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Grade	**20.00** out of 20.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Consider the following LPP model

max z = 15x1 + 10x2

subject to

4x1 + 6x2 <= 360

3x1 <= 180

5x2 <= 200

and x1,x2 >= 0

The solution of the above problem by graphical method is

Select one:

- Max Z=850, x1=30, x2=40
- Max Z=1300, x1=60, x2=40
- Max Z= 1100, x1=60, x2=20 ✔
- Max Z=400, x1=0, x2=40

Your answer is correct.

The correct answer is: Max Z= 1100, x1=60, x2=20

Question **2**

Correct

Mark 1.00 out of 1.00

The mathematical way of writing the following constraint is

"The proportion of interior paint to the total production of both interior and exterior paints should not exceed 0.5"

Select one:

- 0.5 X1 - 0.5X2<=0 ✔
- 0.5 X1 +0.5X2<=0
- 0.5 X1 + 0.5 X2 >=0
- 0.5X1 - 0.5 X2 >= 0

Your answer is correct.

The correct answers are: 0.5X1 - 0.5 X2 >= 0, 0.5 X1 - 0.5X2<=0

Question **3**

Correct

Mark 1.00 out of 1.00

Which of the following statements is true with respect to the optimal solution of an LP problem?

Select one:

- Optimal solution of an LP problem always occurs at origin
- At optimal solution all resources are completely used
- If an optimal solution exists, there will always be at least one at a corner ✔
- Every LP problem has an optimal solution

Your answer is correct.

The correct answer is: If an optimal solution exists, there will always be at least one at a corner

Question **4**

Correct

Mark 1.00 out of 1.00

Alternative solutions exist of an LP model when

Select one:

- One of the constraints is redundant
- Objective function equation is perpendicular to a constraint that is satisfied as equation at the optimal solution
- Two constraints are parallel
- Objective function equation is parallel to a constraint that is satisfied as equation at the optimal solution ✔

Your answer is correct.

The correct answer is: Objective function equation is parallel to a constraint that is satisfied as equation at the optimal solution

Question **5**

Correct

Mark 1.00 out of 1.00

Consider the LPP

Max z = 3 X1 + 9 X2

S.T

X1 + 4 X2 <= 8

X1 + 2 X2 <= 4

X1 , X2 >=0

Which one of the above is a redundant constraint?

Select one:

- X1 + 2 X2 <= 4
- 3 X1 + 9 X2
- X1 , X2 >=0
- X1 + 4 X2 <= 8 ✔

Your answer is correct.

The correct answer is: X1 + 4 X2 <= 8

Question **6**

Correct

Mark 1.00 out of 1.00

A company manufactures two products X and Y. Each product has to be processed in three departments: welding, assembly and painting. Each unit of X spends 2 hours in the welding department, 3 hours in assembly and 1 hour in painting. The corresponding times for a unit of Y are 3, 2 and 1 hours respectively. The maximum employee hours available in a month are 1,500 for the welding department, 1,500 in assembly and 550 in painting. The contribution to profits are £100 for product X and £120 for product Y.

What is the objective function (Z) to be maximised in this linear programming problem (where Z is total profit in £s)?

Select one:

- Z = 100X + 120Y ✔
- Z = 120X + 100Y
- Z = 2X + 3Y
- Z = 1500X + 1500Y

Your answer is correct.

The correct answer is: Z = 100X + 120Y

Question **7**

Correct

Mark 1.00 out of 1.00

A company manufactures two products X and Y. Each product has to be processed in three departments: welding, assembly and painting. Each unit of X spends 2 hours in the welding department, 3 hours in assembly and 1 hour in painting. The corresponding times for a unit of Y are 3, 2 and 1 hours respectively. The maximum employee hours available in a month are 1,500 for the welding department, 1,500 in assembly and 550 in painting. The contribution to profits are £100 for product X and £120 for product Y.
What is the labour constraint for the welding department in this linear programme?

Select one:

- 2X + 3Y <= 1,500 hours ✔
- 3X + 2Y <= 550 hours
- 3X + 2Y <= 1,500 hours
- 2X + 3Y <= 550 hours

Your answer is correct.

The correct answer is: 2X + 3Y <= 1,500 hours

Question **8**

Correct

Mark 1.00 out of 1.00

A company manufactures two products X and Y. Each product has to be processed in three departments: welding, assembly and painting. Each unit of X spends 2 hours in the welding department, 3 hours in assembly and 1 hour in painting. The corresponding times for a unit of Y are 3, 2 and 1 hours respectively. The maximum employee hours available in a month are 1,500 for the welding department, 1,500 in assembly and 550 in painting. The contribution to profits are £100 for product X and £120 for product Y.
What is the labour constraint for the assembly department in this linear programming problem?

Select one:

- 1X + 1Y <= 1,500 hours
- 1X + 1Y <= 550 hours
- 2X + 2Y <= 1,500 hours
- 3X + 2Y< = 1,500 hours ✔

Your answer is correct.

The correct answer is: 3X + 2Y< = 1,500 hours

Question **9**

Correct

Mark 1.00 out of 1.00

A company manufactures two products X and Y. Each product has to be processed in three departments: welding, assembly and painting. Each unit of X spends 2 hours in the welding department, 3 hours in assembly and 1 hour in painting. The corresponding times for a unit of Y are 3, 2 and 1 hours respectively. The maximum employee hours available in a month are 1,500 for the welding department, 1,500 in assembly and 550 in painting. The contribution to profits are £100 for product X and £120 for product Y.
What is the solution to this linear programming problem in terms of the respective quantities of X and Y to be produced if profits are to be maximised?

Select one:

- X=500, Y=0
- X=400, Y=150
- X=150, Y=400 ✔
- X=0, Y=500

Your answer is correct.

The correct answer is: X=150, Y=400

Question **10**

Correct

Mark 1.00 out of 1.00

The following Problem

Maximize

Z= 3 X^2 + 4 Y

Subject to

4X <=2

3X + 4 Y <=3

X,Y>=0

is an example of Non Linear Programming Problem because

Select one:

- Both objective and constraints are non linear
- Constraints are non linear
- Objective function is non linear ✔
- Non Negativtity constraints are available

Your answer is correct.

The correct answer is: Objective function is non linear

Question **11**
Correct
Mark 1.00 out of 1.00

In converting a less-than-or-equal constraint for use in a simplex table, the variable which we add is called

Select one:

- Artificial Variable
- Slack Variable ✔
- Positive Variable
- Surplus Variable

Your answer is correct.
The correct answer is: Slack Variable

Question **12**
Correct
Mark 1.00 out of 1.00

In a Simplex table, the pivot element is the

Select one:

- Intersection of zero coefficient column and minimum ratio row
- Always intersection of first row and first column
- intersection of most negative coefficient column and maximum ratio row
- intersection of most negative coefficient column and minimum ratio row ✔

Your answer is correct.
The correct answer is: intersection of most negative coefficient column and minimum ratio row

Question **13**
Correct
Mark 1.00 out of 1.00

According to algebra of simplex method, slack variables are assigned zero coefficients because

Select one:

- they represent loss
- high contribution in objective function
- Resources are completely utilized
- no contribution in objective function ✔

Your answer is correct.
The correct answer is: no contribution in objective function

Question **14**

Correct

Mark 1.00 out of 1.00

For a maximization problem, an entering variable in simplex table is

Select one:

- a variable with value 0 in Z-row
- a variable with least value in Z-row
- a variable with most positive value in Z-row
- a variable with most negative value in Z-row ✔

Your answer is correct.

The correct answer is: a variable with most negative value in Z-row

Question **15**

Correct

Mark 1.00 out of 1.00

Which one of the following is NOT true about Simplex method

Select one:

- the final corner point evaluated is the optimal one
- the simplex method focuses on corner points
- all corner points are evaluated and the decision maker chooses the best one ✔
- it is an iterative algebraic method

Your answer is correct.

The correct answer is: all corner points are evaluated and the decision maker chooses the best one

Question **16**

Correct

Mark 1.00 out of 1.00

The economical meaning of slack variable in simplex method is

Select one:

- Resources that are required
- Resources are not available
- Shortage of resources
- unused resources ✔

Your answer is correct.

The correct answer is: unused resources

Question **17**

Correct

Mark 1.00 out of 1.00

In a maximization problem, when one or more of the solution variables and the profit can be made infinitely large without violating any constraints, then the linear program has

Select one:

- Feasible Solution
- An unbounded solution ✔
- Alternative Optima
- Infeasible Solution

Your answer is correct.

The correct answer is: An unbounded solution

Question **18**

Correct

Mark 1.00 out of 1.00

The RHS of a constraint represents

Select one:

- a. available resources ✔
- b. Required resources
- c. Resources needed in future
- d. Resources which are not needed

Your answer is correct.

The correct answer is: available resources

Question **19**

Correct

Mark 1.00 out of 1.00

In a LPP if 5 variables and 3 constraints are there, then the possible basic solutions are

Select one:

- 5
- 10 ✔
- 15
- 20

Your answer is correct.

The correct answer is: 10

Question **20**

Correct

Mark 1.00 out of 1.00

Leaving variable in a simplex table is identified by choosing

Select one:

- a variable corresponding to minimum ratio row ✔
- a variable with 0 pivot element
- a variable with zero coefficient in Z row
- a vaiable with most negative coefficient in Z-row

Your answer is correct.

The correct answer is: a variable corresponding to minimum ratio row

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