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[Total No. of Pages : 4

SVIS 324 A -16
B.Sc. VIth Semester Degree Examination
Mathematical Statistics
(Applied Statistics & Operation Research)
Paper - 6.2 (VIII)

Time : 3 Hours

Maximum Marks : 80

Instructions to candidates:

Statistical table and graph sheets are supplied on request.

Section -A

I Answer the following questions.

(1×15=15)

1. In paasch's I.N. the weights used are

- a) base year quantities
- b) current year quantities
- c) base year prices
- d) none

2. If $\sum P_1 q_1 = 884$ and $\sum P_0 q_0 = 864$ then V_{01} is

- a) 1.023
- b) 102.31
- c) 0.97
- d) none

3. Additive model of time series is

- a) TS+CI
- b) TSCI
- c) T+S+C+I
- d) none

4. Increase in the price due to flood is the example of
- Trend
 - Seasonal variation
 - Cyclic variation
 - Irregular variation
5. In standard form of LPP, all the constraints are expressed as
- equal ($=$)
 - less than or equal (\leq)
 - more than or equal (\geq)
 - None
6. Assignment problem is unbalanced if its cost matrix is
- square matrix
 - not square matrix
 - identity matrix
 - None
7. In T.P a solution is called basic feasible if the number of allocation are equal to
- m
 - $m+n$
 - $m+n-1$
 - None
8. Head event slack in CPM is defined as
- $L_j - E_i$
 - $L_j - E_j$
 - $E_j - L_j$
 - None
9. The minimum time required to complete the job in PERT is called
- optimistic
 - pessimistic
 - Normal
 - None

10. The game is said to be fair if its value is
- a) zero
 - b) less than zero
 - c) more than zero
 - d) None
11. In T.P optimality is tested using _____ method.
12. Link relative method is used to find _____
13. Simplex method was developed by _____
14. If all $z_j - c_j \geq 0$, then the IBFS X_B is an _____
15. The theory of games developed in the year _____

Section -B

II. Answer any five of the following.

(5×5=25)

16. Define cost of living index number, what are its limitations?
17. Define time series. What do you understand by seasonal variation?
18. Explain Vogel's Approximation method.
19. Solve the following assignment problem

Job

		1	2	3	4	5
machanic	A	10	3	3	2	8
	B	9	7	8	2	7
	C	7	5	6	2	4
	D	3	5	8	2	4
	E	9	10	9	6	10

20. Define Inventory. What are the different types of inventories?
21. Mention the assumption of sequencing problems
22. Describe the steps of critical path method.

Section -C

Answer any **Four** questions of the following

(10×4=40)

- 23. Describe the criteria of a good index numbers.
- 24. Explain the method of least squares and method of moving averages to measure secular trend.
- 25. What do you mean by LPP? Explain Graphical method for solving an LPP.
- 26. Solve the following LPP using simplex method

$$\max z = 3X_1 + 2X_2$$

$$\text{Subject to } X_1 + X_2 \leq 4$$

$$X_1 - X_2 \leq 2$$

$$X_1, X_2 \geq 0$$

- 27. Solve the following game graphically

$$\begin{matrix} & \text{player B} \\ \text{player A} & \begin{bmatrix} 1 & 3 & 11 \\ 8 & 5 & 2 \end{bmatrix} \end{matrix}$$

- 28. A project has the following time schedules. Draw the network diagram, find critical path and duration of the project.

Activity	Duration
1-2	4
1-3	1
2-4	1
3-4	1
3-5	6
4-9	5
5-6	4
5-7	8
6-8	1
7-8	2
8-10	5
9-10	7