
22	18	17	19	26	21
13	21	19	22	23	13

8. You have given the following problem. Measure skewness and Kurtosis using moments. Calculate first four central moments of the following observations and also calculate the values of measure of skewness (b1), measure of Kurtosis (b2), coefficient of skewness (r1) and coefficient of Kurtosis (r2).



(10+3=13)

(10)

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(15)

(25)

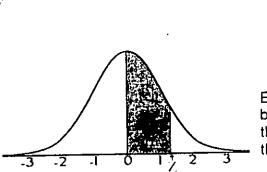
(20) (15)

(35)

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Table - 01

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STANDARD NORMAL TABLE (Z)

Entries in the table give the area under the curve between the mean and z standard deviations above the mean. For example, for z = 1.25 the area under the curve between the mean (0) and z is 0.3944.

0.00 0.001 0.011 0.021 0.031 0.031 0.0239 0.0279 0.0319 0.0359 0.0 0.0000 0.0040 0.0080 0.0120 0.0160 0.0190 0.0239 0.0279 0.0319 0.0359 0.1 0.0398 0.0438 0.0478 0.0517 0.0557 0.0566 0.0636 0.0675 0.0114 0.01130 0.2 0.1179 0.1217 0.1255 0.1293 0.1318 0.1406 0.1443 0.1480 0.1514 0.4 0.1554 0.1591 0.1628 0.1664 0.1700 0.1736 0.1772 0.1808 0.1844 0.187 0.5 0.1915 0.1985 0.2019 0.2264 0.2274 0.2274 0.2734 0.2744 0.2794 0.2823 0.2823 0.6 0.2581 0.2693 0.2395 0.3023 0.3315 0.3310 0.3316 0.3316 0.3316 0.3316 0.3316 0.3316 0.3316 0.3316 0.3316	a a se se da se s		0.04	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
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Table-02

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	Frobabi	lity of	exceedi	ng the c	ritical	value		
v	0.10	0.05	0.025	0.01	0.005	0.001		
1.	3.078	6.314	12.706	31.821	63.657	318.313		
2.	1.886	2.920	4.303	6.965	9.925	22.327		
-• 3.	1.638	2.353	3.182	4.541	5.841	10.215		
4.	1.533	2.132	2.776	3.747	4.604	7.173		
5.	1.476	2.015	2.571	3.365	4.032	5.893		
6.	1.440	1.943	2.447	3.143	3.707			
7.	1.415	1.895	2.365	2.998	3.499			
8.	1.397	1.860	2.306	2.896	3.355	4.499		•
9	1.383	1.833	2.262	2.821	3.250			
0.	1.372	1.812	2.228	2.764	3.169			
1.	1.363	1.796	2.201	2.718	· 3.10€			
2	1.356	1.782	2.179	2.681	3.055	3.929		
3.	1.350	1.771	2.160	2.650	3.012	3.852		
4.	1.345	1.761	2.145	2.624	2.977	3.787		
5.	1.341	1.753	2.131	2.602	2.947	3.733		•
6.	1.337	1.746	2.120	2.583	2.921	3.686		
7.	1.333	1.740	2.110	2.567	2.898	3.646		
8.	1.330	1.734	2.101	2.552	2.878			
9.	1.328	1.729		2.539	2.861	3.579		
0.	1.325	1.725	2.086	2.528	2.845	3.552		
	· • • •							
	•							
•	1.298	1.675	2.008	2.402	2.676	3.258	•	
51. 52.	1.298	1.675	2.007	2.400	2.674	3.255		
3.	1.298	1.674	2.000	2.399	2.672	3.251		
54.	1.297	1.674		2.397	2.670	3.248		
5.	1.297	1.673	2.004	2.396	2.668	3.245		
6.	1.297	1.673	2.003	2.395	2.667	3.242		
57.	1.297	1.672	2.002	2.394	2.605	3.239		
58.	1.296	1.672	2.002	2.392	2.663	3.237		
59.	1.296	1.671	2.001	2.391	2.662	3.234		
50.	1.296	1.671	2.000	2.390	2.660	3.232		
51.	1.296	1.670	2.000	2.389	2.659			
52.	1.295	1.670	1.999	2.388	2.657	3.227		
53.	1.295	1.669	1.998	2.387	2.656	3.225		
54.	1.295	1.669	1.998	2.386	2.655			
55.	1.295	1.009	1.997	2.385	2.654	3.220		
56.	1.295	1.668	1.997	2.384	2.652	3.218		
57.	1.294	1.668	1.996	2.383	2.651	3.216		
58.	1.294	1.668	1.995	2.382	2.650			
59.	1.294	1.607	1.995	2.382	2.649			
70.	1.294	1.667	1.994	2.381 2.380/	2.648 2.647		/	
71.	1.294	1.667	1.994	/				

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Date: 30/04/2023

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 BURP Examinations 2021-2022

Sub: HUM 179 (Sociology)

Full Marks: 210

Time: 3 Hours

The figures in the margin indicate full marks

USE SEPARATE SCRIPTS FOR EACH SECTION

<u>SECTION – A</u>

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

1.	(a) Define natural greenhouse and man-made greenhouse. Write about the sources of	
	global warming.	(10)
	(b) Explain the different methods to save the environment.	(15)
	(c) Describe the types of pollution. Briefly discuss the major pollution issues in Dhaka	
	city.	(10)
2.	(a) Define industrial revolution and capitalism.	(10)
	(b) Discuss the consequences of capitalism.	(15)
	(c) What is the Fourth Industrial Revolution? Discuss the social impact of the fourth	
	industrial revolution.	(10)
3.	(a) Define city, megacity and smart city.	(10)
	(b) Write down the different sources of social change.	(15)
	(c) Briefly discuss the Malthusian population theory.	(10)
4.	Write short notes on any THREE of the following:	(35)
	(a) Greenhouse gases	
	(b) Functions of the family	
	(c) Hazard and disaster	·

(d) 'Orange A' category industry and 'Orange B' category industry.

HUM 179/URP

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<u>SECTION – B</u>

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

5.	(a) Define culture. Discuss the ways in which language shapes and reflects cultural	
	values, beliefs, and social practices.	(15)
	(b) Explain significant roles of sub culture, counter culture and ethnocentrism with	
	suitable examples.	(20)
6.	(a) What is sociological imagination? Discuss how sociological imagination can both	
	limit and empower individuals in their ability to think critically and make decisions.	(15)
	(b) Discuss the underlying factors that contributed to the development of sociology as	
	an independent discipline.	(20)
7. ·	(a) What is social stratification? Critically discuss the properties of caste system and	
	social class system of social stratification.	(15)
	(b) What is research methodology? Explain the detailed steps involved in conducting a	
	social research on low-income housing facilities in diverse urban population.	(20)
8.	(a) What do you understand by globalization? Briefly discuss the social and cultural	
	impacts of globalization.	(15)
	(b) Define deviance, white collar crime and juvenile delinquency.	(10)
	(c) Briefly discuss the causes of crime.	(10)

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Date: 04/04/2023

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 BURP Examinations 2021-2022

Sub: CE 209 (Construction Materials)

Full Marks: 140

Time: 3 Hours

The figures in the margin indicate full marks

USE SEPARATE SCRIPTS FOR EACH SECTION

	$\frac{\text{SECTION} - A}{\text{There are FOUR questions in this section. Answer and TUREE questions}}$	
	There are FOUR questions in this section. Answer any THREE questions.	
1.	(a) Why is artificial cement popular?	(4 1/3)
	(b) What type of cement shall be used in highway pavement or road constru	ction?
	Write a short note on that type of cement.	(2+5=7)
	(c) What are the factors affecting the hydration of cement? Write short notes on c	ement
	silos, blended cement, soundness of cement, and white Portland cement.	(4+8=12)
2.	(a) Write down the functions of cement, coarse aggregates, fine aggregates, and	water
	in concrete.	(8)
	(b) Calculate the quantity of materials required to produce 100 ft ³ of concrete wit	h mix
	proportion of 1:1.25:2.50.	(6 1/3)
	(c) Write short notes on the Curing of concrete, Bleeding of concrete, and Compa	action
	of concrete.	(9)
3.	(a) Why does corrosion occur in metal? Which factors affect corrosion?	$(2+5\frac{1}{3}=7\frac{1}{3})$
	(b) What measures should be taken to prevent corrosion in Steel members?	(6)
	(c) What is Fiber reinforced polymer (FRP))? What are the uses of FRP in	Civil
	Engineering?	(4+6=10)
4.	(a) What is Ferrocement? Draw a typical section of ferrocement and list the comp	oonent
	materials of ferrocement.	(2+3+3=8)
	(b) Explain spalling of concrete with a figure.	(3 1/3)
	(c) Explain with a neat sketch how ferrocement can be used to repair a damp wall	. (12)

CE 209/URP

<u>SECTION – B</u>

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

- 5. (a) List the artificial wood products with their manufacturing processes and uses.
 Explain the advantages and disadvantages of using plywood. (7)
 (b) Briefly explain the deleterious substances in aggregate and their effects on Portland cement concrete. (7)
 (c) Briefly explain the different methods of lime slaking. Differentiate between the different types of lime. (9 ¼)
- (a) List the application of lime as building and construction material. Explain the lime and lime mortar cycle.

(b) Define seasoning of timber. List the different types of artificial seasoning available for timber. Describe the advantages and disadvantages of 'kiln seasoning' of timber. (8) (c) Estimate the mix ratio of Aggregates 1, 2, 3, and 4 to obtain the aggregate blend to meet the specification. Also determine the % passing for the combined aggregate in each sieve and the FM of the combined aggregate. $(9 \frac{1}{3})$

Sieve Size mm inch			Specification			
		Aggregate 1	Aggregate 2	Aggregate 3	Aggregate 4	% Passing
175	7	100	-	-	-	
150	6	98	-	-	-	
100	4	30	100	-	-	
75	3	10	92	-	-	56
50	. 2	2	30	100	-	
37.5	1.5	0	. 6	94	-	28
25	1	0	4	36	100	
19	3/4	0	0	4	92	12
9.5	3/8	0	0	2	30	
4.76	No. 4	0	0	0	2	

Contd P/3

(6)

CE 209/URP

7. (a) Five first class brick samples are tested for absorption and compressive strength. Bricks are cut into identical halves along the length. Following results are obtained from the test. Calculate compressive strength and absorption capacity of brick. Assume, dry unit weight of the brick = 100 lb/ft³ and average depth of each brick = 2.75 inch. Compression testing machine calibration equation: Y (lb) = 1.0471X-5.3621

		Dimensi	Observed Load	SSD wt of		
Sample	Side-1	Side-1 Side-2		le-2	(lb)	brick
	L	W	L	W		(lb)
1	4.50	4.55	4.55	4.60	51245	3.65
2	4.60	4.55	4.60	4.55	52410	3.69
3	4.45	4.55	4.55	4.45	50690	3.58
4	4.60	4.55	4.50	4.60	51355	3.53
5'	4.60	4.60	4.50	4.50	51855	3.61

(b) List the possible moisture states in aggregates. Explain different types of specific gravity of aggregate and their relations. Define alkali-aggregate reactivity and the controlling process.

(c) Classify sands based on Unified Soil Classification System (USCS) under ASTM D 2487 and mention their properties and uses.

 (a) List the laboratory tests available for sand. Briefly explain bulking of sand with necessary diagrams.

(b) Classify and describe the different types of bricks based upon the physical and mechanical properties. Write down the defects and their effects on bricks. Briefly explain the different manufacturing processes used in brick production.

(c) Moist mass of sand sample is 28.35 kg and dry mass is 25.69 kg. If the absorption capacity is 4.3%, determine (i) total moisture content and (ii) free moisture content. Later, 50 kg of gravel is mixed with this moist sand sample. The gravel has a moisture content of 0.3% and absorption of 5.7%. What is the amount of water required to reach the SSD condition for both gravel and sand?

(10 ½)

(8)

(5)

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(6 1/3)

(10)

(7)