BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA
L-2/T-2 BURP Examinations 2011-2012
Sub : **PLAN 215** (Urban Planning Technique)
Full Marks: 210   Time : 3 Hours
USE SEPARATE SCRIPTS FOR EACH SECTION
The figures in the margin indicate full marks.

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

1. (a) Write down the purpose of Structure Plan. Why the conventional method of master planning is insufficient for guiding the development control of fast growing cities. **(10+5=15)**

   (b) Describe about the barriers for realizing betterment fees from beneficiaries in Bangladesh. **(8)**

   (c) What is "replotting" and "contribution" in land readjustment projects? **(6)**

   (d) List the traffic related factors that are necessary for making the proposal of an urban renewal plan. **(6)**

2. (a) How does the site and service scheme method increase the private investments in housing? Describe with necessary examples. **(7)**

   (b) What is zoning? Do you prefer complete segregation of different land uses in different zones on a mixed land use zoning system? Justify your answer with necessary examples. **(2+8=10)**

   (c) How can you delineate the catchment area of an urban center in preparation of a master plan? **(10)**

   (d) Write about the importance of planning standards in land use planning process. **(8)**

3. (a) Write about the interventions that are necessary for upgrading low income settlement areas. "Different case studies of urban upgradation process suggest that the direct recovery of infrastructure investment from beneficiaries is not feasible in this method" — explain the statement. How can such method recover their cost of investments from infrastructures? **(6+5+12=23)**

   (b) Which problems generally necessiate for having an urban renewal process in detail area planning? **(12)**

4. Write short notes: **(7×5=35)**
   (a) Classification of local plans,
   (b) Working procedure for Land Readjustments,
   (c) Application of density zoning,
   (d) Meaning of development,
   (e) Demerits of site and service scheme method.

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PLAN 215

SECTION – B

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

5. (a) Four perspectives are considered for land use information–briefly discuss these perspectives. **(23)**

   (b) In land use design process, which order would you follow to design each category of land uses? **(12)**

6. (a) The tasks for designing residential areas includes a number of steps– give a brief description of the process. **(24)**

   (b) Which residential design concept focuses on interaction between land use and transit system? Discuss the key features of this concept. **(11)**

7. (a) What do you understand by the term "imaqeability" of a city? **(4)**

   (b) In case of Dhaka city, which elements of city image are more vivid compare to other — elaborate your answer with relevant examples. **(17)**

   (c) The compact city is an urban planning concept which promotes relatively high residential density with mixed land use. Do you think Dhaka satisfies all the characteristics of compact development? Explain with necessary example. **(14)**

8. (a) Define the terms "Ecological footprint" and "Ecological Overshoot". **(8)**

   (b) How the ecological footprint measure can guide the policy makers while planning for a city? **(8)**

   (c) Explain why the land use design and the development management plan should be mutually supportive? **(8)**

   (d) It is very difficult to conserve flood flow zones and agricultural land of Dhaka. Which strategies can be adopted to benefit and encourage owners of flood flow zones and agricultural land? **(11)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2   BURP Examinations 2011-2012

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**.

1. (a) Explain the difference between the public good and public provision of a private good? **(10)**

    (b) Consider a public good "a dam designed to control flooding". Assume that only three people Mr. 'A', Mrs. 'B' and Mr. 'C' benefit from the dam. Their demand equations (marginal benefit equations) and the marginal cost are given: **(25)**

    $P = 100 - 3\,Q_A$

    $P = 180 - 5\,Q_B$

    $P = 240 - 6\,Q_C$

    $MC = TK.\ 500$

    Find out the efficient level of output (height of the dam).

2. (a) Explain 'benefit' and 'ability to pay' approaches to taxation. **(10)**

    (b) What are the desirable characteristics of a tax system? **(10)**

    (c) Define 'direct tax' and 'indirect tax' with examples. Explain different types of direct taxes. Write short notes on "tax structure of Bangladesh". **(5+5+5=15)**

3. (a) What do you mean by externality? Explain different types of externalities with examples. **(15)**

    (b) Explain graphically that there is under production and over production of any commodity in the presence of positive externality and negative externality respectively. How can the efficient output be achieved in the presence of externalities in a competitive market? **(20)**

4. (a) How can you measure graphically and mathematically the welfare cost of tax imposition in case of constant cost industry and increasing cost industry? **(15)**

    (b) "When an excise tax is levied on a producer, the more inelastic the supply curve, the more tax burden on the producer and less burden on the consumers", do you agree with the statement? Why or why not, explain. **(20)**

HUM 221

SECTION – B

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

5. (a) What is deficit financing? How are income and employment increased with the help of deficit financing in a developing country like Bangladesh? **(15)**

   (b) Explain the factors determining the safe limit of deficit financing. **(20)**

6. Suppose you are one of the planners of Bangladesh government. You are asked to recommend some policies for the national budget of the fiscal year 2013-2014 with a view to developing Dhaka city. What will be the implications of your policies? **(35)**

7. (a) What do you mean by fiscal policy? **(5)**

   (b) Explain the objectives of fiscal policy. **(20)**

   (c) Explain the role of public borrowing in economic development of a developing country like Bangladesh. **(10)**

8. (a) What are the main sources of government revenue? What new sources do you suggest for raising more revenue for government? **(20)**

   (b) Explain the efficient provision of private goods. **(15)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2   BURP Examinations 2011-2012

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) Describe the techniques applied for contrast manipulation.   **(10)**

    (b) State the issues to be considered for choosing remotely sensed image for change detection. Describe the techniques used for detecting change between two remote sensing images of the same area.   **(5+15=20)**

    (c) Differentiate between sun synchronous satellite and geo-stationary satellite.   **(5)**

2. (a) What are the advantages of using SPOT-4 data over LANDSAT-7 data? In which cases is it be better to use LANDSAT-7 instead of SPOT-4 data?   **(10)**

    (b) Differentiate between push broom scanner and whisk broom scanner.   **(8)**

    (c) An agricultural land classification has been performed where three categories of land have been identified, namely, potato, wheat and sugar beet. Subsequently, the classification result is being evaluated by means of a field survey. All categories of land comprised 1,00,000 pixels in total, of which 15,000 pixels were correctly classified as potato. The training set data offered 8,750 pixels of sugar beet and 6,000 pixels of potato which should have been classified as potato and sugar beet respectively. The classifier provided 45,000 pixels of wheat and 30,000 pixels of sugar beet in total whereas the training set data provided 50,000 pixels of wheat in total. Producer's accuracy of potato and user's accuracy of wheat were found to be 60% and 90% respectively. Find out the missing values of the error matrix and calculate (i) producer's accuracy and user's accuracy for rest of the categories (ii) overall accuracy.   **(12)**

    (d) Briefly state the significance of producer's accuracy and user's accuracy in land classification process.   **(5)**

3. (a) Briefly describe the ways of how electro-magnetic energy interacts with the atmosphere.   **(20)**

    (b) Differentiate between active sensor and passive sensor. Describe the two most widely used active sensor systems.   **(5+10=15)**

PLAN 261

4. Write short notes on the following (any five): (5×7=35)

    (i) Radiometric resolution

    (ii) Temporal resolution

    (iii) Unsupervised classification

    (iv) Spectral ratioing

    (v) Spatial filtering

    (vi) Criteria of choosing remote sensing image

SECTION – B

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

5. (a) Discuss the two structures to store, analyze and represent real-world data in GIS with neat sketch. (14)

    (b) Discuss with an example the raster overlay technique to derive suitable land for a development purpose. Draw a schematic diagram to explain it. (14)

    (c) What do you mean by 'accuracy' and 'resolution'? (7)

6. (a) Write down the differences between 'identity' and 'intersect' overlay operations of GIS. (15)

    (b) What do you mean by interpolation techniques? List the types of interpolation techniques. (10)

    (c) Explain with an example the buffer analysis performed in GIS. (10)

7. (a) What is meant by 'perforated polygon' and 'fragmented polygon'? (10)

    (b) What is Euler function? Explain the types of analysis can be performed using Euler function. (15)

    (c) Illustrate the different types of network analysis performed in GIS. (10)

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

    (a) Sliver poly

    (b) Tessellation

    (c) Sinuosity

    (d) Spatial arrangement

    (e) Elongation ratio

L-2/T-2/URP   **Date : 28/09/2013**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-2   BURP Examinations 2011-2012

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

Full Marks: 210   Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

Terms and abbreviations have their standard meanings.

SECTION – A

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

1. (a) What do you mean by 'Area Ration Method' of population projection?   **(5)**

(b) A transport planner in Dhaka city is exploring the relationship between travel length and associated delay while travelling by bus in arterial roads. A random sample of 10 travel routes is selected and the data are given below:

Travel length (in km)	10	9.5	12	25.2	15	7.8	18	6.6	20	24.5
Delay (in min)	34	25	40	65	44	20	53	10	54	62

    (i)   Determine the value of regression co-efficient 'a' and 'b'.   **(8)**

    (ii)   Calculate the value of 'co-efficient of correlation' and 'co-efficient of determination' and interpret the value of 'co-efficient of determination'.   **(14)**

    (iii)   Faisal have travelled 17 km long route by bus from his home to his university. Predict the delay for his travel and construct a 95% prediction interval of your estimate.   **(8)**

2. (a) What are the assumptions of linear regression model?   **(10)**

(b) Samples of ten male applicants and eight female applicants are randomly selected to determine if there is a difference between the two groups in total score obtained in admission test of a renowned public university in the year 2012. Each applicant is evaluated out of 100 marks. Test the hypothesis with 10% level of significance.   **(25)**

Applicants	Total Scores									
Male	68	72	78	83	84	85	86	90	96	99
Female	71	74	79	80	82	85	86	88		

PLAN 293

3. Following table shows population data of a small union of Noakhali district according to gender and age cohort. Assume there is no migration, survival rate of new born children is 95% and 45% of the total birth are female.　　　　　　　　　　　　　　**(35)**

Cohort	Age	Male ('000)		Female ('000)		Birth ('000) (2001-2011)
		Population (2001)	Death (2001-2011)	Population (2001)	Death (2001-2011)	
1	0–9	1200	90	1000	100	0
2	10–19	850	50	900	80	200
3	20–29	900	60	810	50	450
4	30–39	710	100	750	90	280
5	40–49	600	85	590	70	90
6	50–59	500	70	520	65	0
7	60+	700	250	670	290	0

In this union, government has undertaken a program to dispense free academic books to the people belong to age group 10–19. Project the number of total population who will be eligible for this facility in the year 2021 if 90% of the total population of age group 10–19 meets the criteria.

4. Bangladesh Road Transport Corporation (BRTC) has gathered data on the number of passengers who have travelled in its bus services during each of the last 6 years.

Year	2005	2006	2007	2008	2009	2010
Passengers (× 10,000)	3.5	4.2	4.0	3.9	3.8	3.6

(a) Find the linear estimating equation that best describes these data.　　　　　　**(15)**

(b) Calculate the 'percent of trend' for these data.　　　　　　**(7)**

(c) Calculate the 'relative cyclical residual' for these data.　　　　　　**(5)**

(d) Plot the percent of trend and give a summary of the position in which BRTC finds itself.　　　　　　**(8)**

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

5. A sample of 40 observations is selected from one population. The sample mean is 102 and the sample standard deviation is 5. A sample of 50 observations is selected from a second population. The sample mean is 99 and the sample standard deviation is 6. Conduct the following test of hypothesis using the 0.05 significance level:

$H_0 : \mu_1 = \mu_2$

$H_a : \mu_1 \neq \mu_2$

(a) Is this a one-tailed or a two-tailed test?　　　　　　**(05)**

(b) What is the decision rule?　　　　　　**(10)**

(c) Compute the value of the test statistic.　　　　　　**(15)**

(d) What is your decision regarding H_0.　　　　　　**(05)**

PLAN 293

6. The mayor of a small town claims that his poverty reduction programs have been able to reduce the percentage of poor households in the city. When he took office about 4 years ago 80 percent of the households in the town were poor. But now it is less than 80 percent. A researcher wanted to test the mayor's claim. He took a sample of 2000 households and found that 1550 households were poor. Using the researcher's data conduct a test of hypothesis.

   (a) State the null and alternate hypothesis. **(05)**

   (b) State the decision rule. **(10)**

   (c) Compute the value of the test statistic. **(15)**

   (d) What is your decision regarding the claim of the mayor (Use $\alpha = 0.05$)? **(05)**

7. The following table shows the price of apartments (in thousands of taka) per square foot in three locations of Dhaka. At the 0.05 significance level is it possible to conclude that there is a difference in the mean price of apartments?

   (a) State the null hypothesis and alternate hypothesis. **(05)**

   (b) Calculate the SST, SSE and SS_{total}. **(15)**

   (c) Develop an ANOVA table. **(10)**

   (d) Is there a difference in the mean price of apartments? **(05)**

Location A	Location B	Location C
3	8	14
4	6	12
3	8	11
5	7	13

8. Two hundred men selected at random from various levels of management were interviewed regarding their concern about environmental issues. The distribution of respondents by their concerns is shown in the table below:

Level of Management	No Concern	Some Concern	Great Concern
Top Management	15	13	12
Middle Management	20	19	21
Supervisor	07	07	06
Group Leader	28	21	31

   (a) State the null and alternate hypothesis. **(05)**

   (b) Calculate the test statistic. **(20)**

   (c) At the 0.01 level of significance is there a relationship between management level and environmental concern? **(10)**

STANDARD NORMAL DISTRIBUTION

Areas reported below: *

$$z = \frac{X - \mu}{\sigma}$$
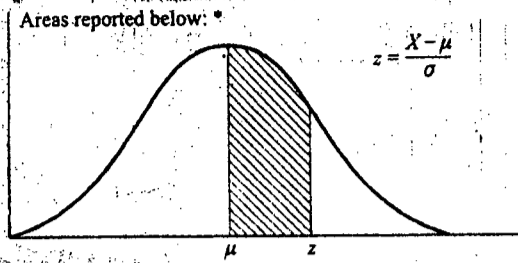
Proportions of Area for the Standard Normal Distribution

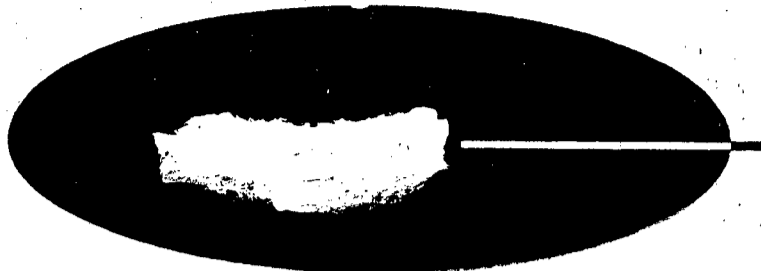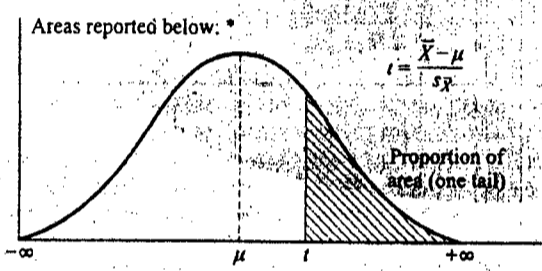| z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.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.

Student's
t Distribution

Areas reported below:

$$t = \frac{\overline{X} - \mu}{s_{\overline{X}}}$$

Proportion of area (one tail)

$-\infty$ μ t $+\infty$

Proportions of Area for the t Distributions

0.05	0.025	0.01	0.005
6.314	12.706	31.821	63.657
2.920	4.303	6.965	9.925
2.353	3.182	4.541	5.841
2.132	2.776	3.747	4.604
2.015	2.571	3.365	4.032
1.943	2.447	3.143	3.707
1.895	2.365	2.998	3.499
1.860	2.306	2.896	3.355
1.833	2.262	2.821	3.250
1.812	2.228	2.764	3.169
1.796	2.201	2.718	3.106
1.782	2.179	2.681	3.055
1.771	2.160	2.650	3.012
1.761	2.145	2.624	2.977
1.753	2.131	2.602	2.947
1.746	2.120	2.583	2.921
1.740	2.110	2.567	2.898

df	0.10	0.05	0.025	0.01	0.005
18	1.330	1.734	2.101	2.552	2.878
19	1.328	1.729	2.093	2.539	2.861
20	1.325	1.725	2.086	2.528	2.845
21	1.323	1.721	2.080	2.518	2.831
22	1.321	1.717	2.074	2.508	2.819
23	1.319	1.714	2.069	2.500	2.807
24	1.318	1.711	2.064	2.492	2.797
25	1.316	1.708	2.060	2.485	2.787
26	1.315	1.706	2.056	2.479	2.779
27	1.314	1.703	2.052	2.473	2.771
28	1.313	1.701	2.048	2.467	2.763
29	1.311	1.699	2.045	2.462	2.756
30	1.310	1.697	2.042	2.457	2.750
40	1.303	1.684	2.021	2.423	2.704
60	1.296	1.671	2.000	2.390	2.660
120	1.289	1.658	1.980	2.358	2.617
∞	1.282	1.645	1.960	2.326	2.576

shaded area to represent 0.05 of the total area of 1.0, value of t with 10 degrees of freedom is 1.812
e III of Fisher and Yates, *Statistical Tables for Biological, Agricultural and Medical Research*, 6th ed., 1974,
an Group Ltd., London (previously published by Oliver & Boyd, Edinburgh), by permission of the authors

Area in the Right Tail of a Chi-square (χ^2) Distribution.[*]

.20 of area

Values of χ^2 14.631
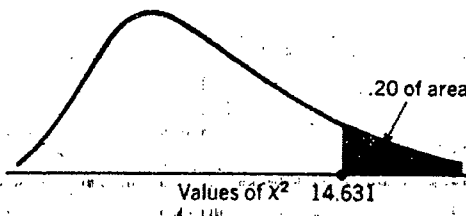
EXAMPLE: In a chi-square distribution with 11 degrees of freedom, if we want to find the appropriate chi-square value for .20 of the area under the curve (the colored area in the right tail) we look under the .20 column in the table and proceed down to the 11 degrees of freedom row; the appropriate chi-square value there is 14.631

Degrees of freedom	Area in right tail				
	.99	.975	.95	.90	.800
1	.00016	.00098	.00398	.0158	.0642
2	.0201	.0506	.103	.211	.446
3	.115	.216	.352	.584	1.005
4	.297	.484	.711	1.064	1.649
5	.554	.831	1.145	1.610	2.343
6	.872	1.237	1.635	2.204	3.070
7	1.239	1.690	2.167	2.833	3.822
8	1.646	2.180	2.733	3.490	4.594
9	2.088	2.700	3.325	4.168	5.380
10	2.558	3.247	3.940	4.865	6.179
11	3.053	3.816	4.575	5.578	6.989
12	3.571	4.404	5.226	6.304	7.807
13	4.107	5.009	5.892	7.042	8.634
14	4.660	5.629	6.571	7.790	9.467
15	5.229	6.262	7.261	8.547	10.307
16	5.812	6.908	7.962	9.312	11.152
17	6.408	7.564	8.672	10.085	12.002
18	7.015	8.231	9.390	10.865	12.857
19	7.633	8.907	10.117	11.651	13.716
20	8.260	9.591	10.851	12.443	14.578
21	8.897	10.283	11.591	13.240	15.445
22	9.542	10.982	12.338	14.041	16.314
23	10.196	11.689	13.091	14.848	17.187
24	10.856	12.401	13.848	15.658	18.062
25	11.524	13.120	14.611	16.473	18.940
26	12.198	13.844	15.379	17.292	19.820
27	12.879	14.573	16.151	18.114	20.703
28	13.565	15.308	16.928	18.939	21.588
29	14.256	16.047	17.708	19.768	22.475
30	14.953	16.791	18.493	20.599	23.364

Chi-square (x^2) Distribution

.20	.10	.05	.025	.01	Degrees of freedom
		Area in right tail			
1.642	2.706	3.841	5.024	6.635	1
3.219	4.605	5.991	7.378	9.210	2
4.642	6.251	7.815	9.348	11.345	3
5.989	7.779	9.488	11.143	13.277	4
7.289	9.236	11.070	12.833	15.086	5
8.558	10.645	12.592	14.449	16.812	6
9.803	12.017	14.067	16.013	18.475	7
11.030	13.362	15.507	17.535	20.090	8
12.242	14.684	16.919	19.023	21.666	9
13.442	15.987	18.307	20.483	23.209	10
14.631	17.275	19.675	21.920	24.725	11
15.812	18.549	21.026	23.337	26.217	12
16.985	19.812	22.362	24.736	27.688	13
18.151	21.064	23.685	26.119	29.141	14
19.311	22.307	24.996	27.488	30.578	15
20.465	23.542	26.296	28.845	32.000	16
21.615	24.769	27.587	30.191	33.409	17
22.760	25.989	28.869	31.526	34.805	18
23.900	27.204	30.144	32.852	36.191	19
25.038	28.412	31.410	34.170	37.566	20
26.171	29.615	32.671	35.479	38.932	21
27.301	30.813	33.924	36.781	40.289	22
28.429	32.007	35.172	38.076	41.638	23
29.553	33.196	36.415	39.364	42.980	24
30.675	34.382	37.652	40.647	44.314	25
31.795	35.563	38.885	41.923	45.642	26
32.912	36.741	40.113	43.194	46.963	27
34.027	37.916	41.337	44.461	48.278	28
35.139	39.087	42.557	45.722	49.588	29
36.250	40.256	43.773	46.979	50.892	30

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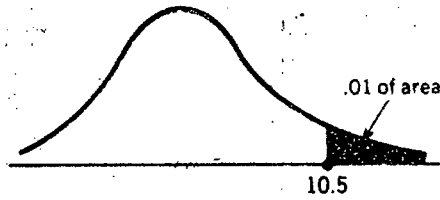

.05 of area

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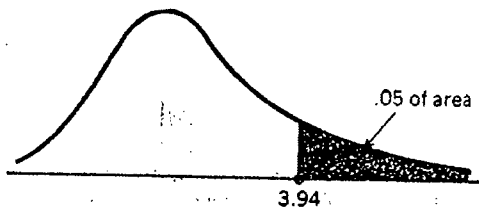
EXAMPLE: For a test at a significance level of .05 where we have 15 degrees of freedom for the numerator and 6 degrees of freedom for the denominator, the appropriate F value is found by looking under the 15 degrees of freedom column and proceeding down to the 6 degrees of freedom row; there we find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

Degrees of freedom for 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

*(Left axis label: Degrees of freedom for denominator)*

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

.01 of area

10.5

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	6,356
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

Areas in Both Tails Combined for Student's t Distribution.*

.05 of area   .05 of area
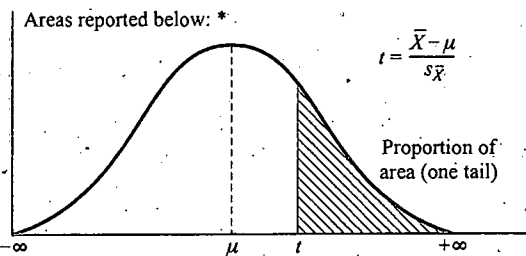
−t = 1.729   +t = 1.729
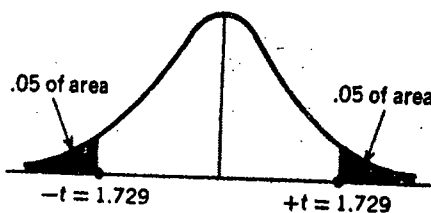
EXAMPLE: To find the value of t which corresponds to an area of .10 in both tails of the distribution combined, when there are 19 degrees of freedom, look under the .10 column, and proceed down to the 19 degrees of freedom row; the appropriate t value there is 1.729.

Degrees of freedom	Area in both tails combined			
	.10	.05	.02	.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

* Taken from Table III of Fisher and Yates, *Statistical Tables for Biological, Agricultural and Medical Research*, published by Longman Group Ltd., London (previously published by Oliver & Boyd, Edinburgh) and by permission of the authors and publishers.

Student's t Distribution

Areas reported below: *

$$t = \frac{\bar{X} - \mu}{s_{\bar{X}}}$$

Proportion of area (one tail)

$-\infty \qquad \mu \quad t \qquad +\infty$

Proportions of Area for the t Distributions

df	0.10	0.05	0.025	0.01	0.005	df	0.10	0.05	0.025	0.01	0.005
1	3.078	6.314	12.706	31.821	63.657	18	1.330	1.734	2.101	2.552	2.878
2	1.886	2.920	4.303	6.965	9.925	19	1.328	1.729	2.093	2.539	2.861
3	1.638	2.353	3.182	4.541	5.841	20	1.325	1.725	2.086	2.528	2.845
4	1.533	2.132	2.776	3.747	4.604	21	1.323	1.721	2.080	2.518	2.831
5	1.476	2.015	2.571	3.365	4.032	22	1.321	1.717	2.074	2.508	2.819
6	1.440	1.943	2.447	3.143	3.707	23	1.319	1.714	2.069	2.500	2.807
7	1.415	1.895	2.365	2.998	3.499	24	1.318	1.711	2.064	2.492	2.797
8	1.397	1.860	2.306	2.896	3.355	25	1.316	1.708	2.060	2.485	2.787
9	1.383	1.833	2.262	2.821	3.250	26	1.315	1.706	2.056	2.479	2.779
10	1.372	1.812	2.228	2.764	3.169	27	1.314	1.703	2.052	2.473	2.771
11	1.363	1.796	2.201	2.718	3.106	28	1.313	1.701	2.048	2.467	2.763
12	1.356	1.782	2.179	2.681	3.055	29	1.311	1.699	2.045	2.462	2.756
13	1.350	1.771	2.160	2.650	3.012	30	1.310	1.697	2.042	2.457	2.750
14	1.345	1.761	2.145	2.624	2.977	40	1.303	1.684	2.021	2.423	2.704
15	1.341	1.753	2.131	2.602	2.947	60	1.296	1.671	2.000	2.390	2.660
16	1.337	1.746	2.120	2.583	2.921	120	1.289	1.658	1.980	2.358	2.617
17	1.333	1.740	2.110	2.567	2.898	∞	1.282	1.645	1.960	2.326	2.576

Example: For the shaded area to represent 0.05 of the total area of 1.0, value of t with 10 degrees of freedom is 1.812

L-2/T-2//URP   Date : 06/07/2013
BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA
L-2/T-2/   BURP Examinations, 2010-2011
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 Q. No. 1 and any **TWO** from the rest.

1. Write notes on the following (Any Four)   (6×4=24)
   - (i)   Albedo   (ii)   Exotic Landscaping
   - (iii) Courtyard Landscaping   (iv)   Top Soil
   - (v)   Wind Tunnel.

2. (a) How can landscaping be applied for environmental control?   (9)
   (b) Describe the salient features of Moghul Gardens.   (14)

3. (a) What do you mean by the terms 'environment' and 'Ecology'?   (8)
   (b) Explain 'Physical Environment', 'Ecosystem' and 'Ecological Balance' as they relate
   to landscape.   (15)

4. (a) Discuss the importance and describe the uses of water features in landscaping.   (13)
   (b) Describe the salient features of Japanese Landscaping.   (10)

SECTION – B

There are **FOUR** questions in this Section. Answer Q. No. 5 and any **TWO** from the rest.

5. Write notes on the following (Any Four)   (6×4=24)
   - (i)   Dew Ponds   (ii)   Biotic Garden
   - (iii) Fencing   (iv)   Niche
   - (v)   Green Landscape

6. (a) Briefly discuss the background of landscape planning and design.
   (b) Describe Dhaka City's present landscape scenario and suggest improvements.   (8+15=23)

7. (a) Discuss the different types of vegetation with examples and mention the purposes
   they are mostly used for.
   (b) Draw some of the different forms of trees and refer to their aesthetic qualities.   (14+9=23)

8. (a) What are the three basic questions you need to ask while pursuing site investigation
   for landscaping?
   (b) Discuss in detail some of the elements of site analysis.   (6+17=23)