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SVIS 324 A-2K14

B.Sc.VIth Semester Degree Examination

Mathematical Statistics

(Applied Statistics and Operation Research)

Paper - VIII

Time :3 Hours Maximum Marks : 80

Instructions to Candidates:

Statistical tables and graph sheet will be supplied on request.

Section - A

I. Answer the following questions. **(1×15=15)**

1) Price index numbers indicate the percentage change in
   a) quantity
   b) Price
   c) time
   d) none

2) If $\sum p_1 q_1 = 500 \, and \, \sum p_1 q_0 = 400$, then the suitable index number is.
   a) 100
   b) 80
   c) 125
   d) 900

3) Heavy rain due to cyclone is associated with
   a) Trend
   b) Seasonal variation
   c) cyclic variation
   d) Irratic variation.

4) The graph of time series is known as
   a) Polygon
   b) histogram
   c) Historigram
   d) O give

5) Normally, graphical method is used of L.P.P. has
   a) any number of variables
   b) two variables
   c) 3 or more variables
   d) None.

6) Most commonly used model in O.R.Are
   a) Mathematical models
   b) Iconic models
   c) Analogue models
   d) None.

7) A set of real values, which satisfy the constraints of L.P.P. is called
   a) Solution
   b) Feasible solution.
   c) Optimal solution
   d) None.

8) Transportation of the commodities will be from.
   a) Origins to origins
   b) origins to destinations.
   c) destinations to destinations
   d) None.

9) The game is said to be unfair, if its value is .
   a) unknown
   b) zero
   c) non-zero
   d) none.

10) Independent float of an activity (i,j) is obtained by
   a) $IF_{ij} = (E_j - L_i) - t_{ij}$
   b) $IF_{ij} = t_{ij} - (L_i - E_j)$
   c) $IF_{ij} = E_j - L_i$
   d) $IF_{ij} = (L_i - E_j) - t_{ij}$

11) The condition in factor reversal test is _____

12) Additive model of time series is given by .....

13) ..... index number is ideal index number.

14) Physical stock of goods is called .....

15) PERT stands for .....

Section - B

II. Answer any five of the following. **(5×5=25)**

16) What is an index numbers? Discuss about unweighted and weighted index numbers.

17) What are the components of time series ? Explain any two of them with examples.

18) Discuss briefly about the models in operations Research.

19) Solve the L.P.P by graphical method.

$$Max.z. = 2x_1 + x_2$$
$$S.T. \quad x_1 - x_2 \le 10$$
$$2x_1 - x_2 \le 40$$
$$x_1, x_2 \ge 0$$

20) Obtain the schedule of assignment for the following problem.

	I	*II*	*III*	*IV*
A	9	12	14	11
B	17	15	18	17
C	12	13	19	15
D	16	15	16	11

21) Define

a) set of cost

b) holding cost

c) storage cost

d) least time.

22) Explain the steps in north west corner rule for solving transportation problem.

Section - C

III. Answer any four of the following questions. **(4×10=40)**

23) What is cost of living index numbers? Discuss the main steps involved in the constructions of cost of living index number.

24) Explain

a) fitting of straight line trend equation by the method of least squares.

b) Method of link relatives.

25) Describe simplex method of solving a L.P.P.

26) Obtain an initial basic feasible solution by vogel's approximation method and find its optimal solution.

	Destination P	Q	R	Capacity
A	2	2	3	12
B	4	1	2	15
C	1	3	1	40
Demand	20	17	30	

27) a) Describe dominance property of solving a game.

b) Use graphical method to solve the following game.

		Player B	
		I	*II*
Player A		2	4
		2	3
		3	2
		−2	6

28) A project has the following characteristics.

Activity:	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-7	7-8	8-10	9-10
Time(days):	4	1	1	1	6	5	4	8	1	2	5	7

construct the network, obtain the critical path and minimum duration of the project.
