L-2/T-2/URP **Date: 17/02/2018**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2016-2017

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**.

1. (a) Define Landscape Planning. Discuss the domains of Landscape Planning with appropriate example. **(1⅓+10=11⅓)**

   (b) Describe the styles of Persian garden. **(6)**

   (c) Mention the key elements of English garden. Differentiate between Japanese and Chinese garden. **(3+3=6)**

2. (a) How soil texture and structure influence Ecosystem Process? Explain a generic soil profile with the typical horizons and their characteristics. **(8+6=14)**

   (b) Illustrate Lindeman's diagram of the food web and different trophic levels in respect to a generalized life. **(4⅓)**

   (c) What is Negative Feedback Loop? Mention the considerations of a site designer, interested in biodiversity conservation. **(2+3=5)**

3. (a) Briefly describe the elements of space organization. **(15)**

   (b) How spatial impact influence organization of space. Use sketches if necessary. **(8⅓)**

4. Explain Landscape Planning and design considerations in the context of Warm Humid climate. Use illustrations. **(23⅓)**

SECTION – B

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

5. Explore the potential and design of edges in urban context using appropriate illustration. **(23⅓)**

6. (a) How design decision for choice of plants are guided by their characteristics? **(13⅓)**

   (b) Mention the information needed for site analysis. **(10)**

7. Briefly explain elements of landscape design and their application. **(23⅓)**

8. (a) Define "Community based landscape conservation planning". **(6⅓)**

   (b) Briefly explain landscape conversation strategies necessary for dhaka according to "Dhaka structure plan 2016-35". **(17)**

L-2/T-2/URP **Date: 22/02/2018**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2016-2017

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

Full Marks: 210 Time: 3 Hours

The figures in the margin indicate full marks.

Symbols indicate their usual meaning.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

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

1. (a) Discuss the General Equilibrium Model of an economy with 2 consumers, 2 commodities, and 2 factors of production to show that the market outcome ensures maximum social welfare (hint: need to describe both exchange economy and production economy). **(35)**

2. (a) What is externality? **(5)**

   (b) Discuss how externality in production can be internalized by imposing tax or subsidy to producers? **(20)**

   (c) Explain how externality can be internalized by applying Coase Theorem. **(10)**

3. (a) What is public good? Discuss how each of the characteristics of public good results in market failure. **(10)**

   (b) Explain how under production of public good is occurred if public good is provisioned by private sector market. **(15)**

   (c) Discuss how Government intervention can ensure efficient provision for public good. **(10)**

4. (a) Discuss "Cyclical Voting Phenomenon" in case of majority voting. **(15)**

   (b) What is "Median Voter Rule"? **(10)**

   (c) Discuss the concept of "Log Rolling" under majority voting. **(10)**

SECTION – B

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

5. Briefly discuss the arguments in favor and against the Government redistribution of income with suitable example. **(35)**

Contd P/2

6. Discuss any **two** of the following three scenarios of fixed quantity subsidy. **(35)**

   (i) Fixed quantity subsidy results in overconsumption.

   (ii) Fixed quantity subsidy results in reduction in private purchase.

   (iii) Fixed quantity subsidy results in under-consumption.

7. (a) Discuss the allocative effect of excise subsidy from both individual and market perspectives. **(20)**

   (b) Show the distributive effect of subsidy depends on the elasticity of demand and supply curves. **(15)**

8. (a) Describe Equal Sacrifice Rules to ensure vertical equity in taxation under different interpretations of equal sacrifice i.e. equal total sacrifice, equal proportional sacrifice and equal marginal sacrifice. **(20)**

   (b) Show that progressive income tax discourages labor supply. **(15)**

L-2/T-2/URP **Date: 27/02/2018**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2016-2017

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

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) State the differences between vector and raster data structure with necessary diagrams. **(15)**

   (b) Discuss with diagrams the three types of topological relationship among different features. **(20)**

2. (a) Explain how to perform a nearest neighbor analysis on point objects. **(15)**

   (b) Define with examples the continuous surface and discrete surface. **(10)**

   (c) Write short notes on high-pass and low-pass filter. **(10)**

3. (a) Describe the different types of overlay and explain its role in land suitability analysis. **(25)**

   (b) Discuss uniform, random and clustered distributional pattern. **(10)**

4. Write short notes on the followings: **(5×7=35)**

   (a) DEM and TIN

   (b) Sliver polygon

   (c) Edge matching

   (d) Interpolation

   (e) "Entity error.

SECTION – B

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

All the terms and abbreviations have their usual meaning.

5. (a) "Ideal Remote Sensing System does not exist" — do you agree? Justify your answer. **(12)**

   (b) Why does one need to know about spectral signature? Table 1 provides spectral reflectance value of three different types of land cover.

Contd P/2

PLAN 261/URP

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

(i) Draw spectral signature of the land cover using the data in table 1. **(6)**

(ii) Is it possible to distinguish the land cover from each other? **(2)**

(iii) Which band (or combination of bands) is best suitable for distinguishing the land covers? Justify your answer. **(2+4)**

Table 1: Spectral Reflectance Ratio (in%) for different land cover types in different Band.

Band No. →	Band 1	Band 2	Band 3	Band 4	Band 5
Band Wave Length →	0.4-0.5 μm	0.5-0.6 μm	0.6-0.8 μm	1.8-2.0 μm	2.0-2.4 μm
Land Cover					
Urban Area	28	56	62	25	10
Water body	40	15	05	02	0
Vegetation	20	30	35	46	50

(c) Write down the differences between **(3×3)**

(i) Mie and Rayleigh Scattering

(ii) Polar and Geo-stationary Satellite

(iii) Across and Along track Sensor

6. (a) What are the advantages of SPOT-4 data over LandSAT-7 data? In which cases it is better to use LandSAT data over SPOT data? **(4+5)**

(b) For buying remote sensing image, what are the factors one has to consider? Explain your answer. **(6+9)**

(c) Write short notes on (Any two) **(2×5½)**

(i) Sentinel-2 mission

(ii) Hyperion Sensor

(iii) Geo-eye Satellite

7. (a) Your company bought image with geometric errors. Explain the reasons behind geometric error of image. How could you correct the geometric errors using GCP method? **(14+6)**

(b) Contrast manipulation is one of the most common approaches for image enhancement. Explain the different types of contrast manipulation techniques. **(9)**

(c) Explain in brief, the structure of remotely sensed image. **(6)**

Contd P/3

PLAN 261/URP

8. (a) In supervised classification, local knowledge of the area under image is important — why? **(4)**

(b) What is training dataset? Write down the sequences you have to follow for selecting pixel for training data set. **(3+16)**

(c) Land cover classification of an image has been performed. After field verification following has been found.

* Out of 50,000 settlement pixels, 5,000 are classified in the image as vegetation and 5,000 as waterbody and the rest as settlement
* Of the 25,000 vegetation pixels 5,000 is identified as waterbody and 15,000 as vegetation. The rest are identified as settlement.
* Of the 25,000 pixels which were found to be waterbody in the field, 8,750 identified as settlement in the image and 1,250 as vegetation. The rest were correctly identified.

(i) Construct the error matrix **(6)**

(ii) Determine the overall accuracy, user accuracy and producer accuracy. **(6)**

L-2/T-2/URP **Date: 05/03/2018**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2016-2017

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

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**.

Commonly used Statistical Formula.

1. A study wishes to investigate whether students' scores on a Higher Secondary Certificate (HSC) examination have any indicative power for future undergrad performance as measure by CGPA. To conduct the study, 100 students were randomly selected in a university and each student's HSC score and CGPA after completing undergrad were noted as shown in the table. **(35)**

HSC Score (in marks)	CGPA (Undergrad)		
	<2.7	2.7–3.2	>3.2
< 800	35	12	5
≥ 800	6	24	18

Test, at the 1% level of significance, whether these data provide sufficient evidence to conclude that HSC scores indicate future performance levels of undergrad students measured by CGPA.

2. (a) The city transit planning authority has recently decided to train their officials. Based on some ground work, they found that three training programs claimed to be the most effective. They randomly selected 33 employees who wished to take the training and sent them to the three training programs. After six months their skillet index on different matrices were recorded. The results are summarized below. **(25)**

Statistics	Program 1	Program 2	Program 3
Sample mean	$\bar{x}_1 = 10.65$	$\bar{x}_2 = 8.90$	$\bar{x}_3 = 9.33$
Sample variance	$s_1^2 = 27.20$	$s_2^2 = 16.86$	$s_3^2 = 32.40$
Sample size	$n_1 = 11$	$n_2 = 11$	$n_3 = 11$

The mean skill set index of the combined sample of all 33 people was $\bar{x} = 9.63$. Test, at the 5% level of significance, using appropriate test, whether the data provided sufficient evidence to conclude that some program is more effective than the others.

(b) Explain, with example, the two types of errors that can be made in a test of hypothesis. **(10)**

Contd P/2

PLAN 293

3. (a) The Director of city's bike-to-work program is preparing a brochure to promote the program. He would like to include in the brochure the average weight loss of program participants, but since time is pressing he decides to estimate this figure with a random sample of 7 participants. The sample mean of pounds lost is 3.6 and the sample standard deviation is 0.5 pound. The Director would like to assert that the program participants lost an average of 3 pounds or more. What is the maximum level of confidence that he can claim in making this assertion? Show your work, including hypothesis formulation and necessary figure. **(18)**

(b) A study wishes to estimate the average increase in the total travel time a person experience due to the traffic signal installed on the Mouchak flyover. Twenty five different randomly selected travelers when took the flyover experienced a mean increase of 47.3 seconds travel time with a standard deviation of 6.4 seconds. Construct a 90% confidence interval for the mean increase of travel time any person would experience for the traffic signal installed on the flyover and interpret its meaning. **(17)**

4. (a) The Department of Environmental (DOE) suspects that the fishes of a particular polluted lake have elevated mercury level. To confirm that suspicion, five fishes in that lake were caught and their tissues were tested for mercury. For the purpose of comparison, four fishes in an unpolluted lake were also caught and tested. The fish tissue mercury levels in mg/kg are given below. **(18)**

Sample 1 (from polluted lake)	Sample 2 (from unpolluted lake)
0.580	0.382
0.711	0.276
0.571	0.570
0.666	0.366
0.598	

Test, at the 5% level of significance, whether the data provide sufficient evidence to conclude that fish in polluted lake have elevated levels of mercury in their tissue.

(b) A neighbourhood home owners' association suspects that the recent appraisal values of the houses in the neighbourhood conducted by the city authority for taxation purpose is too high. It hired a private company to appraise the values of ten houses in the neighbourhood. The results, in thousands of Taka, are shown in the table.

Contd P/3

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Contd... Q. No. 4(b)

(i) Give a point estimate for the difference between the mean private appraisal of all such homes and the government appraisal of all such homes. **(3)**

(ii) Test, at the 1% level of significance, the hypothesis that appraisal values by the city authority of all such houses is greater than the appraised values by the private appraisal company. **(14)**

House	City Authority	Private Company
1	217	219
2	350	338
3	296	291
4	237	237
5	237	235
6	272	269
7	257	239
8	277	275
9	312	320
10	335	335

SECTION – B

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

Abbreviations have their usual meanings.

5. (a) Distinguish between– **(5×3=15)**

(i) Interval and ratio level data,

(ii) Co-efficient of determination and co-efficient of correlation,

(iii) Seasonal and cyclical variation.

(b) Suppose, you are assigned to prepare a structure plan for a 'A-class' Paurashava of Bangladesh. At the very onset of plan preparation process, you have to project population for the plan period. Which trend line methods are available with you to project the population? Discuss their advantages and disadvantages. **(20)**

6. A real estate salesperson in a metropolitan area is studying the relationship between the size of a home (in square feet) and the selling price of the property. A random sample of 20 homes is selected:

Contd P/4

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Contd... Q. No. 6

Selling Price (in millions of Taka)	Area (in square feet)
65	1,500
88	1,400
102	1,600
109	1,450
67	1,400
93	1,800
107	1,560
71	1,540
86	1,490
105	1,700
58	1,330
91	1,810
98	1,700
120	1,750
68	1,360
106	1,650
75	1,505
80	1,475
100	1,550
90	1,490

(a) Determine the regression equation. **(16)**

(b) Compute the 'standard error of estimate' and interpret the result. **(5+3=8)**

(c) Develop a 95% confidence interval for the regression co-efficient and interpret the result. **(6+3=9)**

(d) What selling price would you estimate for all homes with 1,500 square feet? **(2)**

7. (a) What is 'seasonal index'? Describe its uses. **(10)**

(b) A study has been made of the accident rates (per 1,000 population) for a sample of medium sized cities in the Northeast, South and West part of Bangladesh. Use the 0.05 significance level to determine if there is a difference in the accident rates of different geographical areas. The sample for each region has been arranged from low to high. **(25)**

Contd P/5

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Contd... Q. No. 7(b)

Northeast	South	West
2.3	1.6	1.7
4.5	1.9	3.7
6.7	3.0	3.8
7.8	6.5	4.3
9.5	7.2	5.9
12.7	11.6	6.2
13.1	13.1	7.9
	14.5	8.4
	15.1	

8. (a) A researcher wanted to find out whether the income distribution of population are identical in three cities, Rajshahi, Sylhet and Comilla. Three different samples-one from each city-produced the following data on the annual income (in thousand Taka) of people. **(10)**

Rajshahi	Sylhet	Comilla
43	54	57
39	33	68
62	58	60
73	38	44
51	43	39
46	55	28
	34	49
		57

What kind of statistical tests (parametric and/or non-parametric) the researcher would prefer? Justify the answer.

(b) Using 2.0% significance level, can you conclude that the income distributions of people in these three cities are all identical? **(25)**

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Commonly used Statistical Formula

$$\sigma = \sqrt{\frac{\sum_{i}^{N}(X_i - \mu)^2}{N}} \qquad s = \sqrt{\frac{\sum_{i}^{n}(X_i - \bar{X})^2}{n-1}}$$

$$C.V. = \sigma / |\mu| \qquad C.I. = \bar{X} \ +/- \ (s.e. * t_{n-1,\alpha/2})$$

$$s.e. \cong \frac{s}{\sqrt{n}} \qquad \text{z-score} = (X - \mu)/\sigma$$

$$t_{statistic} = \frac{\bar{X} - \mu}{s.e.} \qquad t_{statistic} = \frac{\bar{X}_2 - \bar{X}_1}{s.e._d}$$

$$s.e._d = s_d \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$$

$$s_d = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Notes:
Number of observations/cases variables: N, n
Standard deviation variables: σ, s
Mean variables: μ, X
$t_{d.f.,\alpha}$ or $t_{d.f.,\alpha/2}$ are critical t-values
Standard error = s.e.

Cont... P/7

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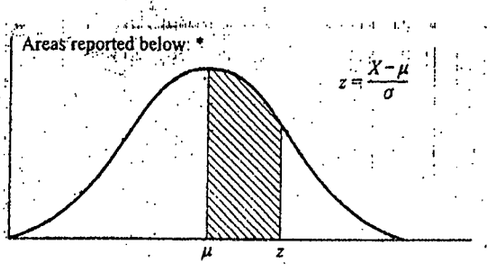
STANDARD NORMAL DISTRIBUTION



Proportions of Area for the Standard Normal Distribution

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2612	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4014
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4983	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987									
3.5	.4997									
4.0	.4999									

*Example: For $z = 1.96$, shaded area is 0.4750 out of the total area of 1.0000.

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Table 3 The *t* Distribution

	Level of Significance for One-Tailed Test						
df	.10	.05	.025	.01	0.005	.001	.0005
1	3.078	6.314	12.71	31.821	63.657	—	636.619
2	1.886	2.920	4.31	6.965	9.925	—	31.598
3	1.638	2.353	3.19	4.541	5.841	—	12.941
4	1.533	2.132	2.78	3.747	4.604	7.18	8.610
5	1.476	2.015	2.57	3.365	4.032	5.90	6.859
6	1.440	1.943	2.45	3.143	3.707	5.21	5.959
7	1.415	1.895	2.37	2.998	3.499	4.79	5.405
8	1.397	1.860	2.31	2.896	3.355	4.51	5.041
9	1.383	1.833	2.27	2.821	3.250	4.30	4.781
10	1.372	1.812	2.23	2.764	3.169	4.15	4.587
11	1.363	1.796	2.20	2.718	3.106	4.03	4.437
12	1.356	1.782	2.18	2.681	3.055	3.93	4.318
13	1.350	1.771	2.16	2.650	3.012	3.86	4.221
14	1.345	1.761	2.15	2.624	2.977	3.79	4.140
15	1.341	1.753	2.13	2.602	2.947	3.74	4.073
16	1.337	1.746	2.12	2.583	2.921	3.69	4.015
17	1.333	1.740	2.11	2.567	2.898	3.65	3.965
18	1.330	1.734	2.10	2.552	2.878	3.62	3.922
19	1.328	1.729	2.09	2.539	2.861	3.58	3.883
20	1.325	1.725	2.09	2.528	2.845	3.56	3.850
21	1.323	1.721	2.08	2.518	2.831	3.53	3.819
22	1.321	1.717	2.07	2.508	2.819	3.51	3.792
23	1.319	1.714	2.07	2.500	2.807	3.49	3.767
24	1.318	1.711	2.06	2.492	2.797	3.47	3.745
25	1.316	1.708	2.06	2.485	2.787	3.45	3.725
26	1.315	1.706	2.06	2.479	2.779	3.44	3.707
27	1.314	1.703	2.05	2.473	2.771	3.43	3.690
28	1.313	1.701	2.05	2.467	2.763	3.41	3.674
29	1.311	1.699	2.05	2.462	2.756	3.40	3.659
30	1.310	1.697	2.04	2.457	2.750	3.39	3.646
∞	1.282	1.645	1.96	2.326	2.576	3.08	3.291

Source: Adapted from David G. Kleinbaum and Lawrence L. Kupper, *Applied Regression Analysis and Other Multivariable Methods*. Copyright © 1978. Published by Wadsworth/Duxbury Press.

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DISTRIBUTION OF χ^2

Degrees of Freedom	Probability						
	.50.	.30.	.20	.10.	.05.	.02.	.01.
1	.455	1.074	1.642	2.706	3.841	5.412	6.635
2	1.386	2.408	3.219	4.605	5.991	7.824	9.210
3	2.366	3.665	4.642	6.251	7.815	9.837	11.345
4	3.357	4.878	5.989	7.779	9.488	11.668	13.277
5	4.351	6.064	7.289	9.236	11.070	13.388	15.086
6	5.348	7.231	8.558	10.645	12.592	15.033	16.812
7	6.346	8.383	9.803	12.017	14.067	16.622	18.475
8	7.344	9.524	11.030	13.362	15.507	18.168	20.090
9	8.343	10.656	12.242	14.684	16.919	19.679	21.666
10	9.342	11.781	13.442	15.987	18.307	21.161	23.209
11	10.341	12.899	14.631	17.275	19.675	22.618	24.725
12	11.340	14.011	15.812	18.549	21.026	24.054	26.217
13	12.340	15.119	16.985	19.812	22.362	25.472	27.688
14	13.339	16.222	18.151	21.064	23.685	26.873	29.141
15	14.339	17.322	19.311	22.307	24.996	28.259	30.578
16	15.338	18.418	20.465	23.542	26.296	29.633	32.000
17	16.338	19.511	21.615	24.769	27.587	30.995	33.409
18	17.338	20.601	22.760	25.989	28.869	33.346	34.805
19	18.338	21.689	23.900	27.204	30.144	33.687	36.191
20	19.337	22.775	25.038	28.412	31.410	35.020	37.566
21	20.337	23.858	26.171	29.615	32.671	36.343	38.932
22	21.337	24.939	27.301	30.813	33.924	37.659	40.289
23	22.337	26.018	28.429	32.007	35.172	38.968	41.638
24	23.337	27.096	29.553	33.196	36.415	40.270	42.980
25	24.337	28.172	30.675	34.382	37.652	41.566	44.314
26	25.336	29.246	31.795	35.563	38.885	42.856	45.642
27	26.336	30.319	32.912	36.741	40.113	44.140	46.963
28	27.336	31.391	34.027	37.916	41.337	45.419	48.278
29	28.336	32.461	35.139	39.087	42.557	46.693	49.588
30	29.336	33.530	36.250	40.256	43.773	47.962	50.892

Appendix L is abridged from Table IV of Fisher and Yates: *Statistical Tables for Biological, Agricultural, and Medical Research*, published by Oliver and Boyd Ltd., Edinburgh, and by permission of the authors and publishers.

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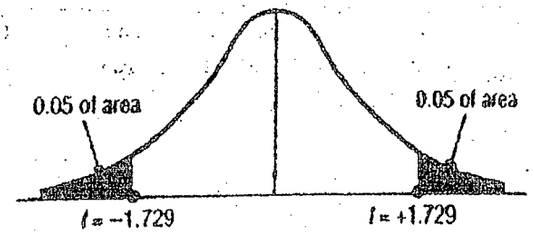

Appendix Table 2

Areas in Both Tails Combined for Student's t Distribution

Example: To find the value of t that corresponds to an area of 0.10 in both tails of the distribution combined when there are 19 degrees of freedom, look under the 0.10 column and proceed down to the 19 degrees of freedom row; the appropriate t value there is 1.729.

Degrees of Freedom	Area in Both Tails Combined			
	0.10	0.05	0.02	0.01
1	6.314	12.706	31.821	63.657
2	2.920	4.303	6.965	9.925
3	2.353	3.182	4.541	5.841
4	2.132	2.776	3.747	4.604
5	2.015	2.571	3.365	4.032
6	1.943	2.447	3.143	3.707
7	1.895	2.365	2.998	3.499
8	1.860	2.306	2.896	3.355
9	1.833	2.262	2.821	3.250
10	1.812	2.228	2.764	3.169
11	1.796	2.201	2.718	3.106
12	1.782	2.179	2.681	3.055
13	1.771	2.160	2.650	3.012
14	1.761	2.145	2.624	2.977
15	1.753	2.131	2.602	2.947
16	1.746	2.120	2.583	2.921
17	1.740	2.110	2.567	2.898
18	1.734	2.101	2.552	2.878
19	1.729	2.093	2.539	2.861
20	1.725	2.086	2.528	2.845
21	1.721	2.080	2.518	2.831
22	1.717	2.074	2.508	2.819
23	1.714	2.069	2.500	2.807
24	1.711	2.064	2.492	2.797
25	1.708	2.060	2.485	2.787
26	1.706	2.056	2.479	2.779
27	1.703	2.052	2.473	2.771
28	1.701	2.048	2.467	2.763
29	1.699	2.045	2.462	2.756
30	1.697	2.042	2.457	2.750
40	1.684	2.021	2.423	2.704
60	1.671	2.000	2.390	2.660
120	1.658	1.980	2.358	2.617
Normal Distribution	1.645	1.960	2.326	2.576

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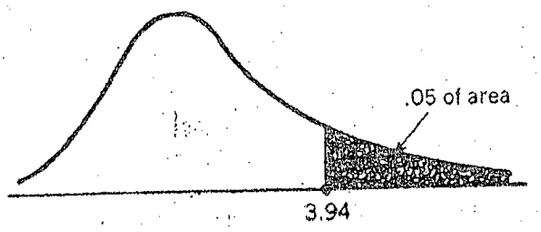
Values of F for F Distributions with .05 of the Area in the Right Tail.*



EXAMPLE: For a test at a significance level of .05 where we have 15 degrees of freedom for the numerator and 6 degrees of freedom for the denominator, the appropriate F value is found by looking under the 15 degrees of freedom column and proceeding down to the 6 degrees of freedom row; there we find the appropriate F value to be 3.94.

Degrees of freedom for denominator	Degrees of freedom for numerator																		
	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	161	200	216	225	230	234	237	239	241	242	244	246	248	249	250	251	252	253	254
2	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.5	19.5	19.5	19.5	19.5	19.5
3	10.1	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.37
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
120	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00

* Source: M. Merrington and C. M. Thompson, *Biometrika*, vol. 33 (1943).

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PLAN 293
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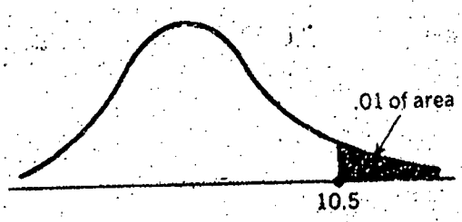
URP

Values of F for F Distributions with .01 of the Area in the Right Tail.



EXAMPLE: For a test at a significance level of .01 where we have 7 degrees of freedom for the numerator and 5 degrees of freedom for the denominator, the appropriate F value is found by looking under the 7 degrees of freedom column and proceeding down to the 5 degrees of freedom row; there we find the appropriate F value to be 10.5.

	Degrees of freedom for numerator																		
	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	4,052	5,000	5,403	5,625	5,764	5,859	5,928	5,982	6,023	6,056	6,106	6,157	6,209	6,235	6,261	6,287	6,313	6,339	6,366
2	98.5	99.0	99.2	99.2	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5	99.5	99.5
3	34.1	30.8	29.5	28.7	28.2	27.9	27.7	27.5	27.3	27.2	27.1	26.9	26.7	26.6	26.5	26.4	26.3	26.2	26.1
4	21.2	18.0	16.7	16.0	15.5	15.2	15.0	14.8	14.7	14.5	14.4	14.2	14.0	13.9	13.8	13.7	13.7	13.6	13.5
5	16.3	13.3	12.1	11.4	11.0	10.7	10.5	10.3	10.2	10.1	9.89	9.72	9.55	9.47	9.38	9.29	9.20	9.11	9.02
6	13.7	10.9	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87	7.72	7.56	7.40	7.31	7.23	7.14	7.06	6.97	6.88
7	12.2	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62	6.47	6.31	6.16	6.07	5.99	5.91	5.82	5.74	5.65
8	11.3	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91	5.81	5.67	5.52	5.36	5.28	5.20	5.12	5.03	4.95	4.86
9	10.6	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26	5.11	4.96	4.81	4.73	4.65	4.57	4.48	4.40	4.31
10	10.0	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94	4.85	4.71	4.56	4.41	4.33	4.25	4.17	4.08	4.00	3.91
11	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63	4.54	4.40	4.25	4.10	4.02	3.94	3.86	3.78	3.69	3.60
12	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30	4.16	4.01	3.86	3.78	3.70	3.62	3.54	3.45	3.36
13	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19	4.10	3.96	3.82	3.66	3.59	3.51	3.43	3.34	3.25	3.17
14	8.86	6.51	5.56	5.04	4.70	4.46	4.28	4.14	4.03	3.94	3.80	3.66	3.51	3.43	3.35	3.27	3.18	3.09	3.00
15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80	3.67	3.52	3.37	3.29	3.21	3.13	3.05	2.96	2.87
16	8.53	6.23	5.29	4.77	4.44	4.20	4.03	3.89	3.78	3.69	3.55	3.41	3.26	3.18	3.10	3.02	2.93	2.84	2.75
17	8.40	6.11	5.19	4.67	4.34	4.10	3.93	3.79	3.68	3.59	3.46	3.31	3.16	3.08	3.00	2.92	2.83	2.75	2.65
18	8.29	6.01	5.09	4.58	4.25	4.01	3.84	3.71	3.60	3.51	3.37	3.23	3.08	3.00	2.92	2.84	2.75	2.66	2.57
19	8.19	5.93	5.01	4.50	4.17	3.94	3.77	3.63	3.52	3.43	3.30	3.15	3.00	2.92	2.84	2.76	2.67	2.58	2.49
20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37	3.23	3.09	2.94	2.86	2.78	2.69	2.61	2.52	2.42
21	8.02	5.78	4.87	4.37	4.04	3.81	3.64	3.51	3.40	3.31	3.17	3.03	2.88	2.80	2.72	2.64	2.55	2.46	2.36
22	7.95	5.72	4.82	4.31	3.99	3.76	3.59	3.45	3.35	3.26	3.12	2.98	2.83	2.75	2.67	2.58	2.50	2.40	2.31
23	7.88	5.66	4.76	4.26	3.94	3.71	3.54	3.41	3.30	3.21	3.07	2.93	2.78	2.70	2.62	2.54	2.45	2.35	2.26
24	7.82	5.61	4.72	4.22	3.90	3.67	3.50	3.36	3.26	3.17	3.03	2.89	2.74	2.66	2.58	2.49	2.40	2.31	2.21
25	7.77	5.57	4.68	4.18	3.86	3.63	3.46	3.32	3.22	3.13	2.99	2.85	2.70	2.62	2.53	2.45	2.36	2.27	2.17
30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98	2.84	2.70	2.55	2.47	2.39	2.30	2.21	2.11	2.01
40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89	2.80	2.66	2.52	2.37	2.29	2.20	2.11	2.02	1.92	1.80
60	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72	2.63	2.50	2.35	2.20	2.12	2.03	1.94	1.84	1.73	1.60
120	6.85	4.79	3.95	3.48	3.17	2.96	2.79	2.66	2.56	2.47	2.34	2.19	2.03	1.95	1.86	1.76	1.66	1.53	1.38
∞	6.63	4.61	3.78	3.32	3.02	2.80	2.64	2.51	2.41	2.32	2.18	2.04	1.88	1.79	1.70	1.59	1.47	1.32	1.00

L-2/T-2/URP **Date: 11/03/2018**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2 BURP Examinations 2016-2017

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) Write down the application of different types of zoning. **(15)**

   (b) List the problems for which urban renewal is necessary. Which methods are used for urban renewal process? Explain with example. **(20)**

2. (a) Define the types of local plan. What are the functions of local plan? Explain the form and content of local plan. **(25)**

   (b) State the concept and importance of planning standards. **(10)**

3. (a) Describe the upgrading principles of low-income settlements. **(15)**

   (b) Discuss the characteristics of urban areas of a city. List the different techniques of "detail area planning". **(15+5)**

4. (a) Write down the concept of land readjustment technique for planned development of urban land. **(8)**

   (b) Write short notes on the followings: **(3×9=27)**

   (i) Sites and services scheme

   (ii) Master plan

   (iii) Structure plan

SECTION – B

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

5. (a) Residential land use plan making process is comprised of a number of steps. Briefly describe these steps. **(22)**

   (b) People of Holland require 15 times more land than their country for food, forest product and energy. Explain this statement from the perspective of "ecological footprint" concept. **(13)**

Contd P/2

PLAN 215

6. (a) Which aspects need to be addressed to achieve the targets of Sustainable Development Goal 11 in the context of Bangladesh. **(20)**

(b) What is the importance of land classification in planning? Write shor note on 'Detroit System" of land classification. **(5+10)**

7. (a) What are the characteristics of compact development? Do you think Dhaka is a compact city? — Justify your opinion. **(5+10)**

(b) How the following tools/strategies can regulate development — explain with example. **(4×5=20)**

(i) Urban growth boundary
(ii) Inheritance tax
(iii) Transfer of development right
(iv) Impact fees

8. (a) Briefly discuss five dimensions of development management plan. **(10)**

(b) Elaborate the social, ecological and health impacts of sprawl development. **(15)**

(c) Explain the term "imageability" of a city. 'Edge' is one of the elements of city image. Discuss this element in case of Dhaka. **(3+7=10)**
