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MTH 601 Final term Data

Note:- Please confirm the answers by your own too

I made it with a lot of hard work as there was not much data on web for this subject

Please duaon main yad rakhiay ga

While solving an LP problem by the Simplex method, in the standard table, the element at the intersection of key column and key row is called ----- element.

Entering

Leaving

Slack

Pivot

In the initial table of Simplex method, the objective function should not contain the terms involving-----variables

Artificial

Degenerate

Basic

Non basic

If a balanced Transportation problem with 'm' sources and 'n' sinks then degeneracy will arise only if there are less than ----- independent allocations in the solution.

m-n-1

m+n-1

(In this question all options are in (-) negative range like m-n-1 , m-n-2 m-n-3, m-n-4) and there was no one true. correct was m+n-1 .however i select m-n-1).

Which of the following type of Elementary matrix operations are performed while solving an Assignment problem by Hungarian's method?

Row operations

Column operations

Both of the above

None of the above

Check Not sure

While solving an Assignment problem by Hungarian's method, in the modified cost matrix if the minimum number of horizontal and vertical lines to cover zeros are not equal to the number of rows (or columns), then which of the following operation is done?

Subtract smallest element of uncovered rows from all other elements of uncovered cells

Which of the following is a characteristic of critical path scheduling techniques?

The jobs or tasks are dependent on each other

Interruptions may be permitted if they are documented

The jobs or tasks must be well defined, and their completion marks the end of the project

The jobs or tasks do not necessarily have to be in a predetermined sequence

Search and cutting methods are used to solve following types of problems

Transportation

Assignment

Integer Programming

Queuing problems

A feasible solution is called a _____ solution if the number of non negative allocation is equal to " $m + n - 1$ " (Here m is the number of rows, n is the number of columns in transportation problem)

basic feasible

non basic feasible

basic infeasible

optimal

Consider the following cost table

		Destinations			
Source		D1	D2	D3	Supply
	S1	5	1	2	25
	S2	7	2	4	10
	S3	3	3	5	15
	Demand	10	20	20	

Using Vogel's Approximation Method, which one is the starting cell?

S1 à D1

S3 à D1

S2 à D2

S2 à D1

Using Vogel's Approximation method:

These below are the three cells which can be next cell:

Which one is the correct option?

Source	Destinations				Supply
		D1	D2	D3	
S1		5	1	2	25
S2		7	2	4	10
S3		3	3	5	15
	10				
Demand		10	20	20	

Using Vogel's Approximation Method:

These below are the three cells which can be next cell:

- I. S3 → D2
- II. S2 → D2
- III. S1 → D3

Which one is the correct option?

I, II and III

I only

II only

III only

I and II only

This is the initial basic feasible solution of a question by North-West Corner Method.

Finding optimal basic feasible solution: Consider $U_1=0$ and $V_1=5$, what is the value of V_2 ?

	D1	D2	D3	Supply
S1	5 10	1 15	2	25
S2	7	2 5	4 5	10
S3	3	3	5 15	15
Demand	10	20	20	

$$\text{Cost} = 10(5) + 15(1) + 5(2) + 5(4) + 15(5) = 170$$

This is the initial basic feasible solution of a question by North – West Corner Method.

Finding optimal basic feasible solution: Consider $U_1 = 0$ and $V_1 = 5$, what is the value of V_2 ?

10
15
25
5

Transportation problem is a special class of linear programming problem in which transport a commodity from the source to a destination in such a way that the total transportation cost is

_____.

Zero

Maximum

Minimum

Average

We solve a assignment problem by subtracting least number in each row and we get the table below:

Cost Table	Dist Center D	Dist Center E
Plant A	0	135
Plant B	0	8
Plant C	34	0

After doing next step, which table should be next?

Cost Table	Dist Center D	Dist Center E
Plant A	0	135
Plant B	0	8
Plant C	34	0

Cost Table	Dist Center D	Dist Center E
Plant A	0	127
Plant B	0	0
Plant C	0	0



Cost Table	Dist Center D	Dist Center E
Plant A	135	0
Plant B	8	0
Plant C	0	34



Cost Table	Dist Center D	Dist Center E
Plant A	0	0
Plant B	34	8
Plant C	0	135

Selected answer

If the arrival rate is 5 per hour and the service rate is 10 per hour, then the average system time is:

1/5

5

1

2

If the arrival rate is 5 per hour and the service rate is 10 per hour, then ρ (traffic intensity or system utilization) =?

☐ ☐ ☐

☐ ☐ ☐

☐ ☐ ☐

☐ ☐ ☐

If the arrival rate is 5 per hour and the service rate is 10 per hour, then the expected number in the queue or average queue length is:

☐ ☐ ☐

☐

☐

☐ ☐ ☐

Formula for the expected number in the system L is:

$$L = \frac{\lambda}{\mu - \lambda}$$

$$L = \frac{\lambda}{\mu + \lambda}$$

$$L = \frac{\lambda}{\lambda - \mu}$$

$$L = \frac{\mu}{\mu - \lambda}$$

Total cost per period = Item cost + Order cost + Holding cost + _____.

Shortage cost

Optimum Shortage (S^*)

Economic Order Quantity. (Q^*)

Maximum Inventory. ($I_{\max.}$)

In Manufacturing Model with no shortage, the replacement rate is finite and _____ the demand rate
greater than

less than

equal to

Formula of EOQ in manufacturing model with shortages is

$$Q^* = \sqrt{2C_2D/C_3(1-D/R)} \cdot \sqrt{C_3 + C_4/C_4}$$

$$Q^* = \sqrt{2C_2D/C_3} \cdot \sqrt{R/R-D}$$

$$Q^* = \sqrt{2C_2D/C_3}$$

None of them

To identify and maintain the proper precedence relationship between activities those are not connected by event, we introduce

Parallel Activity

Dummy Activity

Sequential Activity

None of these

PERT is based on

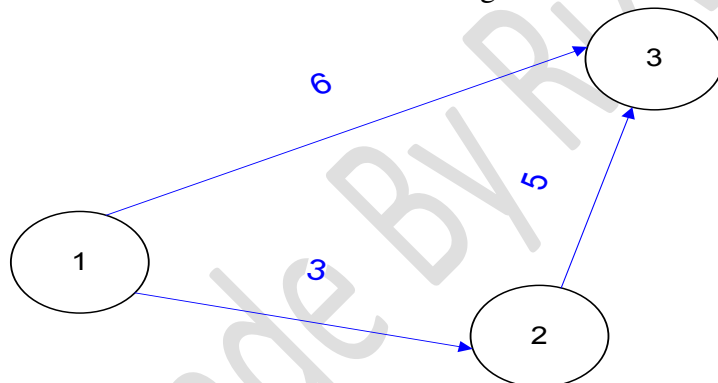
Deterministic times

Probabilistic Times

Dummy Times

Estimated times

Non-critical activities in the following network are -----



Activity (1,2)

Activity (2,3)

Dummy Activity

Activity (1,3)

If $t_0 = 10$, $t_m = 10$ and $t_p = 16$, then S.D = _____.

Answer will be 1

Which of the following is an essential characteristic of a linear programming problem?

The relationship between variables and constraints must be linear

The model must have an objective function

The model must have structural constraints

All are equivalent

In the simplex table for a linear programming problem, we select the leaving basic variable corresponds to -----

Maximum non-negative ratio

Maximum negative ratio

Minimum non-negative ratio

Minimum negative ratio

A technique for solving a linear programming problems in which artificial variables are included with coefficients of very large number say equal 10 times of any cost coefficient of decision variables is known as -----

Big M – Method.

Least Cost Method

Hungarian Method

Branch and Bound Method

Check

If the _____ variables appear in the final basic set, then the LP (Linear Program) has no solution.

slack

surplus

non – basic

artificial

In Two – Phase method, if all the _____ variables become zero, we stop the phase I and proceed to phase-II.

artificial

basic

non basic

positive slack

negative slack

In two phase method, for the phase-I, a new objective function is expressed as -----.

sum of slack variables

difference of slack variables

difference of artificial variables

sum of artificial variables

Page # 133 – My Ok

If “ $\text{Max } Z = x - y$, subject to $x > 3$, $x < 2$, $x, y > 0$ ” is solved by two phase method, then which of the following would be the objective function of 1st phase?

Max $Z = A$

In two phase method, for the phase-I, the problem has infeasible solution if the minimum value of objective function

zero

greater than zero

less than zero

In two phase method, for the phase-I, a new objective function in terms of artificial is to be

minimized

Maximized

In two phase method, which of the following will be taken as starting solution for 2nd phase?

Basic solution of 1st phase containing non-zero artificial variables

Non-basic solution of 1st phase containing non-negative slacks

Optimum feasible solution of 1st phase

Infeasible solution of 1st phase

Which of the following order pair would minimize the objective function of the linear programming problem; $z = x + y$ subject to $x \geq 3$, $y \geq 0$?

(3,3)

(3,0)

(0,3)

(0,0)

In a Transportation Problem, the objective function 'Z' gives -----.

Total Cost of transportation

Total Time of transportation

Total Profit of transportation

Total inventory be supplied in transportation

For North West Corner method, in the first row and first column, resource and sink contain '5' and '7' units respectively; then after allocating the appropriate amount 'x₁₁' in the cell (1,1), we will move towards which of the following cell?

missed

To convert an Assignment problem into a maximization problem, which of the following operations would have to apply?

Deduct all elements of the row from highest element in that row

If the total demand is equal to total supply as per requirement of a balanced transportation problem i-e " $a_1 + a_2 + \dots + a_n = b_1 + b_2 + \dots + b_n$ " then which of the following is true?

" $a_1 = b_1$, $a_2 = b_2$, ..., $a_n = b_n$ " is necessarily implied (not sure)

In case the cost elements of one or two cells are not given in the problem, it means that -----

The routes connected by those cells are not available

If the cost matrix in an Assignment problem is not square then which the following modification will be made to balance the given problem?

Add a dummy row(column) with negative cost elements (not sure)

The cost coefficient of artificial variable in Objective function is -----.

M (sure)

While solving a Linear Programming problem by Simplex Method, an inequality says: ' $2x-3y < 5$ ' is transformed into strict equality of the form -----, where ' $s \geq 0$ '.

$$2x-3y +s =5$$

In the Simplex method to solve an LP problem, Gauss Jordan Elimination method demands that all the key column's entries should be ----- except key row(pivot) entry.

strictly negative

While solving an LP problem by Simplex method, the inclusion of slacks in the constraints' inequalities helps in finding ----- variables

Check for options

In a feasible region, if the end points of the line segment are basic solutions, then all the points between these two will -----.

also be the basic

In a feasible region, if the end points of a line segment are basic solutions which BOTH also give the optimal solution, then ----- will also serve for optimal.

the point which divides segment in ratio 1:2

After converting constraints into the respective Standard equalities, we have an LP problem of '4' equations in '6' variables, if the initial basic feasible solution is say: (2,4,0,2), then it is ----- -- solution.

degenerate feasible

The positive slack variables indicate -----.

excess resource available (sure)

If in a LP problem, the objective is to maximize: $z = 2x+3y$, with all associated constraints of ' $= <$ ' type, then in the 1st iteration, $z =$ -----.

0

In M-method, which of the following is the standard equality corresponds to the constraint: " $3x+5y=2$ "?

$$3x+2y +A=2$$

$$3x+2y-A=2$$

$$3x+2y-MA=2$$

$$3x+2y+MA=2$$

In the final iteration of M-method to obtain the optimal solution, the artificial variable must----- the basis.

add in each variable of
subtract from each variable of
leave
include in

If Primal Problem is a maximization problem, then the dual will be -----
minimization Problem sure

Graphically, in case of optimal degenerate solution, feasible solution always exists at corner points -----.

lie on any axis

The number of variables in the Primal will be the number of ----- in Dual and vice versa.
constraints sure

When the total allocations in a transportation model of $m \times n$ size is not equals to " $m + n - 1$ ", the situation is known as:

Unbalanced situation

In North West Corner method, the first step after choosing the appropriate cell in 1st row, we allocate -----so that the capacity of first row or first column is exhausted.

as much as possible

The row, which is introduced in the matrix to balance an unbalanced Transportation problem, is known as -----.

dummy row (conform)

The solution of a transportation problem with m rows (supplies) and n (destinations) is feasible if numbers of positive allocations are

$m+n-1$ (conform)

The amounts shipped from a dummy source represent shortages at the receiving destinations

True (conform)

False

In the Vogel's approximation Method for solving a Transportation problem, Penalty measure for any row or column, is given by which of the following?

Difference between the smallest unit cost to the next smallest cost in the same row(column)

While solving a LP problem by Simplex method in a given iteration, the new basic variable is ---
----- and the variable remove from the basis is called -----

Entering Variable, Leaving variable

Page # 113 - My Ok

Due to which of the following reason, Simplex method is not preferred to solve a Transportation problem

Since it contains large number of decision variables 'xij's' so that it becomes complicated

Since Transportation problem contains constraints of '=' type

Since Transportation problem does not contain positive slacks

Since Transportation problem does not contain negative slacks

If a variable in the Primal is unrestricted in sign, then the corresponding constraint in the dual will be of ----- type and vice versa

$\geq$

$\leq$

$=$

None

In M-method, which of the following is true about the coefficient (M) of artificial variable(A) in the objective function

M $\rightarrow$ +infinity

M $\rightarrow$ -infinity

M $\rightarrow$ zero

M $\rightarrow$ optimal solution

For finding the maximum profit in an enterprise of selling two products such that 'freezing' the sale of one product and keep selling the other

Degeneracy

Duality

In Hungarian method of solving assignment problem, the cost matrix is obtained by-----.

Dividing each row by the elements of the row above it

Subtracting the elements of the row from the elements of the row above it

Subtracting the smallest element from all other elements of the row

Subtracting all the elements of the row from the highest element in the matrix

Page # 204 Or [Click Here](#) – My Ok

Which of the following statement applies to both transportation model and assignment model?

The inequalities of both problems are related to one type of resource.

Both have objective function, structural constraint and non-negativity constraints

Both use Vogel's approximation for getting basic feasible solution

Both are tested by Stepping Stone for optimality

[Click Here](#) – My Ok

The similarity between Assignment problem and Transportation problem is _____

Both are rectangular matrices

Both are square matrices

Both can be graphical method

Both have objective function and non negativity constraints

[Click Here](#) – My Ok

For the project of a firm, if '5' sales persons are assigned '5' different sales territories, then in how many ways a single territory can be assigned to a single sale person?

- 120
- 25
- 10
- 5

In which of the following stage, the machine operates at highest efficiency and its production rate will be high and hence no need of replacement?

- Infant stage
- Youth stage
- Old stage
- None of the above

When money value changes with time at Ten percent(10%), then Power Worth Factor(PWT) for first year is.

- 1
- 0.909
- 0.852
- 0.9

Which of the following is the correct assumption for replacement policy when money value does not change with time

- No Capital cost
- No scrap value
- Constant scrap value**
- Zero maintenance cost
- My Ok - google Books

Which of the following department is more responsible for the development of queuing theory.

- Railway station
- Municipal office
- Telephone department**
- Health department
- My Ok - google books

This department is responsible for the development of queuing theory:

- Railway station
- Municipal office
- Telephone department**
- Health department
- My Ok - google books

If the number of arrivals during a given time period is independent of the number of arrivals that have already occurred prior to the beginning of time interval, then the new arrivals follow ----- distribution.

Erlang

Poisson

Exponential

Normal

My Ok - google books

The arrival rate of customers in a Queue is an example of _____ variable

Continuous

Complex

Stochastic

Discrete

Primal of a Primal is-----.

Primal

Dual

Primal Primal

Primal dual

My Ok

Primal of a Dual is-----.

Primal

Dual

Primal Primal

Primal dual

My Ok

The dual of a dual problem yields the original primal.

True

False

My Ok - Note

Dual of a dual is

Primal

Dual

Primal Primal

Primal dual

My Ok

1. Primal of a Prima is Primal

2. Dual of a Dual is Primal.

3. Primal of a Dual is Primal.

4. Dual of a Primal is Dual.

5. Dual of a Dual of a Dual is Primal.

An unrestricted primal variable will result in an equality dual constraint. Conversely a primal equation produces an unrestricted dual variable.

True (I think)

False

If the primal (either) problem has an unbound solution, then the dual has no solution

Optimal solution

Infeasible solution

Bounded solution

No solution

My Ok – Google books

If the primal has an unbound solution, then the dual has no solution

Optimal solution

Infeasible solution

Bounded solution

No solution

My Ok – Google books

In two phase method, for the Phase-I, if the objective function has zero value with all vanishing artificial variables then we _____

Necessarily have optimal solution

Infeasible solution

Can't proceed for 2nd phase

Proceed for 2nd phase

Page # 133 – My Ok

In M-method, if the given LP problem has the feasible solution then the optimization algorithm enforces artificial variable to

+infinite

-infinite

zero

optimal solution

Check

Which of the following is the standard form of objective function corresponding to, $\text{Min } Z = 2x - 11y$, subject to $x = 5$ and $y = 7$? Where A_1 and A_2 are artificial

$Z = 2x - 11y - MA_1 - MA_2$

$Z = 2x - 11y + MA_1 + MA_2$

$Z = 2x - 11y - MA_1 + MA_2$

$Z = 2x - 11y + MA_1 - MA_2$

Not confirm – check

The insensitivity of the solution relative to the original decision variables in an LP problem which is solved by M-method is overcome by -----

Simplex method

Graphical method

Two phase method

Duality principle

Page # 133 – My Ok

In Simplex method, which of the following is the standard equality corresponding to the constraint " $3x+5y \geq 2$ "?

$3x+2y+S+A=2$

$3x+2y-S+A=2$

$3x+2y-S-A=2$

$3x+2y+S-A=2$

In the initial iteration of Big M-method, the artificial variables appear in -----.

Basis

Non-basic variables' set

In two phase method, for the phase-I, if the given problem has feasible solution then-----

both objective function and artificial are zero

objective function is zero but artificial may arbitrary

objective function is arbitrary but artificial is zero

both objective and artificial can have arbitrary values

Under which of the following condition to solve an LP by using two phase method, we can't proceed for 2nd phase?

Objective function of 1st phase has zero value

Objective function of 1st phase has positive value

In replacement analysis, the maintenance cost is a function of _____ My Quiz

Time

Final investment

Initial investment

Resale value

Replacement of an item will become necessary when _____

The company has surplus funds to spend

Old item becomes too expensive to operate or maintain

Your opponent changes his machine in his unit

Your operator desires to work on a new machine

Which of the following type of failure that usually occurs in old age of the machine and hence become a reason of replacement? My Quiz

Random failure

Early failure

Wear-out failure

Chance failure

My Ok – Google Books

The type of failure that usually occurs in old age of the machine is

(a) Random failure

(b) Early failure

(c) Chance failure

(d) Wear - out failure

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Group replacement policy applies to _____

Irreparable items

Reparable items

Items that fails partially

Items that fail completely

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Which of the following Replacement policy is imposed on an item irrespective of its failure?

Group replacement

Individual replacement

Repair spare replacement

Successive replacement

My Ok – Google Books

The replacement policy that is imposed on an item irrespective of its failure is

(a) Group replacement

(b) Individual replacement,

(c) Repair spare replacement,

(d) Successive replacement. ()

My Ok – Google Books

Which of the following cost is irrelevant to replacement analysis?

Purchase cost of the machine

Operating cost of the machine

Maintenance cost of the machine

Machine hour rate of the machine

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Which cost of the following is irrelevant to replacement analysis?

(a) Purchase cost of the machine,

(b) Operating cost of the machine,

(c) Maintenance cost of the machine,

(d) Machine hour rate of the machine. ()

My Ok – Google Books

In a queue, the arrival pattern can be expressed in terms of -----.

Probabilities

Exact continuous variables

Customer behavior

Number of servers

Page # 230 – My Ok

If there is infinite number of servers then all the customers are served _____ on arrival.

Randomly

Instantaneously

To convert the transportation problem into a maximization model we have to-----

write the inverse of the coefficient matrix

multiply the feasibility condition by -1

multiply the coefficient matrix by -1

We can't convert the transportation problem into a maximization problem, as it is basically a minimization problem.

My Ok – Google Books

Transportations models consist of ----- like the production centers and ----- which may be the sales centers.

(sinks, sources)

(sources, sinks) Most

(origins, sources)

(sinks, destinations)

In which of the following models, Simplex algorithm is not preferred to use due to laborious computations?

Transportations models

Degenerate Linear models (Waqar Sidhu)

Non-degenerate Linear models

Dual or unbounded linear models

The inequality $2x + 3y \leq 18$ is equivalent to

$$2x + 3y \leq -18$$

$$\underline{-2x - 3y \geq 18}$$

$$-2x - 3y \geq -18$$

$$-2x - 3y \leq -18$$

The inequality $2x + 3y \geq 18$ is equivalent to

$$2x + 3y \leq -18$$

$$-2x - 3y \geq 18$$

$$-2x - 3y \geq -18$$

$$\underline{-2x - 3y \leq -18}$$

$$\text{Max } Z = 2x + 3y$$

Subject to

$$\left. \begin{array}{l} x \geq 2 \\ y \leq 3 \\ x, y \geq 0 \end{array} \right\} \Rightarrow \left. \begin{array}{l} x - s_1 + A = 2 \\ y + s_2 = 3 \\ x, y, s_1, s_2, A \geq 0 \end{array} \right\}$$

Which of the following is associated objective function of the 1st phase?

Which of the following is associated objective function of the 1st phase?

$$\text{Max } Z = 2x + 3y + A$$

$$\text{Min } Z = 2x + 3y + A$$

$$\text{Max } Z = A$$

$$\underline{\text{Min } Z = A}$$

By using two phase method to solve a linear programming problem, in Phase I, a new objective function is formed by assigning on left hand side, zero to every original variable (including slack and surplus variables) and _____ to each of the artificial variables.

M

-M

+1

-1

Zero valued artificial variables may appear as _____ variables in the final solution, when one or more of the original constraints equations is redundant.

Non basic

Basic

Slacks

Surplus

Artificial

In the big-M method, if the introduced _____ variables do not leave the basis in final iteration, then this indicates that the given linear programming problem can't be optimized.

Entering

Positive slack

Negative slack

Artificial

While solving a linear programming problem by using M-Method, traditionally the _____ variables are chosen in the initial basic feasible solution.

Negative slack

Positive slack

Entering

Artificial

The _____ variable is chosen by examining the cost coefficients in the objective function.

Entering

Leaving

Positive slack

Negative slack

If a company manufacture 'x' units of product 'A' and 'y' units of 'B' with associated profits of Rs.5 and Rs.3 then which of the following is the objective function to maximize is the profit?

$$Z=15xy$$

$$Z=5x-3y$$

$$Z=3x-5y$$

$$\underline{Z=5x+3y}$$

In a linear Programming problem (LPP), which of the following must be hold?

Only objective function is linear

Both objective function and constraints are linear

Only constraints needs to be linear

At least one of objective function or constraint should be linear

Solution region for constraint $y \leq 0$ is the

Half plane below y-axis

Half plane below the line $y=0$

Set of all those points where ordinates are non-positive

All are equivalent

In PERT, activity time estimates are distributed according to

Beta distribution

Normal Distribution

Poisson Distribution

Binomial Distribution

Page # 35, 36 – My Ok

Best possible time estimate that a given activity would take under normal conditions which often exist, is called

Most likely time estimate

Pessimistic time estimate

Smallest time estimate

Activity time estimate

Page # 35 – My Ok

For any activity backward pass computations provide its

Earliest start times

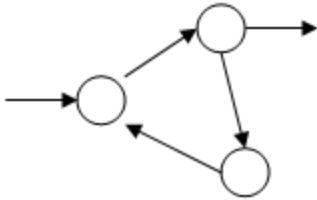
Latest start time

Moderate start times

Completion time

Page # 32 – My Ok

The following network is an example of



Redundancy

Dangling

Cycling

Dummy

MAD=_____ S.D

$$\sqrt{\frac{2}{\pi}}$$

$$\sqrt{\frac{\pi}{2}}$$

$$\sqrt{\frac{2\pi}{3}}$$

$$\sqrt{\frac{3\pi}{2}}$$

Standard Deviation (S.D) = _____ MAD

$$\sqrt{\frac{\pi}{2}}$$

$$\sqrt{\frac{2}{\pi}}$$

$$\sqrt{\frac{2\pi}{3}}$$

$$\sqrt{\frac{3\pi}{2}}$$

Product of 'item cost' and 'ordered item' is
Crash cost

Cost period

Set up cost

Shortage cost

Page # 51 – My Ok

Formula for geometric series

Formula for geometric series “ $x+vx+v^2x+\dots$ ” is

$$P(n) = x \frac{1-v^n}{1-v}$$

$$P(n) = \frac{1-v^n}{1-v}$$

$$P(n) = x \frac{1-v}{1-v^n}$$

$$P(n) = \frac{1-v}{1-v^n}$$

Page # 255 - My Ok

The present worth of a rupee to be spent after a year is denoted by v and given by

$$v = (1 + r)$$

$$v = (1 / r)$$

$$v = (1 + r) / 10$$

$$\mathbf{v = 1 / (1 + r)}$$

If “ N_i ” be the Number of replacement made at the end of the i^{th} week and “ P_j ” be the probability of failure during the i^{th} week, then $N_1 = \dots\dots\dots$.

$$\mathbf{N_0P_1}$$

$$N_1P_1$$

$$N_0P_0$$

$$N_1P_2$$

If “ N_i ” be the Number of replacement made at the end of the i^{th} week and “ P_j ” be the probability of failure during the i^{th} week, then $N_2 = \dots\dots\dots$.

$$N_1P_2 + N_1P_1$$

$$N_0P_2 + N_1P_1$$

$$N_0P_1 + N_1P_2$$

$$N_0P_2 + N_1P_2$$

Check

A repairman services three machines. For each machine the time between service requirements is 8 hours following exponential distribution. The time of repair also has the same distribution with a mean of 2 hours. Then the mean service time “ μ ” is

$$\mathbf{\frac{1}{2}=0.5}$$

$$4$$

$$\frac{1}{4}=0.25$$

2

A repairman services three machines. For each machine the time between service requirements is 8 hours following exponential distribution. The time of repair also has the same distribution with a mean of 2 hours. Then the average rate " λ " is

$1/8=0.125$

8

$1/4=0.25$

4

A duplicating machine maintained for office use is used and operated by people in the office who need to make copies. Since the work to be copied varies in length (number of pages of the original) and copies required, the service rate is randomly distributed, the arrival rate is 5 per hour and the service rate is 10 per hour then the equipment utilization " ρ " is equal to

0.50

0.20

5

2

In a bank, every 15 minutes one customer arrives for cashing the cheque. The staff in the payment counter takes only 10 minutes for serving a customer on an average, then the service rate " μ " = _____

6 per hour

4 per hour

10 per hour

1/6 per hour

If the mean arrival and mean service rates are 4 and 7 respectively in a queue then expected waiting time in system is

$1/3$

3

28

7/4

Page # 237 – My Ok

We go in probabilistic replacement model when period between installation and failure is Varying exponentially

Varying linearly

Constant

Is not constant (varying arbitrarily)

If a basic feasible solution contains less than " $m + n - 1$ " (Here m is the number of rows, n is the number of columns in transportation problem) non negative allocation, then it is said to be

Degenerate (Waqar Sidhu)

Multiple Solutions

Non degenerate

Alternative Optima

Any set of non negative allocation ($X_{ij} > 0$) which satisfy the row and column sum is called a _____ solution

Feasible (Waqar Siddhu)

Non basic feasible

Basic infeasible

Optimal

Degeneracy in a 5x6 transportation problem occurs when the number of occupied cell is less than **20 but greater than 10**

10

Zero

Infinity

Check

In sequencing problem, the Johnson's algorithm in finding the optimal ordering of n jobs through 3 machines can be applied, if the problem is converted into following number of machine problems

3n

3n!

2*3=6

2

During a replacement if the value of money decreases at the rate of 3% then the present worth factor of unit amount to be spent after one year is given by

0.25

0.333

0.9708

4

If the money carries a rate of interest of 12% per year, the present worth factor of one rupee due in one year is

0.08333

0.89285 (Waqar Sidhu)

0.0769

13

Which of the following binary operation in assignment problem among all the elements in the given profit matrix from the highest element in the matrix

Subtraction

Division

Multiplication

Addition

The cost matrix in assignment problem is always diagonal matrix

identity matrix

zero matrix

diagonal matrix

square matrix (Waqar Sidhu)

The cost matrix in assignment problem is always

identity matrix

zero matrix

diagonal matrix

square matrix (Waqar Sidhu)

The important characteristic of Cost matrix associated with Assignment problem, while solving it by Hungarian's method is _____

It will have zero as element of one diagonal

It will have zero as the element of both diagonals

It will have at least one zero in each column and each row

It will not have zero as its element

In which of the following age, the Replacement decision is very much common?

Infant stage

Old age

Youth

In all the above

The assignment problem is unbalanced if the cost matrix is not a _____ matrix.

Square

Rectangle

Non-singular

Singular

In the assignment problem, the cost matrix is _____

Rectangular

Square

Non-Singular

Singular

Which of the following replacement policy is considered to be dynamic in nature? My Quiz

Time is continuous variable and the money value does not change with time.

When money value does not changes with time and time is a discrete variable.

When money value changes with time.

When money value remains constant for some time and then goes on changing with time.

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To balance Assignment matrix we have to:

(a) Open a Dummy row,

- (b) Open a Dummy column,
 - (c) Open either a dummy row or column depending on the situation.**
 - (d) You cannot balance the assignment matrix
- My Ok – Google books

To balance the assignment matrix we have to:

- (a) Open a Dummy row,
- (b) Open a Dummy column,
- (c) Open either a dummy row or column depending on the situation.**
- (d) You cannot balance the assignment matrix.

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Note google book waly sary answers dobara sy confirm krny hain lazmi

In an assignment problem, while applying Hungarian's method, if in the final modified matrix any row or column does not have single zero, then which of the following is true?

- No assignment can be made
- Unique assignment will be made
- Multiple assignments can be made
- None of the above

For a Transportation Problem, if it's initial feasible solution is evaluated by Least cost method, the quality of this initial solution is better than_____

- North West Corner Method
- Vogal's approximation Method

For an unbalanced Transportation problem, if the total demand is MORE than total supply then which of the following is true in order to balance the problem?

One constraint will have evacuate

One constraint will have to add

A dummy sink would have to include with demand equal to surplus

A dummy source would have to include with supply equal to shortage

Check

In the assignment problem, the decision variable ' x_{ij} ' can attain which of the following value?

Only '1'

- Only zero
- Any arbitrary non-negative
- Zero or 1

In Least cost Method, for any cell both demand and supply are satisfied then which of the following will be crossed out?

- Only row
- Only column
- Both row and column
- Either of row or column

Which of the following method is used to find the basic feasible solution of a transportation problem?

- North West Corner Method
- Least Cost's Method
- Vogel's approximation Method
- All above methods are applicable

If shortage cost is infinity, then _____

- No shortages are allowed
- No inventory carrying cost is allowed
- Ordering cost is zero
- Purchase cost = Carrying cost

Many decision making problems involve a process that takes place in multiple stage in such a way that at each stage, the process is dependent on the strategy chosen. Such types or problems are called.

- Linear Programming problems
- Integer programming problems
- Dynamic programming problems
- Assignment problems

A primal's constraint equation produces _____ dual variable

- Non basic
- An unrestricted
- Artificial
- Basic

In the Simplex table, if the coefficient of non-basic variable says x_1 in the Z-row is zero, then it indicates that value of z _____

- Increase
- Decrease
- Does not change
- Becomes infinity

Consider the following simplex table corresponding to maximization problem

Basic	x_1	x_2	x_3	x_4	A_1	A_2	R.H.S
Z	0	0	$M+1/2$	M	$16M-11$	0	$-0.6M-5.7$
x_1	1	0	5	0	-1	0	3
x_2	0	1	-5	0	3	0	9
A_2	0	0	-1	-1	-0.6	1	0.6

This is the indication that problem has _____.

- Infeasible Solution
- Temporarily Degenerate Solution
- Unbounded Solution
- Degenerate Solution

Consider the following simplex table corresponding to maximization problem

Basic	x_1	x_2	x_3	S_1	S_2	S_3	R.H.S
Z	-4	-3	-2	0	0	0	0
x_1	0	0	1	1	0	0	8
x_2	-2	1	3	0	1	0	9
A_2	0	2	1	0	0	1	3

This is the indication that problem has _____.

- Problem has Unbounded Solutions
- Problem has Infeasible Solutions
- Problem has temporarily degenerate
- Problem has Multiple Optimal Solutions

For a linear programming problem, the Unboundedness is related to which of the following?

- Solution space only
- Objective value only
- Neither solution space nor to objective value
- Both solution space and objective value

If the degeneracy arises in the initial stage, then which of the following is true?

- One of the basic variables is zero
- More than one variable is eligible to leave the basis
- Tie the ratio of each row, by taking right hand side of each row and dividing by the corresponding element of the key column.
- Iterative Cycling of basic solution exists without reaching the optimality

If the problem has a _____ solution such that the minimum value of the objective function is zero along with zero values of artificial variables. Then proceed to phase II method.

- Unbounded
- Feasible**
- Non feasible
- De-generate feasible solution

Min. $Z = 0$ and no artificial variable appears in the basic variables. _____ solution to original problem has been found and we proceed to phase II method.

- A basic feasible
- An optimal
- An infeasible**

If no _____ variable appears in the basis and the optimality conditions are satisfied, then the current solution will be optimal one.

- artificial
- non basic**
- slack
- surplus

The constrained $3x_1 + 2x_2 \leq 18$ in standard form can be as:

(Where R is artificial variable and S_1 is slack variable)

$$3x_1 + 2x_2 + S_1 + R = 18$$

$$3x_1 + 2x_2 + S_1 - R = 18$$

$$3x_1 + 2x_2 - S_1 + R = 18$$

$$3x_1 + 2x_2 + S_1 = 18$$

If the objective function of a linear programming problem needs further improvement then which of the following will have to proceed?

A new decision variable to be entered and other decision variable to leave the basis

A new slack variable to be entered and other slack to leave the basis

A new non-degenerate variable to be entered and other non-degenerate to leave the basis

A new basic variable to be included and other basic variable to leave the basis

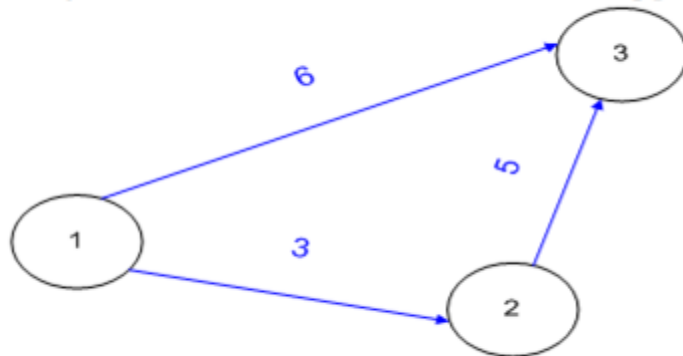
It is a property of simplex method that there always exist infinite number of basic feasible solution.

True

False

Early finish time of the event is '3' in the following is _____

Early finish time of the event '3' in the following project is -----.



14 days

2 days

8 days

6 days

Which of the following give the excess of available time over the activity time when all jobs start as early as possible?

Total float

Free float

Independent float

Early finish time

Let FS = Free Slack, TS = Total Slack, INDS = Independent Slack, then which relation is true

- I. $TS \leq FS$
- II. $INDS \leq FS$
- III. $FS \leq TS$

Then which relation is true

Only I

Only II

Only III

Only I & II

Only II & III

In replacement Models, Capital Cost = (Item / Machine Costs) – (-----)

Resale Cost

Running Cost

Maintenance Cost

Operating Cost

In assignment problem, each job requires exactly one resource.

True

False

May not be true

The name of the method in getting the optimum assignment is

Simplex method

North-West corner method

Vogel's approximation method

Hungarian method

The Vogel Approximation method is an iterative procedure for computing a _____ solution of the transportation problem

Basic feasible

Non basic feasible

Basic infeasible

CPM can help you figure out EXCEPT:

How long your complex project will take to complete

Which activities are "critical" meaning that they have to be done on time or else the whole project will take longer

You can try to speed up the project

What is the most costly way to speed up the project

Transportation technique or the simplex method cannot be used to solve the assignment problem because of

Degeneracy

Involvement of dummy activities

Looping among the entries of assignment matrix

Inequilibrium between demand and supply

The representation of reality in some physical form or in some form of mathematical equation may be discussed under the topic entitled as

Transportation problems

Game theory

Simulation

Replacement problems

Under the individual replacement policy an item is replaced on its

Success

Failure

Maximum utilization

Minimum utilization

Made BY Rizwan Ashraf

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<https://books.google.com.pk/books?id=u-eRHBbJW7AC&pg=PA263&lpg=PA263&dq=transportation+model+and+assignment+model+The+inequalities+of+both+problems+are+related+to+one+type+of+resource.&source=bl&ots=93F4IylWQB&sig=e84VsaivWDsZYmMAVJO0T1ZvBeE&hl=en&sa=X&ved=0ahUKEwjC9qvDu5fcAhUHOJoKHRfrB0oQ6AEILjAB#v=onepage&q=transportation%20model%20and%20assignment%20model%20The%20inequalities%20of%20both%20problems%20are%20related%20to%20one%20type%20of%20resource.&f=false>

Note Yeh MCQs Quiz k hain lakin in k options nhi hain

Which of the following represents “Arrival-->Service-->Service-->Service-->Out-->”?

- (a) Single Channel Single Phase system
- (b) Multi channel single-phase system
- (c) Single channel multi phase system**
- (d) Multi channel multi phase system. ()

4. Distribution of service time in Queuing Model is -----exponential distribution.

5. Which of the following replacement model is said to be probabilistic model?

6. Queuing models measure the effect of-----.

In Simplex standard table to solve an LP problem of Minimization, we choose the candidate for entering variable in _____

Objective function with most positive coefficient

Objective function with most negative coefficient

Constraint with most positive coefficient

Constraint with most negative coefficient

In Simplex standard table to solve an LP problem of Maximization, we choose the candidate for entering variable in _____

Objective function with most positive coefficient

Objective function with most negative coefficient

Constraint with most positive coefficient

Constraint with most negative coefficient

If an artificial variable is not included while converting a constraint of type ' $\geq$ ' into equation, then we will have _____ solution

Feasible

Infeasible

Degenerate

Non-degenerate

By Simplex method, to minimize ' $Z=2x+9y$ ' of an LP problem, if ' $z=A>0$ ' for the initial iteration then for its next improved solution ($0<A<100$), which of the following would be the next entering variable

$X<0$

$Y < 0$
 $x > 0$
 $y > 0$

Made BY Rizwan Ashraf

Transportation problem is basically a
Maximization model
Minimization model
Transshipment problem
Iconic model

The column, which is introduced in the matrix to balance the rim requirements, is known as:
Key column
Idle column
Slack column
Dummy Column

The row, which is introduced in the matrix to balance the rim requirement, is known as:
Key row
Idle row
Dummy row
Slack row

One of the differences between the Resource allocation model and Transportation Model is:
The coefficients of problem variables in Resource allocation model may be any number and in transportation model it must be either zeros or ones. (I Think)
The coefficients of problem variable in Resource allocation model must be either zeros or ones and in Transportation model they may be any number
In both models they must be either zeros or ones only
In both models they may be any number
Check

To convert the transportation problem into a maximization model we have to
To write the inverse of the matrix
To multiply the rim requirements by -1
To multiply the matrix by -1 (I think)
We cannot convert the transportation problem in to a maximization problem, as it is basically a minimization problem
Check

In a transportation problem where the demand or requirement is equals to the available resource is known as
Balanced transportation problem (I think)
Regular transportation problem,
Resource allocation transportation problem
Simple transportation model
[Check](#)

The total number of allocation in a basic feasible solution of transportation problem of $m \times n$ size is equal to:
 $m \times n$

$$(m / n) - 1$$

$$m + n + 1$$

$$\underline{m + n - 1}$$

When the total allocations in a transportation model of $m \times n$ size is not equals to $m + n - 1$ the situation is known as:

Unbalanced situation

Tie situation

Degeneracy (I Think)

None of the above

Check

The opportunity cost of a row in a transportation problem is obtained by:

Deducting the smallest element in the row from all other elements of the row,

Adding the smallest element in the row to all other elements of the row,

Deducting the smallest element in the row from the next highest element of the row

Deducting the smallest element in the row from the highest element in that row.

In Northwest corner method the allocations are made

Starting from the left hand side top corner,

Starting from the right hand side top corner

Starting from the lowest cost cell

Starting from the lowest requirement and satisfying first

VAM stands for:

Value added method

Value assessment method

Vogel Adam method

Vogel's approximation method

MODI stands for

Modern distribution

Mendel's distribution method

Modified distribution method

Model index method

In the optimal solution, more than one empty cell have their opportunity cost as zero, it indicates

The solution is not optimal

The problem has alternate solution

Something wrong in the solution

The problem will cycle. ()

In case the cost elements of one or two cells are not given in the problem, it means:

The given problem is wrong

We can allocate zeros to those cells

Allocate very high cost element to those cells

To assume that the route connected by those cells are not available

To solve degeneracy in the transportation problem we have to:

Put allocation in one of the empty cell as zero

Put a small element epsilon in any one of the empty cell

Allocate the smallest element epsilon in such a cell, which will not form a closed loop with other loaded cells.

Allocate the smallest element epsilon in such a cell, which will form a closed loop with other loaded cells

A problem where the produce of a factory is stored in warehouses and then they are transported to various demand point as and when the demand arises is known as:

Transshipment problem

Warehouse problem

Storing and transport problem

None of the above ()

Implied Cost in transportation problem sets (in the existing program):

The lowest limit for the empty cell beyond which it is not advisable to include in the programme,

The highest limit for the empty cell beyond which it is not advisable to include in the programme.

The opportunity cost of the empty cell,

None of the above

In transportation model, the opportunity cost is given by

Implied cost + Actual cost of the cell

Actual cost of the cell – Implied cost,

Implied cost – Actual cost of the cell (I think)

Implied cost $\times$ Actual cost of the cell

Check

If u_i and v_j are row and column numbers respectively, then the implied cost is given by:

$u_i + v_j$

$u_i - v_j$

$u_i \times v_j$

u_i / v_j ()

If a transportation problem has an alternate solution, then the other alternate solutions are derived by:

(Given that the two matricides of alternate solutions are A and B, and d is any positive fraction number)

$A + (1 - d) \times B$

$A (1 - d) + B$

$dA + dB$

$dA + (1 - d) \times B$

Check

Assignment Problem is basically a
Maximization Problem

Minimization Problem

Transportation Problem

Primal problem

The Assignment Problem is solved by

Simplex method

Graphical method

Vector method

Hungarian method

In Index method of solving assignment problem

The whole matrix is divided by smallest element

The smallest element is subtracted from whole matrix

Each row or column is divided by smallest element in that particular row or column

The whole matrix is multiplied by -1 .

In Hungarian method of solving assignment problem, the row opportunity cost matrix is obtained by:

Dividing each row by the elements of the row above it,

By subtracting the elements of the row from the elements of the row above it

By subtracting the smallest element from all other elements of the row

By subtracting all the elements of the row from the highest element in the matrix

In Flood's technique of solving assignment problem the column opportunity cost matrix is obtained by:

Dividing each column by the elements of a column which is right side of the column

By subtracting the elements of a column from the elements of the column which is right side of the column

By subtracting the elements of the column from the highest element of the matrix

By subtracting the smallest elements in the column from all other elements of the column

The property of total opportunity cost matrix is

It will have zero as elements of one diagonal

It will have zero as the elements of both diagonals

It will have at least one zero in each column and each row

It will not have zeros as its elements

The horizontal and vertical lines drawn to cover all zeros of total opportunity matrix must be:

Equal to each other,

Must be equal to $m \times n$ (where m and n are number of rows and columns)

$m + n$ (m and n are number of rows and columns)

Number of rows or columns

The assignment matrix is always is a
Rectangular matrix

Square matrix

Identity matrix

None of the above.

To balance the assignment matrix we have to:

Open a Dummy row

Open a Dummy column

Open either a dummy row or column depending on the situation

You cannot balance the assignment matrix

In cyclic traveling salesman problem the elements of diagonal from left top to right bottom are
Zeros

All negative elements

All are infinity

all are ones

In cyclic traveling salesman problem the elements of diagonal from left top to right bottom are
Zeros

All negative elements

All infinity

All ones

To convert the assignment problem into a maximization problem

Deduct smallest element in the matrix from all other elements.

All elements of the matrix are deducted from the highest element in the matrix.

Deduct smallest element in any row from all other elements of the row.

Deduct all elements of the row from highest element in that row. ()

The similarity between Assignment Problem and Transportation problem is:

Both are rectangular matrices

Both are square matrices,

Both can be solved by graphical method

Both have objective function and nonnegativity constraints

The following statement applies to both transportation model and assignment model

The inequalities of both problems are related to one type of resource.

Both use VAM for getting basic feasible solution

Both are tested by MODI method for optimality

Both have objective function, structural constraint and non-negativity constraints

To test whether allocations can be made or not (in assignment problem), minimum number of horizontal and vertical lines are drawn. In case the lines drawn is not equal to the number of rows (or columns), to get additional zeros, the following operation is done:

Add smallest element of the uncovered cells to the elements to the line

Subtract smallest element of uncovered rows from all other elements of uncovered cells

Subtract the smallest element from the next highest number in the element.

Subtract the smallest element from the element at the intersection of horizontal and vertical line

The total opportunity cost matrix is obtained by doing:

Row operation on row opportunity cost matrix,

By doing column operation on row opportunity cost matrix,

By doing column operation on column opportunity cost matrix

None of the above

The total opportunity cost matrix is obtained by doing:

Row operation on row opportunity cost matrix,

Column operation on row opportunity cost matrix,

Column operation on column opportunity cost matrix,

None of the above

Flood's technique is a method used for solving

Transportation problem

Resource allocation model

Assignment mode.

Sequencing model

The assignment problem will have alternate solutions when total opportunity cost matrix has

At least one zero in each row and column,

When all rows have two zeros,

When there is a tie between zero opportunity cost cells,

If two diagonal elements are zeros

The following character dictates that assignment matrix is a square matrix:

The allocations in assignment problem are one to one

Because we find row opportunity cost matrix

Because we find column opportunity matrix

Because one to make allocations, one has to draw horizontal and vertical lines. ()

When we try to solve assignment problem by transportation algorithm the following difficulty arises:

There will be a tie while making allocations

The problem will get alternate solutions,

The problem degenerates and we have to use epsilon to solve degeneracy

We cannot solve the assignment problem by transportation algorithm

The objective of sequencing problem is:

To find the order in which jobs are to be made

To find the time required for completing all the jobs on hand

To find the sequence in which jobs on hand are to be processed to minimize the total time required for processing the jobs

To maximize the effectiveness

The time required for printing of four books A , B , C and D is 5, 8, 10 and 7 hours. While its data entry requires 7, 4, 3 and 6 hours respectively. The sequence time that minimizes total elapsed time is

ACBD

ABCD

ADCB

CBDA

If there are ' n ' jobs and ' m ' machines, there will be -----sequences of doing the jobs.

$n \times m$

$m \times n$

$n\ m$

$(n!)m$

In general sequencing problem will be solved by using

Hungarian Method

Simplex method

Johnson and Bellman method

Flood's technique

In solving 2 machine and ' n ' jobs, the following assumption is wrong:

No passing is allowed

Processing times are known

Handling time is negligible

The time of processing depends on the order of machining

The following is the assumption made in processing of ' n ' jobs on 2 machines

The processing time of jobs is exactly known and is independent of order of processing

The processing times are known and they depend on the order of processing the job

The processing time of a job is unknown and it is to be worked out after finding the sequence

The sequence of doing jobs and processing times are inversely proportional

The following is one of the assumptions made while sequencing ' n ' jobs on 2 machines

Two jobs must be loaded at a time on any machine

Jobs are to be done alternatively on each machine

The order of completing the jobs has high significance

Each job once started on a machine is to be performed up to completion on that machine

This is not allowed in sequencing of ' n ' jobs on two machines:

Passing

Loading

Repeating the job

Once loaded on the machine it should be completed before removing from the machine.

Write the sequence of performing the jobs for the problem given below:

Jobs: A B C D E

Time of machining

On Machine X: 6 8 5 9 1

They can be processed in any order.

As there is only one machine, sequencing cannot be done

This is not a sequencing problem.

None of the above

Johnson Bellman rule states that:

If smallest processing time occurs under first machine, do that job first

If the smallest processing time occurs under the second machine, do that job first

If the smallest processing time occurs under first machine, do that job last

If the smallest processing time occurs under second machine keep the processing pending

To convert ' n ' jobs and 3-machine problem into ' n ' jobs and 2-machine problem, the following rule must be satisfied.

All the processing time on second machine must be same.

The maximum processing time of 2nd machine must be $\leq$ to minimum processing times of first and third machine.

The maximum processing time of 1st machine must be $\leq$ to minimum processing time of other two machines.

The minimum processing time of 2nd machine must be $\leq$ to minimum processing times of first and third machine

If two jobs J_1 and J_2 have same minimum process time under first machine but processing time of J_1 is less than that of J_2 under second machine, then J_1 occupies:

First available place from the left

Second available place from left

First available place from right

Second available place from right

If Job A and B have same processing times under machine I and Machine II, then prefer

Job A

Job B

Both A and B

Either A or B

The given sequencing problem will have multiple optimal solutions when the two jobs have same processing times under:

First Machine,

Under both machines,

Under second machine

None of the above

The given sequencing problem will have multiple optimal solutions when the two jobs have same processing times under:

First machine

Both machines,

Second machine

None of the above

If a job is having minimum processing time under both the machines, then the job is placed in:

Any one (first or last) position,

Available last position,

Available first position,

Both first and last position

FIFO is most applicable to sequencing of

One machine and 'n' jobs,

2 machines and 'n' jobs,

3 machine 'n' jobs,

'n' machines and 2 jobs. ()

At a petrol Bunk, when 'n' vehicle are waiting for service then this service rule is used:

LIFO

FIFO

Service in Random Order

Service by highest profit rule

Consider the following sequencing problem, and write the optimal sequence:

Jobs: 1 2 3 4 5

Processing M/C X 1 5 3 10 7

Time in Hrs.

M/C Y 6 2 8 4 9

1 2 3 4 5

1 3 5 4 2

5 4 3 2 1

1 4 3 5 2 (I think)

Check

In a 3 machine and 5 jobs problem, the least of processing times on machine A, B and C are 5, 1, and 3 hours and the highest processing times are 9, 5, and 7 respectively, then Johnson and Bellman rule is applicable if order of the machine is:

B-A-C

A-B-C

C - B - A

Any order

In maximization case of sequencing problem of 2 machines and 'n' jobs, the job is placed at available left first position if it has ----- process time under machine -----.

Least, first
highest, first
least, second
highest, second

The fundamental assumption of Johnson's method of sequencing is:

No Passing rule

Passing rule

Same type of machines are to be used

Non zero process time

If a job has zero process time for any machine, the job must be

Possess first position only

Possess last position only

Possess extreme position

Be deleted from the sequencing

The assumption made in sequencing problems *i.e.* No passing rule means:

A job once loaded on a machine should not be removed until it is completed

A job cannot be processed on second machine unless it is processed on first machine

A machine should not be started unless the other is ready to start

No job should be processed unless all other are kept ready to start

The technological order of machine to be operated is fixed in a problem having:

1 machine and ' n ' jobs

2 machines and ' n ' jobs

3 machine and ' n ' jobs

' n ' machines and 2 jobs

A sequencing problem is infeasible in case of:

1 machine and ' n ' jobs

2 machines and ' n ' jobs

3 machines and ' n ' jobs

2 jobs and ' n ' machines

In a 2 jobs and ' n ' machine problem a line at 45° represents:

Job 2 is idle

Job 1 is idle

Both jobs are idle

both jobs are under processing

In a 2 jobs and ' n ' machine problem, the elapsed time for job 1 is calculated as (Job 1 is represented on X -axis).

Process time for Job 1 + Total length of vertical line on graph

Process time for Job 2 + Idle time for Job 1

Process time for job 1 + Total length of horizontal line on graph

Process time for job 2 – Idle time for job 1

In a 2 jobs and 'n' machine-sequencing problem the horizontal line on a graph indicates:

Processing time of Job 1

Idle time of Job 1,

Idle time of both jobs,

Processing time of both jobs

In a 2 job, 'n' machine sequencing problem, the vertical line on the graph indicates:

Processing time of Job 1

Processing time of Job 2

Idle time of Job 2

Idle time of both jobs

In a 2 job and 'n' machine sequencing problem we find that:

Sum of processing time of both the jobs is same,

Sum of idle time of both the jobs is same,

Sum of processing time and idle time of both the jobs is same,

Sum of processing time and idle time of both the jobs is different

One of the important basic objective of Inventory management is

To calculate EOQ for all materials in the organization

To go in person to the market and purchase the materials

To employ the available capital efficiently so as to yield maximum results

Once materials are issued to the departments, personally check how they are used

The best way of improving the productivity of capital is

Purchase automatic machines

Effective labour control

To use good financial management

Productivity of capital is to be increased through effective materials management

Materials management is a body of knowledge, which helps manager to

Study the properties of materials

Search for needed material

Increase the productivity of capital by reducing the cost of material

None of the above

The stock of materials kept in the stores in anticipation of future demand is known as

Storage of materials

Stock of materials

Inventory

Raw materials

The stock of animals reared in anticipation of future demand is known as:

Live stock Inventory

Animal inventory
Flesh inventory
None of the above

The working class of human beings is a class of inventor known as:

Live stock
Human inventory
Population

Human resource inventory

In general the percentage of materials cost in product is approximately equals to:

40 to 50 %
5 to 10 %
2 to 3 %
90 to 95%

Materials management bring about increased productivity of capital by:

Very strict control over use of materials
Increasing the efficiency of workers

Preventing large amounts of capital locked up for long periods in the form of inventory

To apply the principles of capital management

We can reduce the materials cost by

Using systematic inventory control techniques,

Using the cheap material,
Reducing the use of materials,
Making hand to mouth purchase

The basis for ABC analysis is

Interests of Materials manager
Interests of the top management

Pareto's 80-20 rule

None of the above

ABC analysis depends on the

Quality of materials
Cost of materials
Quantity of materials used

Annual consumption value of materials

'A' class materials consumes:

10 % of total annual inventory cost
30% of total annual inventory cost

70 to 75% of total inventory cost

90 % of total annual inventory cost

'B' class of materials consumes -----% of annual inventory cost.

60 to 70%

20 to 25%

90 to 95%

5 to 8%

'C' class materials consume -----% of annual inventory cost.

5 to 10 %

20 to 30%

40 to 50%

70 to 80%

The rent for the stores where materials are stored falls under:

Inventory carrying cost

Ordering cost,

Procurement cost

Stocking cost

Insurance charges of materials cost falls under:

Ordering cost

Inventory carrying cost

Stock out cost

Procurement cost

As the volume of inventory increases, the following cost will increase:

Stock out cost

Ordering cost

Procuring cost

Inventory carrying cost

As the order quantity increases, this cost will reduce:

Ordering cost

Insurance cost

Inventory carrying cost

Stock out cost

Procurement cost may be clubbed with:

Inventory carrying charges

Stock out cost

Loss due to deterioration

Ordering cost

The penalty for not having materials when needed is:

Loss of materials cost

Loss of order cost,

Stock out cost

General losses

Losses due to deterioration, theft and pilferage comes under,

Inventory Carrying charges

Losses due to theft,

Does not come under any cost

Consumption cost

Economic Batch Quantity is given by: (where, C_1 = Inventory carrying cost, C_3 = Ordering cost, r = Demand for the product)

$$(2C_1 / C_3)^{1/2}$$

$$\underline{(2 C_3 / C_1 r)^{1/2}}$$

$$2C_3 r / C_1$$

$$(2C_3 r / C_1)^{1/2}$$

If λ is the annual demand, C_1 = Inventory carrying cost, i = rate of inventory carrying charges, p = unit cost of material in Rs., then EOQ =

$$(2C_3 \square\square / ip)^{1/2}$$

$$2C_3 \square\square / ip,$$

$$\underline{(2 C_3 / ip \square\square)^{1/2}}$$

$$(2 \square\square / C_3 ip)^{1/2}, ()$$

If C_1 = Carrying cost, C_3 is the ordering cost, r = demand for the product, then the optimal period for placing an order is given by:

$$\underline{(2 C_3 / C_1 r)^{1/2}}$$

$$(2C_1 C_3 / r)^{1/2}$$

$$(2C_3 r / C_1)^{1/2}$$

$$(2C_1 C_3 r)^{1/2}$$

When C_1 = Inventory carrying cost, C_3 = ordering cost, r = demand for the product, the total cost of inventory is given by:

$$(2C_1 C_3 r)$$

$$(2C_1 C_3)^{1/2}$$

$$(2C_3 r / C_1)^{1/2}$$

$$\underline{(2C_1 C_3 r)^{1/2}}$$

When λ is the annual demand for the material, p = unit price of the material in Rs., C_3 is the ordering cost, q = order quantity, then the total cost including the material cost is given by:

$$\underline{(q/2) ip + \square\square/q C_3 + \square\square p}$$

$$2C_3 \square\square ip + \square\square p$$

$$(q/2) ip + \square\square p$$

$$(2C_3 q \square\square ip)^{1/2}$$

In VED analyses, the letter V stands for:

Very important material

Viscous material

Weighty materials

Vital materials

In VED analysis, the letter D stands for:

Dead stock

Delayed material

Deserved materials

Diluted materials

The VED analysis depends on:

Annual consumption cost of materials

Unit price of materials

Time of arrival of materials

Criticality of materials

In FSN analysis the letter S stands for:

Slack materials

Stocked materials,

Slow moving materials

Standard materials

In FSN analyses, the letter N stands for:

Non moving materials

Next issuing materials,

No materials

None of the above

FSN analysis depends on:

Weight of the material

Volume of material,

Consumption pattern

Method of moving materials

MRP stands for:

Material Requirement Planning

Material Reordering Planning,

Material Requisition Procedure

Material Recording Procedure

A system where the period of placing the order is fixed is known as:

q – system

Fixed order system

p – system

Fixed quantity system

A system in which quantity for which order is placed is constant is known as:

q – System

p - system,
Period system
Bin system

LOB stands for:

Lot of Bills
Line of Batches
Lot of Batches

Line of Balance

High reliability spare parts in inventory are known as:
Reliable spares

Insurance spares

Capital spares
Highly reliable spares

The property of capital spares is:

They have very low reliability;

These can be purchased in large quantities, as the price is low,

These spares have relatively higher purchase cost than the maintenance spares.

They are very much similar to breakdown spares.

Re-usable spares are known as:

Multi use spares
Repeated useable stores,
Scrap materials

Rotable spares

JIT stands for:

Just in time Purchase

Just in time production,

Just in time use of materials
Just in time order the material

The cycle time, selected in balancing a line must be:

Must be greater than the smallest time element given in the problem,

Must be less than the highest time element given in the problem,

Must be slightly greater than the highest time element given in the problem,

Left to the choice of the problem solver

The cycle time, selected in balancing a line must be:

Greater than the smallest time element given in the problem,

Less than the highest time element given in the problem,

Slightly greater than the highest time element given in the problem,

Left to the choice of the problem solver

The lead-time is the time:
To place orders for materials,
Time of receiving materials,
Time between receipt of material and using materials
Time between placing the order and receiving the materials

The lead-time is the time:
To place orders for materials,
Of receiving materials,
Between receipt of material and using materials,
Between placing the order and receiving the materials

The PQR classification of inventory depends on:
Unit price of the material
Annual consumption value of material,
Criticality of material
Shelf life of the materials

The PQR classification of inventory depends on:
Unit price of the material
Annual consumption value of the material,
Criticality of the material
Shelf life of the materials

The classification made on the weight of the materials is known as:
PQR analysis
VED analysis
XYZ analysis
FSN analysis

At *EOQ*
Annual purchase cost = Annual ordering cost
Annual ordering cost = Annual carrying cost
Annual carrying cost = annual shortage cost
Annual shortage cost = Annual purchase cost

If shortage cost is infinity,
No shortages are allowed
No inventory carrying cost is allowed.
Ordering cost is zero
Purchase cost = Carrying cost

The most suitable system for a retail shop is
FSN Analysis
ABC analysis,

VED analysis
GOLF analysis

The inventory maintained to meet unknown demand changes is known as

Pipeline inventory

Anticipatory inventory

De coupling inventory

Fluctuatory inventory

The most suitable inventory system for a Petrol bunk is

P- System

2 Bin system,

Q- System

Probabilistic model

The water consumption from a water tank follows

P – system

PQ -system,

Q – System

EOQ System

Which of the following inventories is maintained to meet expected demand fluctuations?

Fluctuatory Inventory

Buffer stock,

De-coupling inventory

Anticipatory inventory

Which of the following inventory is maintained to meet expected demand fluctuations?

Fluctuatory Inventory

Buffer stock

De- coupling inventory

Anticipatory inventory

Which of the following increases with quantity ordered per order

Carrying cost

Ordering cost,

Purchase cost

Demand

The ordering cost per order and average unit carrying cost are constant, and demand suddenly falls by 75 % then EOQ will:

Decreases by 50 %

Does not change

Increases by 50 %

Decreases by 40%

In JIT system, the following is assumed to be zero.

Ordering cost

Transportation cost

Carrying cost

Purchase cost

Which of the following analyses neither considers cost nor value?

ABC

XYZ

HML

VED

Which of the following analysis neither considers cost nor value:

ABC

XYZ

HML

VED

As per queue discipline the following is not a negative behaviour of a customer:

Balking

Reneging

Boarding

Collusion

The expediting or follow up function in production control is an example of

LIFO

FIFO

SIRO

Pre emptive

The expediting or follow up function in production control is an example of

LIFO

FIFO

SIRO

Preemptive

In M/M/S: N/FIFO the following does not apply

Poisson arrival

Limited service

Exponential service

Single server

The dead bodies coming to a burial ground is an example of:

Pure Birth Process

Pure death Process

Birth and Death Process

Constant rate of arrival

The system of loading and unloading of goods usually follows:

LIFO

FIFO

SIRO

SBP

A steady state exist in a queue if:

$\lambda > \mu$

$\lambda < \mu$

$\lambda \leq \mu$

$\lambda \geq \mu$

Note this question font should be symbol

If the operating characteristics of a queue are dependent on time, then is said to be:

Transient state

Busy state

Steady state

Explosive state

A person who leaves the queue by losing his patience to wait is said to be: ()

Reneging

Balking

Jockeying

Collusion

The characteristics of a queuing model is independent of:

Number of service stations

Limit of length of queue

Service Pattern

Queue discipline

The unit of traffic intensity is:

Poisson

Markow

Erlang

Kendall

In (M /M /1) : (∞ / FCFS) model, the length of the system L_s is given by:

$\frac{\rho^2}{1-\rho}$

$\frac{\rho}{1-\rho}$

$\frac{\rho^2}{\mu(\mu - \rho)}$

$\frac{\rho^2}{\mu(\mu - \rho)}$ ()

Note this question font should be symbol

In $(M / M / 1)$: (∞ / FIFO) model, $1 / (\mu \cdot \rho)$ represents:

L_s , Length of the system

L_q length of the queue

W_q Waiting time in queue

W_s Waiting time in system. ()

The queue discipline in stack of plates is:

SIRO

Non-Pre-Emptive

FIFO

LIFO

Office filing system follows:

LIFO

FIFO

SIRO

SBP

SIRO discipline is generally found in:

Loading and unloading

Office filing

Lottery draw

Train arrivals at platform

The designation of Poisson arrival, Exponential service, single server and limited queue selected randomly is represented by:

$(M / E / S) : (\infty / \text{SIRO})$

$(M / M / 1) : (\infty / \text{SIRO})$

$(M / M / S) : (N / \text{SIRO})$

$(M / M / 1) : (N / \text{SIRO})$

For a simple queue $(M / M / 1)$, ρ is known as:

Poisson busy period

Random factor,

Traffic intensity

Exponential service factor

With respect to simple queuing model which one of the given below is wrong:

$L_q = \rho W_q$

$\rho = \mu \beta$

$W_s = W_q + \mu$

$L_s = L_q + \beta$

When a doctor attends to an emergency case leaving his regular service is called:

Reneging

Balking

Pre-emptive queue discipline

Non-Pre-Emptive queue discipline ()

A service system, where customer is stationary and server is moving is found with:

Buffet Meals

Out patient at a clinic

Person attending the breakdowns of heavy machines

Vehicle at Petrol bunk

In a simple queuing model the waiting time in the system is given by:

$(Lq + 1/\mu)$

$1/(\mu - \lambda)$

$\mu/(\mu - \lambda)$

$Wq + 1/\mu$

This department is responsible for the development of queuing theory:

Railway station

Municipal office

Telephone department

Health department.

If the number of arrivals during a given time period is independent of the number of arrivals that have already occurred prior to the beginning of time interval, then the new arrivals follow -----
---distribution.

Erlang

Poisson

Exponential

Normal

Arrival $\rightarrow$ Service $\rightarrow$ Service $\rightarrow$ Service $\rightarrow$ Out $\rightarrow$

The figure given represents:

Single Channel Single Phase system

Multi channel single-phase system

Single channel multi phase system

Multi channel multi phase system

In queue designation $A/B/S : (d/f)$, what does S represents:

Arrival Pattern

Service Pattern

Number of service channels

Capacity of the system

When the operating characteristics of the queue system dependent on time, then it is said to be:

Steady state

Explosive state

Transient state

Any one of the above

The distribution of arrivals in a queuing system can be considered as a:

Death Process

Pure Birth Process

Pure live process

Sick process

Queuing models measure the effect of:

Random arrivals

Random service

Effect of uncertainty on the behaviour of the queuing system

Length of queue

Traffic intensity is given by:

Mean arrival rate/Mean service rate,

$\lambda \times \mu$,

μ / λ ,

Number present in the queue / Number served

Variance of queue length is :

$\lambda \times \lambda / \mu$

$\lambda^2 / (1 - \rho)$

$\lambda / \mu - \rho$

$\lambda^2 / (1 - \rho)^2$

If the value of the game is zero, then the game is known as:

Fair strategy

Pure strategy

Pure game

Mixed strategy

The games with saddle points are:

Probabilistic in nature

Normative in nature

Stochastic in nature

Deterministic in nature

When Minimax and Maximin criteria matches, then

Fair game is exists

Unfair game is exists,

Mixed strategy exists

Saddle point exists

When the game is played on a predetermined course of action, which does not change throughout game, then the game is said to be

Pure strategy game

Fair strategy game

Mixed strategy game

Unsteady game

If the losses of player A are the gains of the player B , then the game is known as:

Fair game

Unfair game

Non- zero sum game

Zero sum game

Identify the wrong statement:

Game without saddle point is probabilistic

Game with saddle point will have pure strategies

Game with saddle point cannot be solved by dominance rule.

Game without saddle point uses mixed strategies

In a two person zero sum game, the following does not hold correct:

Row player is always a loser

Column Player is always a winner.

Column player always minimizes losses

If one loses, the other gains

If a two person zero sum game is converted to a Linear Programming Problem,

Number of variables must be two only

There will be no objective function

If row player represents Primal problem, Column player represent Dual problem

Number of constraints is two only

In case, there is no saddle point in a game then the game is

Deterministic game

Fair game,

Mixed strategy game

Multi player game

When there is dominance in a game then

Least of the row $\geq$ highest of another row

Least of the row $\leq$ highest of another row

Every element of a row $\geq$ corresponding element of another row.

Every element of the row $\leq$ corresponding element of another row. ()

When the game is not having a saddle point, then the following method is used to solve the game:

Linear Programming method

Minimax and maximin criteria

Algebraic method

Graphical method

Consider the matrix given, which is a pay off matrix of a game. Identify the dominance in it.

B

X Y Z

P 1 7 3

A Q 5 6 4

R 7 2 0

P dominates Q

Y dominates Z

Q dominates R

Z dominates Y

Identify the unfair game:

C D C D

(a) A 0 0 (b) A 1 -1

B 0 0 B -1 1

C D C D

(c) A -5 +5 **(d) A 1 0**

B + 10 - 10 B 0 1

If there are more than two persons in a game then the game is known as:

Non zero sum game

Open game

Multiplayer game

Big game

For the pay of matrix the player A always uses:

B

I II

I -5 -2

A

II 10 5

First strategy

Mixed strategy of both II and I

Does not play game

Second strategy

For the pay off matrix the player prefers to play

B

I II

I -7 6

A

II -10 8

Second strategy

First strategy

Keep quite
Mixed strategy

For the game given the value is:

B
I II
1 2 3
A
II -5 5
3
-5
5
2

In the game given the saddle point is:

B
I II III
I 2 -4 6
A II 0 -3 -2
III 3 -5 4
-2
0
-3
2

A competitive situation is known as:

Competition

Marketing

Game

None of the above

One of the assumptions in the game theory is:

All players act rationally and intelligently

Winner alone acts rationally

Loser acts intelligently,

Both the players believe luck

A play is played when:

The manager gives green signal

Each player chooses one of his courses of action simultaneously

The player who comes to the place first says that he will start the game

When the latecomer says that he starts the game. ()

The list of courses of action with each player

Is finite

Number of strategies with each player must be same

Number of strategies with each player need not be same

None of the above

A game involving ' n ' persons is known as:

Multi member game

Multi player game

n - person game

not a game

Theory of games and economic behavior is published by:

John Von Neumann and Morgenstern

John Flood

Bellman and Neumann

Mr. Erlang

In the matrix of a game given below the negative entries are:

B

I II

I 1 -1

A

II -1 1

Payments from A to B

Payments from B to A

Payment from players to organizers

Payment to players from organizers

In Dynamic Programming Problems, the decisions are made in

Single stage

2-stages

Multi-stages

No decision making process

In dynamic programming problems, the main problem is divided into subproblems. Each subproblem is known as:

Part

Stage

State

Mini problem

The technique of Dynamic Programming problem is developed by:

Taylor

Gilberth

Richard Bellman

Bellman and Clarke

Another name used to Dynamic Programming is:

Multistage problem

Recursive optimization

State problems

No second name

If the outcome at any decision stage is unique and known for the problem, then the Dynamic programming problem is known as:

Probabilistic dynamic programming problem

Stochastic dynamic programming problem

Static dynamic programming problem

Deterministic dynamic programming problem

The possible decisions at any stage are known as:

States

Steps

Parts

None

The rule which determines the decision at each stage is known as

State

Stage

Policy

Decision

The conclusion of a process designed to weigh the relative utilities of a set of available alternatives to select most preferred one is known as:

Concluding session

Conclusion

End of the process

Decision

The body of knowledge that deals with the analysis of making of decisions is known as

Decisions

Knowledge base

Decision theory

Decision analysis

Decisions that are meant to solve repetitive and well structured problems are known as:

Repetitive decisions

Structured decisions,

Programmed decisions

Linear programming

Decisions that handle non-routine, novel, and ill structured problems are known as:

Non-programmed decisions

Programmed decisions,

Ill-structured decisions
Non-linear programming

Operations Research is the outcome of
National emergency
Political problems

Combined efforts of talents of all fields

Economics and Engineering

O.R. came into existence during

World War I

India and Pakistan War,

World War II

None of the above

The name of the subject Operations Research is due to the fact that

Problems can be solved by war approach

The researchers do the operations

The war problems are generally known as operations and inventing a new way of solving such problems.

Mathematical operations are used in solving the problems

The first country to use Operations Research method to solve problems is

India

China,

U.K

U.S.A

The name Operations Research is first coined in the year

1945

1935,

1940

1950

The person who coined the name Operations Research is:

Bellman

Newman,

McClosky and Trefrhen

None of the above

O.R. Society of India is founded in the year

1965

1970,

1959

1972

The objective of Operations Research is:
To find new methods of solving Problems,
To derive formulas

Optimal utilization of existing resources

To utilize the services of scientists

Operations Research is the art of giving
Good answers for war problems,
Bad answers to war problems,

Bad answers to problems where otherwise worse answers are given.

Good answers to problems where otherwise bad answers are given

Operations Research is
Independent thinking approach
Group thinking approach

Inter-disciplinary team approach

None of the above

The first step in solving Operations Research problem is
Model building

Obtain alternate solutions,

Obtain basic feasible solutions

Formulation of the problem

The model, which gives physical or visual representation of the problem, is

Analogue model

Static model,

Iconic model

Symbolic model

One of the properties of O.R. model is

Model should be complicated,

Model is structured to suit O.R. techniques.

Model should be structured to suit all the problems we come across,

Model should be easy to derive

The problem, which is used to disburse the available limited resources to activities, is known as
O.R. Model

Resources Model

Allocation Model

Activities model

A wide class of allocation models can be solved by a mathematical technique known as:

Classical model

Mathematical Model,

Descriptive model

Linear Programming model

One of the properties of Linear Programming Model is

It will not have constraints,

It should be easy to solve,

It must be able to adopt to solve any type of problem,

The relationship between problem variables and constraints must be linear

The constraints of Maximisation problem are of

Greater than or equal type

Less than or equal type

Less than type

Greater than type

The slack variables indicate

Excess resource available

Shortage of resource available,

Nil resources

Idle resource

In graphical solution of solving Linear Programming problem to convert inequalities into equations, we

Use Slack variables,

Use Surplus variables

Use Artificial surplus variables,

Simply assume them to be equations

To convert $\leq$ type of inequality into equations, we have to

Assume them to be equations

Add surplus variables,

Subtract slack variables

Add slack variables

To convert $\geq$ type of inequality into equations, we have to

Add slack variable

Subtract slack Variable

Subtract surplus variable

Add surplus variable

In Graphical solution of maximisation problem, the line, which we move from origin to the extreme point of the polygon is :

Any one side of the polygon

Iso cost line,

Iso profit line

An imaginary line

The key row indicates
Incoming variable
outgoing variable
Slack variable
Surplus variable

The key column indicates
Outgoing variable
Incoming variable
Independent variable
Dependent variable

The penalty for not taking correct decision is known as
Fine
Loss,
Cost
Opportunity cost.

To transfer the key row in simplex table we have to
Add the elements of key row to key number
Subtract the elements of key row from topmost no key row
Divide the elements of key row by key number
None of the above.

The solution of the Linear programming problem in graphical solution lies in
First quadrant
Second quadrant,
Third quadrant
Fourth quadrant

When we solve maximization problem by simplex method the elements of net evaluation row of optimal solution must be (when we use opportunity cost concept)
Either zeros or positive numbers
Either zeros or negative numbers
All are negative numbers
All are zeros

When all the elements of replacement ratio column are equal, the situation is known as
Tie
Degeneracy
Break
None of the above

When the elements of net evaluation row of simplex table are equal, the situation is known as
Tie
Degeneracy

Break
Shadow price

The number at the intersection of key row and key column is known as
Column number
Row number,
Key number
Cross number

Dual of a Dual is
Primal
Dual
Prima dual
None of the above

Primal of a Primal is :
Primal
Dual
Prima primal
duo primal

Dual of a Dual of Dual is
Dual
Primal
Double dual
Single dual

Primal of a dual is
Primal
Dual,
Prime dual
Prime primal

If Dual has a solution, then the primal will
Not have a solution
Have only basic feasible solution,
Have a solution
None of the above

If Primal Problem is a maximisation problem, then the dual will be
Maximisation Problem
Minimisation Problem
Mixed Problem
None of the above

To get the Replacement ration column elements we have to

Divide Profit column elements by key number,
The first column elements of identity is divided by key number
Divide the capacity column elements by key number
Answer mentioned there is c option but there is no C option

The cost coefficient of slack variable is

Zero

One,

> than one

< than one, ()

The cost coefficient of artificial surplus variable is

0

1

M

> than 1

If the primal has an unbounded solution, then the dual has
Optimal solution

No solution

Bound solution

None of the above

One of the important basic objectives of Inventory management is:

To calculate EOQ for all materials in the organisation,

To go in person to the market and purchase the materials,

To employ the available capital efficiently so as to yield maximum results

Once materials are issued to the departments, personally check how they are used

The best way of improving the productivity of capital is:

Purchase automatic machines

Effective labour control

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Study the properties of materials

Search for needed material

Increase the productivity of capital by reducing the cost of material

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Inventory

Raw materials

The stock of animals reared in anticipation of future demand is known as:

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Animal inventory,

Flesh inventory

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The working class of human beings is a class of inventor known as:

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Increasing the efficiency of workers,

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Using the cheap material,

Reducing the use of materials,

Making hand to mouth purchase, ()

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Interests of the top management,

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Cost of materials,

Quantity of materials used,

Annual consumption value of materials

'A' class materials consume:

10% of total annual inventory cost

30% of total annual inventory cost,

70 to 75% of total inventory cost

90% of total annual inventory cost. ()

‘B’ class of materials consumes% of annual inventory cost.

60 to 70%

20 to 25%

90 to 95%

5 to 8% ()

‘C’ class of materials consume% of annual inventory cost.

5 to 10 %

20 to 30%

40 to 50%

70 to 80% ()

The rent for the stores where materials are stored falls under:

Inventory carrying cost

Ordering cost,

Procurement cost

Stocking cost

Insurance charges of materials cost fall under:

Ordering cost

Inventory carrying cost

Stock out cost

Procurement cost

As the volume of inventory increases, the following cost will increase:

Stock out cost

Ordering cost,

Procuring cost

Inventory carrying cost

As the order quantity increases, this cost will reduce:

Ordering cost

Insurance cost,

Inventory carrying cost

Stock out cost

Procurement cost may be clubbed with:

Inventory carrying charges

Stock out cost

Loss due to deterioration

Ordering cost

The penalty for not having materials when needed is:

Loss of materials cost

Loss of ordering cost,

Stock out cost

General losses

When Q is the annual demand for the material, p = unit price of the material in Rs., C_3 is the ordering cost, q = order quantity, then the total cost including the material cost is given by:

$(Q/2)ip + \frac{C_3}{q}Q + qp$

$2C_3 \frac{Q}{q}ip + qp$

$(Q/2)ip + qp$

$(2C_3 \frac{Q}{q}ip)^{1/2}$ ()

Contractual maintenance or agreement maintenance with manufacturer is suitable for equipment, which is

In its infant state

When machine is old one,

Scrapped

None of the above

When money value changes with time at 10 %, then PWF for first year is :

1

0.909

0.852

0.9

When money value changes with time at 20%, the discount factor for 2nd year is:

1

0.833

0

0.6955 ()

Which of the following maintenance policy is not used in old age stage of a machine? My Quiz

Operate up to failure and do corrective maintenance

Reconditioning

Replacement

Scheduled preventive maintenance

Which of the following maintenance policies is not used in old age stage of a machine?

Operate up to failure and do corrective maintenance,

Reconditioning,

Replacement,

Scheduled preventive maintenance

Which of the following replacement policies is considered to be dynamic in nature?

Time is continuous variable and the money value does not change with time,

When money value does not change with time and time is a discrete variable,

When money value changes with time

When money value remains constant for some time and then goes on changing with time

Which of the following replacement policy is considered to be dynamic in nature?

Time is continuous variable and the money value does not change with time.

When money value does not change with time and time is a discrete variable.

When money value changes with time

When money value remains constant for some time and then goes on changing with time

When the probability of failure reduces gradually, the failure mode is said to be:

Regressive

Retrogressive

Progressive

Recursive

The following replacement model is said to be probabilistic model:

When money value does not change with time and time is a continuous variable

When money value changes with time

When money value does not change with time and time is a discrete variable

Preventive maintenance policy (I think)

Check

A machine is replaced with average running cost_____ My Quiz

Is not equal to current running cost,

Till current period is greater than that of next period,

If current period is greater than that of next period,

If current period is less than that of next period

The curve used to interpret machine life cycle is

Bath tub curve

Time curve,

Product life cycle

Ogive curve

Decreasing failure rate is usually observed in stage of the machine

Infant

Youth

Old age

Any time in its life

Which cost of the following is irrelevant to replacement analysis?

Purchase cost of the machine,

Operating cost of the machine,

Maintenance cost of the machine,

Machine hour rate of the machine

The type of failure that usually occurs in old age of the machine is

Random failure

Early failure,

Chance failure

Wear-out failure

Group replacement policy is most suitable for: My Quiz

Trucks

Infant machines,

Street light bulbs

New cars

The chance failure that occur on a machine are commonly found on a graph of time Vs

Failure rate (on X and Y axis respectively as

Parabolic

Hyperbolic

Line nearly parallel to X axis

Line nearly parallel to Y-axis

The chance failure that occurs on a machine is commonly found on a graph of time Vs failure rate (on X and Y axes respectively as

Parabolic

Hyperbolic,

Line nearly parallel to X-axis

Line nearly parallel to Y-axis

Replacement of an item will become necessary when

Old item becomes too expensive to operate or maintain

When your operator desires to work on a new machine

When your opponent changes his machine in his unit

When company has surplus funds to spend

The production manager will not recommend group replacement policy My Quiz

When large number of identical items are to be replaced

In case Low cost items are to be replaced, where record keeping is a problem

For items that fail completely

For Repairable items

Which of the following is the correct assumption for replacement policy when money value does not change with time? My Quiz

No Capital cost

No scrap value,

Constant scrap value

Zero maintenance cost

Which one of the following does not match the group?

Present Worth Factor (PWF)

Discounted rate (DR),
Depreciation value (DV)
Mortality Tables (MT)

Reliability of an item is
Failure Probability
 $1 / \text{Failure probability,}$
1 - failure probability
Life period / Failure rate

The following is not discussed in group replacement policy: My Quiz
Failure Probability
Cost of individual replacement,
Loss due to failure
Present worth factor series

It is assumed that maintenance cost mostly depends on:
Calendar age
Manufacturing date
Running age
User's age

Group replacement policy applies to:
Irreparable items
Reparable items
Items that fail partially
Items that fail completely

If a machine becomes old, then the failure rate expected will be:
Constant
Increasing
Decreasing
We Cannot be said

Replacement is said to be necessary if
Failure rate is increasing
Failure cost is increasing,
Failure probability is increasing
Any of the above

In this stage, the machine operates at highest efficiency and its production rate will be high.
Infant stage
Youth stage
Old age
None of the above

Replacement decision is very much common in this stage:

Infant stage

Old age

Youth

In all the above

The replacement policy that is imposed on an item irrespective of its failure is My Quiz

Group replacement

Individual replacement

Repair spare replacement

Successive replacement

When certain symptoms indicate that a machine is going to fail and to avoid failure if maintenance is done it is known as:

Symptoms maintenance

Predictive maintenance

Repair maintenance

Scheduled maintenance

In retrogressive failures, the failure probability ----- with time

Increases

Remains constant,

Decreases

None of the above