1. Suppose that a farmer has 35 acres of farm land to be planted with either cauliflower (x_1) or cabbage (x_2). Which of the following constraints represent this statement?
a) Capacity constraint x1+ x2 <= 35
b) Requirement constraint x1+ x2>=35
c) Nonlinear constraint x1.x2=35
d) Equation constraint x1-x2 =35
e) None of the answers above is correct.

2. Suppose the following simplex table:

		8	5	0	0	0	b
C_B	B	x1	x2	x3	x4	x5	
		1	1	1	0	0	100
		1	0	0	1	0	40
		5	10	0	0	1	750
z_j-c_j							

The optimality test values will be:
a) 8;5;0;0;0
b) -8;-5;0;0;0
c) -5;0;0;8;0
d) 0;0;0;0;0
e) None of the answers above is correct.

3. A transportation problem has 4 suppliers, 5 destinations, total supply is 500 t and total demand is 450 t. Number of basic variables is:
a) 4
b) 5
c) 9
d) 10
e) None of the answers above is correct.

4. Alternative optimal solution of a transportation problem is:
a) solution close to the optimum solution
b) solution with zero value of some basic variables
c) any feasible solution
d) feasible solutions with the optimal value of the objective function
e) None of the answers above is correct.

5. Variant that is best in all criteria is called
a) Dominanted alternative
b) Ideal alternative
c) Nadir alternative

d) Degenerate alternative
e) None of the answers above is correct.

6. The method for solution of the multiple optimization problem is
a) Simple additive weighting method
b) Goal programming
c) MODI method
d) CPM method
e) None of the answers above is correct.

7. The project is described by the following PERT chart (activity on arc).
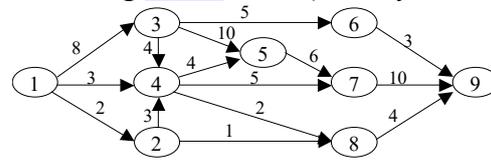
Arc evaluations represent the task duration.Which of the following tasks is a critical task:
a) 3-4
b) 4-5
c) 3-5
d) 4-7
e) none of the answers above is correct.

8. The data of the stochastic project tasks are in the following table (tasks, predecessors, optimistic time, most likely time, pesimistic time). Identify the average minimum time needed to complete the project.

Task	Predecessors	a_{ij}	m_{ij}	b_{ij}
A	/	3	4	5
B	/	6	8	10
C	A	5	6	7
D	A	3	8	13
E	B,C	6	9	18
F	D,E	3	4	11

a) 17
b) 25
c) 23
d) 41
e) none of the answers above is correct.

9. The game of two rational players X a Y

with payoff matrix $\begin{pmatrix} 1 & -1 & 0 & 2 \\ -1 & 2 & 1 & -1 \\ 0 & 3 & 4 & 5 \end{pmatrix}$

a)   has only one saddle point
b)   has three saddle points
c)   has two saddle points
d)   has no saddle points
e)   none of the answers above is correct.

10. Suppose the following Input-Output

table

	O1	O2	CP
O1	10	20	40
O2	5		10
P1	8	3	

. Total output in

both sectors is
a)   0 and 0
b)   8 and 3
c)   40 and 10
d)   10 and 5
e)   none of the answers above is correct.

14. The variance analysis of simple grouping is applied in hypothesis testing for equality of:

a)   Two averages,
b)   More than two averages,
c)   Two variances,
d)   More than two variances,
e)   None of the answers above is correct.

15. We are given a 15-member sample:

24,5	5,4	13,1	3,6	7,8	12,5	11,4	6,9
7,5	8,1	9,6	9,8	15,2	5,8	7,7	

The value of variation range is (rounded to 1 dec. p.)
a)   5.1
b)   19.1
c)   20.9
d)   51.4
e)   None of the answers above is correct

16. The significance level represents
a)   the error of the 1st kind,
b)   the error of the 2nd kind,
c)   the probability of the error of the 1st kind,
d)   the probability of the error of the 2nd kind,
e)   none of the answers above is correct.

17. For assessment of independence of two alternative properties the χ^2-test of independence has been applied, giving the resulting test criterion value $\chi^2 = 5.26$. The critical values are $\chi^2_{0.05(1)} = 3.841$ and $\chi^2_{0.01(1)} = 6.635$. The decision :
a)   the null hypothesis of independence can be rejected at $\alpha = 0.01$ significance level, it cannot be rejected at $\alpha = 0.05$ significance level;
b)   the null hypothesis of independence can be rejected at $\alpha = 0.05$ significance level, it cannot be rejected at $\alpha = 0.01$ significance level;
c)   the null hypothesis of independence cannot be rejected at any of the significance levels given;
d)   we reject the null hypothesis of independence at the $\alpha=0.05$ significance level, as well as at the $\alpha=0.01$ significance level;
e)   none of the answers above is correct.

18. Incidence of an extreme value in the sample does not affect the value of the :
a)   arithmetic average,
b)   variance,
c)   median,
d)   standard deviation,
e)   none of the answers above is correct.

19. The „3σ" rule is connected to the :
a)   normal distribution,
b)   exponential distribution,
c)   hypergeometric distribution,
d)   uniform distribution,
e)   none of the answers above is correct.

20. A partial regression coefficient can assume values from :
a)   the interval <0 ; 1>
b)   the interval (0 ; 1)
c)   the interval <–1 ; +1>
d)   the interval (–∞ ; +∞)
e)   none of the answers above is correct