L-2/T-2/URP **Date : 25/09/2022**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2020-2021

Sub : **PLAN 215** (Urban Planning Techniques)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

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

1. (a) Strategic planning was introduced in Bangladesh during 1980s to combat the weakness of traditional master planning. Explain the statement. **(25)**

   (b) Discuss how slum upgrading projects can be assisted by Non-Government Organizations (NGOs). **(10)**

2. (a) "Urban renewal is a carefully controlled change, as opposed to the rapid and violent change of redevelopment, and is also distinguished from preservation and improvement."-Explain the statement with appropriate examples. **(20)**

   (b) Do you consider the "land readjustment technique" as a useful tool to solve the problems of spontaneous and haphazard growth of squatter settlement in urban areas? Justify your opinion. **(15)**

3. (a) Consider a scenario where landowners and the slum community are engaged in a prolonged struggle for control over the land and none have a clear prospect of success. Identify the land development technique which will be appropriate to solve this issue and justify your answer. **(25)**

   (b) Compare "regional survey" and "town survey" carried out far plan preparation. **(10)**

4. (a) Do you think "incremental development scheme" and "slum upgrading" are more appropriate than "site and service scheme" in the context of Bangladesh. Explain your opinion. **(10+10=20)**

   (b) Explain with examples how different kinds of zoning can be applied to control development in an urban area. **(15)**

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PLAN 215

SECTION – B

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

5. (a) Briefly discuss the advantages of "Detroit Land Classification System". **(8)**

   (b) Planners are recommended to follow an order of "Categories of land uses" for urban land use design – justify this approach with relevant examples. **(12)**

   (c) "The land use design and the development management plan should be mutually supportive" – in the context of Bangladesh critically review this statement. **(15)**

6. (a) Briefly discuss the steps those need to be followed in residential land use design process. **(17)**

   (b) Evaluate Dhaka city on the basis of characteristics of "Smart City". **(10)**

   (c) Prepare a set of policy to improve the image of Dhaka. Focus your discussion on any two elements of city image. **(8)**

7. (a) Kevin Lynch's goal was to combat Modernisms unified monolithic depersonalized city through reannerting the human role in the interpretation of the city – illustrate this statement and briefly discuss Lynch's work. **(5+8=13)**

   (b) Write a short note on "Ecological Footprint". **(10)**

   (c) Development management plan suggests a number of strategies to regulate development. Recommended and explain two potential strategies to address each of the following goals for urban areas of Bangladesh. **(12)**

   (i) Conservation of wetland

   (ii) To ensure planned development of urban fringe areas

8. (a) Diagnose two obstacles towards planned development of urban areas of Bangladesh and discuss possible measures to address. **(8+7=15)**

   (b) Critically assess the urban development of Bangladesh in the light of Sustainable Development Goal 11. **(20)**

L-2/T-2/URP **Date: 20/10/2022**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2020-2021

Sub: **PLAN 261** (GIS and Remote Sensing)

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** questions.

1. (a) (i) Why different types of scatterings are important to capture a digital image? Explain with relevant examples. **(15)**

(ii) Differentiate between active and passive sensors. **(5)**

(b) Describe the importance of spectral reflectance ratio in defining physical features of a land cover image with appropriate examples. **(15)**

2. Suppose you are working as a planner in a Upazila master plan development project. The total area of the Upzila is 168 sq. kilometers. The scale of the work is 1:100. The market price of different sensors are mentioned in the Table 1.

Table 1: Price of the Sensors

Name of the Sensor	Price/sq. km(in USD)
SPOT HGM	0.4
1KONOS	0.5
Quickbird	0.3
SPOT VMI	0.1

(a) What would be your potential image source to develop a land cover map of the Upzila? Explain why are you choosing this particular sensor. **(11)**

(b) You have to do a hydrological analysis of the area. How date of acquisition and image resolution could be the important factor in this regard? **(12)**

(c) How the choice of a particular band number of sensor and repeat coverage of satellite can influence your decision of data collection? Explain with appropriate examples. **(12)**

3. (a) Suppose you have collected a digital image for your research. After getting the image, you have identified some random noise and error in map co-ordinates.

(i) How could you correct these two types of error of the image? **(15)**

(ii) To prepare a vegetation map and a hydrologic map from the collected image, what algebraic operations could be performed? Explain with appropriate examples. **(15)**

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Contd... Q. No. 3

(b) Differentiate between low frequency pass and high frequency pass spatial filtering. **(05)**

4. (a) What types of non-systematic distortion can be found in a digital image? **(05)**

(b) Different visual interpretation strategies could be followed to extract information from an image. Describe the strategies with appropriate examples. **(10)**

(c) Why local knowledge is important to follow the supervised classification technique? **(05)**

(d) Suppose after developing a land cover map from a digital image, you have got the following error matrix (Table 2):

Table 2: Error matrix

Physical features	Settlement	Vegetation	Wetland
Settlement	250	65	50
Vegetation	100	150	120
Wetland	120	200	90

(i) Determine overall accuracy, user accuracy, producer accuracy. **(02+02+02=06)**

(ii) How could you evaluate the results of error matrix? **(04)**

(iii) Write down the limitation of using kappa Index considering this context. **(05)**

SECTION – B

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

5. (a) What is a geographic information system (GIS) and why it is important? **(15)**

(b) Describe the two methods of representing geographic data in GIS. **(20)**

6. (a) Why it is important to create topological relationship between features? Explain the terms 'contiguity', area definition' and connectivity. Draw diagrams in your own and show how do you build 'arc-node topology', 'polygon-arc topology' and 'left-right topology'. **(20)**

(b) Describe the entity error frequently occurred in digitizing features in GIS. **(15)**

7. (a) Discuss the different types of overlay techniques used in GIS. Write down application of overlay techniques in LSA. **(25)**

(b) Give a short description of connectivity analysis. **(10)**

8. (a) Explain what do you understand by 'spatial integrity'? How do you measure it? **(25)**

(b) Write short notes on 'roving window'. **(10)**

L-2/T-2/URP Date : 01/10/2022

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2020-2021

Sub : **PLAN 293** (Statistics for Planners II)

Full Marks : 210 Time : 3 Hours

The figures in the margin indicate full marks.

Assume reasonable value in case of missing data.

Check the end of the question paper for any required equations.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

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

1. (a) An urban planner has the opinion that time spent on a park depends on the quality of the park. To test this hypothesis, he randomly distributed questionnaires to 400 park-users in Dhaka. Within the questionnaire, there are two questions: "How many hours per week do you spend in your nearby park"? and "What is the quality of the park"? The data from the survey are in the following table. Using a 5% significance level, determine whether park quality and time spent in the park are independent or dependent. **(18)**

Hour spent in park	Park Quality					
	Very bad	Bad	Moderate	Good	Very good	Total
< 5 hrs	13	10	11	16	5	55
5-10 hrs	20	27	27	19	2	95
11-20 hrs	9	27	71	16	32	155
> 20 hrs	8	11	41	24	11	95
Total	50	75	150	75	50	400

(b) A researcher, working on the accessibility of persons with disabilities, assumes that persons with disabilities need to spend more money to travel the same distance compared to the persons without disabilities. A random sample of 38 persons with disabilities found a mean travel cost of Tk. 11.38 per kilometer, and the sample standard deviation was Tk. 1.84. A random sample of 45 persons without disabilities found their mean travel cost to be Tk. 8.42 per kilometer, and the sample standard deviation was Tk. 1.31. On the basis of these samples, is it reasonable to conclude (at $\alpha = 0.01$) that the persons with disabilities are spending over Tk. 2.00 more to travel per kilometer than the persons without disabilities? **(17)**

2. (a) The government wants to assess the capabilities of two planning organizations (CDA and KDA) to implement the tasks of the structure plan. According to the structure plan, both organizations have to implement 100 tasks. After the completion of the implementation period, CDA could not fulfill 13 tasks; whereas, KDA failed to complete 10 tasks. Test, at the 10% level of significance, whether the data provide sufficient evidence to conclude that there exists a difference in the capabilities of implementing plans between CDA and KDA. **(15)**

Contd P/2

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Contd ... Q. No. 2

(b) The government is interested in determining if a city corporation maintains a consistent quality standard across all of its services. Due to budget constraints, the government wished to conduct the survey on a small scale and investigated only three of the city corporation's services: water supply, sewage system, and solid waste management. Then, residents were asked to rate these three services out of 100 points. Results of the survey is presented in the following table. Test the hypothesis that the quality of these three services is similar (0.05 level of significance). **(20)**

Water Supply	78	64	75	45	82	69	60
Sewage System	99	70	53	51	61	68	70
Solid Waste	90	68	70	54	74	65	59

3. (a) What is the relationship between the significance level of a test and Type I error? **(10)**

(b) Create a 5-point satisfaction scale. **(5)**

(c) A researcher wants to examine whether people's perceived risk of COVID-19 transmission varies among public bus, rickshaw, and bicycle user. She surveyed a total of 63 people. Each respondent was asked to rate the perceived risk of COVID-19 transmission in one of the three modes, which (s)he mostly used for regular travel on a scale of 1 to 5, with 1 being the highest level of risk and 5 being the lowest level of risk. The results of the study are summarized below: **(20)**

Statistics	Public Bus	Rickshaw	Bicycle
Sample Mean	$\bar{X}_1 = 3.28$	$\bar{X}_2 = 3.96$	$\bar{X}_3 = 4.10$
Sample Variance	$S_1^2 = 0.15$	$S_2^2 = 0.32$	$S_3^2 = 0.36$
Sample Size	$n_1 = 18$	$n_2 = 23$	$n_3 = 22$

The mean perceived risk level of the combined sample of all 63 participants was $\bar{X} = 3.81$. Test, at the 5% level of significance, whether the data provide sufficient evidence to conclude that not all three average perceived levels are the same.

4. (a) The average household size in a certain region several years ago was 3.14 persons. For planning purpose, a regional planner wishes to test, at the 5% level of significance, whether it is different now. Perform the test using the information collected by the planner: in a random sample of 25 households, the average size was 2.98 persons, with sample standard deviation 0.82 person. **(14)**

(b) A transport planner wants to examine whether any linkage available between travel cost and travel mode. **(8+8=16)**

(i) What hypothesis testing procedures are available to the planner?

(ii) What are the deciding factors for selecting proper hypothesis testing technique in this case?

(c) When should you use Chi-square goodness of fit test? **(5)**

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SECTION – B

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

5. (a) Construct a least squared line considering X as the independent variable and Y as the dependent variable. The required (X, Y) values for constructing this line are given below: **(18)**

Table - 01

X	1	3	4	6	8	9	11	14
Y	1	2	4	4	5	7	8	9

(b) Find the standard error of the estimates of Y on X; obtained from the corresponding (X, Y) values provided in Table 01. **(10)**

(c) Compare the underlying assumptions of three different methods of ratio method for forecasting population. **(7)**

6. (a) The following table shows the number of ships loaded at the port of Ashuganj during 2012 to 2021. Estimate the number of ship loadings for the year of 2022. **(20)**

Table - 02

Year	Number of Ship Loadings
2012	45
2013	25
2014	20
2015	35
2018	15
2019	30
2020	55
2021	44

(b) Provide appropriate examples to explain relative cyclical residual method and percent of trend method of measuring cyclical variation in trend analysis. **(10)**

(c) Why do pattern area and study area need to share similar experiences to be considered accordingly for comparative method of aggregate approach of population forecasting? **(5)**

7. (a) The following table shows the number of rentees for each of the four (Q-I, Q-II, Q-III, Q-IV) quarters at Hotel 'Relaxing'. Find out the four quarter indices of Hotel Relaxings' occupancy. **(24)**

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Table - 03

Year	Number of Guests Per Quarter			
	Q-I	Q-II	Q-III	Q-IV
1991	1861	2203	2415	1908
1992	1921	2343	2514	1986
1993	1834	2154	2098	1799
1994	1837	2025	2304	1965
1995	2073	2414	2339	1967

(b) Explain the rationale behind the method of 'Logistic Curve Trend' that is used for forecasting population. **(6)**

(c) Population in City-A at the beginning of the year 2011 is 10,000. Recent census shows the same city's population has increased by 6,000 at the end of the year 2021. The absolute number of births and the absolute number of deaths during this time interval are 3,000 and 1,500 respectively. Find the crude birth rate and the crude death rate of city-A for 10 years' time interval starting from 2011, ending to 2021. **(5)**

8. (a) The survival matrix (S), the birth matrix (B) and the population matrix at time t (P_t) are as follows:

$$S = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0.9 & 0 & 0 & 0 & 0 \\ 0 & 0.8 & 0 & 0 & 0 \\ 0 & 0 & 0.7 & 0 & 0 \\ 0 & 0 & 0 & 0.5 & 0.2 \end{bmatrix}, \quad B = \begin{bmatrix} 0 & 1.0 & 0.5 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}, \quad P(t) = \begin{bmatrix} 40 & 0 & 0 & 0 \\ 20 & 0 & 0 & 0 \\ 24 & 0 & 0 & 0 \\ 10 & 0 & 0 & 0 \\ 6 & 0 & 0 & 0 \end{bmatrix}$$

(i) Find the change matrix, C. **(5)**

(ii) Form the matrix, C^2. **(5)**

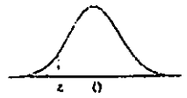
(iii) Estimate the population at time (t + 2). **(15)**

(b) Actual seasonalized production of crop-A for the seasons of summer, fall, winter and spring are 1861 kg, 2203 kg, 2415 kg, 1908 kg respectively. The seasonal indices for these four seasons are as follows: **(10)**

Table - 04

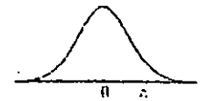
Summer	90.3
Fall	106.6
Winter	112.1
Spring	91.0

Calculate the deseasonalized production of crop-A for respective four seasons.



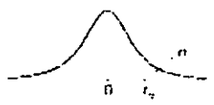
Cumulative Probability $P(Z \le z)$

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
−3.9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
−3.8	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
−3.7	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
−3.6	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
−3.5	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
−3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
−3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
−3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
−3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
−3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
−2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
−2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
−2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
−2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
−2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
−2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
−2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
−2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
−2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
−2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
−1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
−1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
−1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
−1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
−1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
−1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
−1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
−1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
−1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
−1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
−0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
−0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
−0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
−0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
−0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
−0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
−0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
−0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
−0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
−0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641



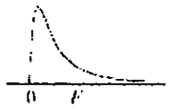
Cumulative Probability $P(Z \le z)$

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8304	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998
3.5	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998
3.6	0.9998	0.9998	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.7	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.8	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



Critical Values of t

df	$t_{0.200}$	$t_{0.100}$	$t_{0.050}$	$t_{0.025}$	$t_{0.010}$	$t_{0.005}$	$t_{0.0025}$	$t_{0.001}$	$t_{0.0005}$
51	0.849	1.298	1.675	2.008	2.402	2.676	2.934	3.258	3.492
52	0.849	1.298	1.675	2.007	2.400	2.674	2.932	3.255	3.488
53	0.849	1.298	1.674	2.006	2.399	2.672	2.929	3.251	3.484
54	0.848	1.297	1.674	2.005	2.397	2.670	2.927	3.248	3.480
55	0.848	1.297	1.673	2.004	2.396	2.668	2.925	3.245	3.476
56	0.848	1.297	1.673	2.003	2.395	2.667	2.923	3.242	3.473
57	0.848	1.297	1.672	2.002	2.394	2.665	2.920	3.239	3.470
58	0.848	1.296	1.672	2.002	2.392	2.663	2.918	3.237	3.466
59	0.848	1.296	1.671	2.001	2.391	2.662	2.916	3.234	3.463
60	0.848	1.296	1.671	2.000	2.390	2.660	2.915	3.232	3.460
61	0.848	1.296	1.670	2.000	2.389	2.659	2.913	3.229	3.457
62	0.848	1.295	1.670	1.999	2.388	2.657	2.911	3.227	3.454
63	0.847	1.295	1.669	1.998	2.387	2.656	2.909	3.225	3.452
64	0.847	1.295	1.669	1.998	2.386	2.655	2.908	3.223	3.449
65	0.847	1.295	1.669	1.997	2.385	2.654	2.906	3.220	3.447
66	0.847	1.295	1.668	1.997	2.384	2.652	2.904	3.218	3.444
67	0.847	1.294	1.668	1.996	2.383	2.651	2.903	3.216	3.442
68	0.847	1.294	1.668	1.995	2.382	2.650	2.902	3.214	3.439
69	0.847	1.294	1.667	1.995	2.382	2.649	2.900	3.213	3.437
70	0.847	1.294	1.667	1.994	2.381	2.648	2.899	3.211	3.435
71	0.847	1.294	1.667	1.994	2.380	2.647	2.897	3.209	3.433
72	0.847	1.293	1.666	1.993	2.379	2.646	2.896	3.207	3.431
73	0.847	1.293	1.666	1.993	2.379	2.645	2.895	3.206	3.429
74	0.847	1.293	1.666	1.993	2.378	2.644	2.894	3.204	3.427
75	0.846	1.293	1.665	1.992	2.377	2.643	2.892	3.202	3.425
76	0.846	1.293	1.665	1.992	2.376	2.642	2.891	3.201	3.423
77	0.846	1.293	1.665	1.991	2.376	2.641	2.890	3.199	3.421
78	0.846	1.292	1.665	1.991	2.375	2.640	2.889	3.198	3.420
79	0.846	1.292	1.664	1.990	2.374	2.640	2.888	3.197	3.418
80	0.846	1.292	1.664	1.990	2.374	2.639	2.887	3.195	3.416
81	0.846	1.292	1.664	1.990	2.373	2.638	2.886	3.194	3.415
82	0.846	1.292	1.664	1.989	2.373	2.637	2.885	3.193	3.413
83	0.846	1.292	1.663	1.989	2.372	2.636	2.884	3.191	3.412
84	0.846	1.292	1.663	1.989	2.372	2.636	2.883	3.190	3.410
85	0.846	1.292	1.663	1.988	2.371	2.635	2.882	3.189	3.409
86	0.846	1.291	1.663	1.988	2.370	2.634	2.881	3.188	3.407
87	0.846	1.291	1.663	1.988	2.370	2.634	2.880	3.187	3.406
88	0.846	1.291	1.662	1.987	2.369	2.633	2.880	3.185	3.405
89	0.846	1.291	1.662	1.987	2.369	2.632	2.879	3.184	3.403
90	0.846	1.291	1.662	1.987	2.368	2.632	2.878	3.183	3.402
91	0.846	1.291	1.662	1.986	2.368	2.631	2.877	3.182	3.401
92	0.846	1.291	1.662	1.986	2.368	2.630	2.876	3.181	3.399
93	0.846	1.291	1.661	1.986	2.367	2.630	2.876	3.180	3.398
94	0.846	1.291	1.661	1.986	2.367	2.629	2.875	3.179	3.397
95	0.845	1.291	1.661	1.985	2.366	2.629	2.874	3.178	3.396
96	0.845	1.290	1.661	1.985	2.366	2.628	2.873	3.177	3.395
97	0.845	1.290	1.661	1.985	2.365	2.627	2.873	3.176	3.394
98	0.845	1.290	1.661	1.984	2.365	2.627	2.872	3.175	3.393
99	0.845	1.290	1.660	1.984	2.365	2.626	2.871	3.175	3.392
100	0.845	1.290	1.660	1.984	2.364	2.626	2.871	3.174	3.390
∞ [1]	0.842	1.282	1.645	1.960	2.326	2.576	2.807	3.090	3.291



Upper Critical Values of *F*-Distributions

F tail area	df_1 / df_2	1	2	3	4	5	6	7	8	9	10	15	20	30	60
0.005	15	10.8	7.70	6.48	5.80	5.37	5.07	4.85	4.67	4.54	4.42	4.07	3.88	3.69	3.48
0.01	15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80	3.52	3.37	3.21	3.05
0.025	15	6.20	4.77	4.15	3.80	3.58	3.41	3.29	3.20	3.12	3.06	2.86	2.76	2.64	2.52
0.05	15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.40	2.33	2.25	2.16
0.10	15	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06	1.97	1.92	1.87	1.82
0.005	20	9.94	6.99	5.82	5.17	4.76	4.47	4.26	4.09	3.96	3.85	3.50	3.32	3.12	2.92
0.01	20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37	3.09	2.94	2.78	2.61
0.025	20	5.87	4.46	3.86	3.51	3.29	3.13	3.01	2.91	2.84	2.77	2.57	2.46	2.35	2.22
0.05	20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.20	2.12	2.04	1.95
0.10	20	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96	1.94	1.84	1.79	1.74	1.68
0.005	30	9.18	6.35	5.24	4.62	4.23	3.95	3.74	3.58	3.45	3.34	3.01	2.82	2.63	2.42
0.01	30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98	2.70	2.55	2.39	2.21
0.025	30	5.57	4.18	3.59	3.25	3.03	2.87	2.75	2.65	2.57	2.51	2.31	2.20	2.07	1.94
0.05	30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.01	1.93	1.84	1.74
0.10	30	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85	1.82	1.72	1.67	1.61	1.54
0.005	40	8.83	6.07	4.98	4.37	3.99	3.71	3.51	3.35	3.22	3.12	2.78	2.60	2.40	2.18
0.01	40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89	2.80	2.52	2.37	2.20	2.02
0.025	40	5.42	4.05	3.46	3.13	2.90	2.74	2.62	2.53	2.45	2.39	2.18	2.07	1.94	1.80
0.05	40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	1.92	1.84	1.74	1.64
0.10	40	2.84	2.44	2.23	2.09	2.00	1.93	1.87	1.83	1.79	1.76	1.66	1.61	1.54	1.47
0.005	50	8.63	5.90	4.83	4.23	3.85	3.58	3.38	3.22	3.09	2.99	2.65	2.47	2.27	2.05
0.01	50	7.17	5.06	4.20	3.72	3.41	3.19	3.02	2.89	2.78	2.70	2.42	2.27	2.10	1.91
0.025	50	5.34	3.97	3.39	3.05	2.83	2.67	2.55	2.46	2.38	2.32	2.11	1.99	1.87	1.72
0.05	50	4.03	3.18	2.79	2.56	2.40	2.29	2.20	2.13	2.07	2.03	1.87	1.78	1.69	1.58
0.10	50	2.81	2.41	2.20	2.06	1.97	1.90	1.84	1.80	1.76	1.73	1.63	1.57	1.50	1.42
0.005	60	8.49	5.79	4.73	4.14	3.76	3.49	3.29	3.13	3.01	2.90	2.57	2.39	2.19	1.96
0.01	60	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72	2.63	2.35	2.20	2.03	1.84
0.025	60	5.29	3.93	3.34	3.01	2.79	2.63	2.51	2.41	2.33	2.27	2.06	1.94	1.82	1.67
0.05	60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.84	1.75	1.65	1.53
0.10	60	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74	1.71	1.60	1.54	1.48	1.40
0.005	100	8.24	5.59	4.54	3.96	3.59	3.33	3.13	2.97	2.85	2.74	2.41	2.23	2.02	1.79
0.01	100	6.90	4.82	3.98	3.51	3.21	2.99	2.82	2.69	2.59	2.50	2.22	2.07	1.89	1.69
0.025	100	5.18	3.83	3.25	2.92	2.70	2.54	2.42	2.32	2.24	2.18	1.97	1.85	1.71	1.56
0.05	100	3.94	3.09	2.70	2.46	2.31	2.19	2.10	2.03	1.97	1.93	1.77	1.68	1.57	1.45
0.10	100	2.76	2.36	2.14	2.00	1.91	1.83	1.78	1.73	1.69	1.66	1.56	1.49	1.42	1.34

L-2/T-2/URP **Date: 26/10/2022**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 B. Sc. Engineering Examinations 2020-2021

Sub: **HUM 221** (Public Finance)

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** questions.

1. (a) Dhaka City has two regions. In North City Corporation, the marginal benefit associated with pollution cleanup is MB = 3000 – 100Q, while in South City Corporation, the marginal benefit associated with pollution cleanup is MB = 2000 – 40Q. Suppose that the marginal cost of cleanup is constant at Tk 1200 per unit. What is the optimal level of pollution cleanup in each of the two regions? **(20)**

   (b) Can an activity generate both positive and negative externalities at the same time? Explain. **(15)**

2. Armana's demand for cakes (a private good) is Q = 21 - 6P and Nafisa's demand is Q = 6 - 3P.

   a. Write down an equation for the social marginal benefit of cake consumption. **(20)**

   b. Now suppose that cakes are a public good. Write down an equation for the social marginal benefit of cake consumption. **(15)**

3. (a) Explain different stages of a public project evaluation and methods of evaluation. **(20)**

   (b) How do you interpret the following values of NPV, BCR and IRR of a public project? **(15)**

   NPV (Lakh taka): 2085, 771.60

   BCR : 1.803

   IRR : 67.94%

4. Consider that for every hour you work, you can earn Tk 100 before taxes. Moreover, suppose that you can work up to 16 hours per day, 365 days per year. Draw your annual budget constraint reflecting the consumption-leisure trade-off under the following income tax schemes:

   (a) A fat income tax of 15% on all income earned. **(20)**

   (b) An income tax where you payment no tax on the first Tk 2,00000 earned and a tax of 20% on all income over Tk 2,00000. **(15)**

Contd P/2

SECTION – B

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

5. (a) Explain and show graphically the effects of negative and positive externality on output produced in the economy for both production and consumption. **(20)**

   (b) Discuss how negative externality in production can be internalized by imposing tax to producer? **(15)**

6. (a) Describe "if demand is more elastic than supply, consumer bear less of the tax burden" and "if supply is more elastic than demand, sellers bear less of the tax burden". Draw graphs if it is necessary to explain your answer. **(20)**

   (b) "The deadweight loss of a given tax is larger when the demand curve is more elastic than when it is less elastic". Do you agree with the statement? Explain and show graphically. **(15)**

7. (a) Suppose 40 people each have the demand Q = 800 - 40P for roads, and 200 people have the demand Q = 720 - 80P for roads. The cost of construction for each foot of road is Tk 400. How is road socially optimal? **(20)**

   (b) Explain Ramsey's "theory of optimal commodity taxation". **(15)**

8. Suppose the demand for good "A" is Q = 8,000 - 1200P, and the supply of good "A" is Q = - 400 + 800P.

   (a) Who bears the statutory incidence of a Tk. 4 per unit tax on the sale of good "A"? **(20)**

   (b) Who bears the economic incidence of this tax? **(15)**

L-2/T-2/URP **Date: 26/10/2022**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2020-2021

Sub: **HUM 281** (Political Science and Local Government)

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** questions.

1. (a) Make a comparison between society and state. **(20)**
   (b)Write on the concept of nationalism? Discuss the merits and demerits of nationalism. **(15)**

2. (a) Analyze the political rights and duties of a citizen in a state. **(20)**
   (b) Describe the functions of the Legislature in a state. **(15)**

3. (a) Explain the strengths and weaknesses of democracy. **(20)**
   (b) Define bureaucracy. Critically discuss the functions of bureaucracy in a state. **(15)**

4. Write short notes on any three (3) of the following: **(35)**
   (a) Sovereignty
   (b) A good Constitution
   (c) Political executive
   (d) Decentralization

SECTION – B

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

5. (a) What is the parliamentary form of government? Discuss the importance of opposition party in parliamentary form of government. **(20)**
   (b) What is good governance? Briefly analyze the agenda for good governance. **(15)**

6. (a) Explain the salient features of Bangladesh constitution. **(20)**
   (b) What is foreign policy? Describe the principles of Bangladesh foreign policy. **(15)**

7. (a) Briefly discuss the relationship between local government organizations (LGOs) and non-government organization (NGOs). **(20)**
   (b) Write an analytical note on local government finance in Bangladesh. **(15)**

8. (a) Analyze the challenges of city corporation as an urban local government institution in Bangladesh. **(20)**
   (b) Describe the structure and functions of hill-district local government in Bangladesh. **(15)**

L-2/T-2/URP **Date: 16/10/2022**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2020-2021

Sub: **ARCH 233** (Landscape Planning and Design)

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** questions.

1. (a) Define Landscape Planning and its scopes. Briefly explain the domains of Landscape planning and design with example. **($13\frac{1}{3}$)**

   (b) Illustrate the features of Kalian Landscape garden style with its elements. **(10)**

2. Appraise renowned case study of any city in respect to Landscape planning and design in the context of its climate characteristics. **($23\frac{1}{3}$)**

3. (a) How 'Negative Feedback Loops' help ecosystems maintain stability? **(10)**

   (b) 'Biodiversity supports ecosystem functioning' – explain with example. **($13\frac{1}{3}$)**

4 Write short notes on the following elements of space organization in Landscape planning and design. **($23\frac{1}{3}$)**

   (a) Planting and vegetation

   (b) Land

SECTION – B

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

5. (a) differentiate between Ecosystem and community based landscape conservation planning. **(10)**

   (b) Briefly explain the principles of patches, corridor, matrix and structure for landscape planning. **($13\frac{1}{3}$)**

Contd P/2

ARCH 233/URP

6. If you were given a site in Sylhet, what information would be needed for site planning and why? Explain with necessary sketches. $(23\frac{1}{3})$

7. How does the design principles affect application of different elements of landscape design? Explain with respect to proportion, order, Repetition and Unity. $(23\frac{1}{3})$

8. To ensure a natural and healthy environment in Dhaka city, what strategies should be taken and why? Briefly discuss with SWOT analysis in reference to the 'Dhaka Structure Draft Plan 2016 – 35'. $(23\frac{1}{3})$
