ALUMINA

TIME : 2 hrs. March - 09 MARKS : 60

Note : 1) Log table will be provided on request
2) statistical tables will also be provided on Request.

Section - I

15

Q.1 A) **Describe in short :** 05

a) Statistics b) population c) Sample
d) Attribute e) Variate f) parameter

Q.1 B) Write in short about primary and secondary data 02

Q.2 A) Explain in brief on the following with reference to testing of hypothesis 04

a) Both Errors
b) Level of significance
c) Critical Region

Q.2 B) A Box contains 10 marbles out of which 'K' are white & rest are blue. We want to examine whether k = 4 or k = 5. If 2 marbles are taken at random with replacement turn out to be blue. We accept 'K' to be 4. With respect to this problems :- 04

a) calculate / state Null & Alternate hypothesis.
b) Critical Region
c) Type I & Type II Errors
d) Level of significance

Section - II

15

Q.3 A) A Farm is engaged in breeding pigs. The pigs are fed on diet nutrient content are as follows : 07

Nutient	Food		Minimum amt. of Nutient leg
	A	B	
1	18	3	54
2	3	12	36
3	10	5	50

Product A costs Rs.20/- per kg. & B costs Rs.40 per kg. How much quantity of each product should be purchased to provide the pigs with the required nutient at the minimum cost to the farm. (Solve graphically)

Q.3 B) i) Solve the following problem by simplex method 05

$$Z \min = 60x_1 + 80x_2$$

S.t

$$20x_1 + 30x_2 \geq 900$$
$$40x_1 + 30x_2 \geq 1200$$
$$x_1, x_2 \geq 0.$$

ii) Write in brief all the terminologies used in simplex method. 03

Section - III

Q.4 a) Explain the theory behing testing of hypothesis of mean for a two sample test in case of large populations. Please write down the entire testing procedure. 04

b) In a study designed to test whether there is difference between average height of adult female born in 2 different counties. 04

random sample give following results

Q.5 The following data give relationship and activity duration in weeks of a project. Draw the network (CPM) diagram. Obtain EF, ES, LS, LF times. Identify the critical path, critical activities and find minimum time to finish the project. 07

Activity	1-2	2-3	3-4	3-5	4-6	3-7	5-7	6-7	7-8
Duration	7	7	2	7	4	5	7	7	2

Section - IV

Q.6 a) A post - office deposits Rs.2500/- fetches Rs.40,000 after 6 years. Find compound rate of interest if interest is added yearly 03

Q.6 b) Ameya's father wants to have Rs.60,000 when Ameya enters college after 10 yrs. If the rate of interest is compounded continously is 9% How much money will he invest Today? 04

Q.7 a) Find the amount of an ordinary annuity of Rs.20,000 payable for 5 years if interest rate is 8% compounded annually. 04

b) A machine costs Rs.80,000 has 15 years as estimated affective life at and of effective life company has to set up a Sinking fund. The scrap value of machine is Rs.8000/- only. Find the amount to be set aside at the end of each year if the rate of interest rate is 8% per annual compounded annually. 04

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