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**ID # 12241**

**SUBJECT: QUANTITATIVE TECHNIQUES FOR MANAGERS**

**PROGRAM: BBA**

**MID TERM**

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QUESTION NO.1

Explain the methodology of quantitative techniques in detail?

ANSWER

The methodology of quantitative techniques is:

1. Formulating the problem
2. Defining the decision variables and constraints
3. Developing a suitable model
4. Acquiring the input data
5. Solving the model
6. Validating the model
7. Implementing the result
8. **FORMULATING THE PROBLEM:**

It is the first step in which we have to understand the problem. It is essential to recognize how it is described and what is prerequisite to be resolute. In this step we have to identify the objective of the problem. After this we have to regulate variable relationship as well as the numbers of variables decisions.

1. **DEFINING THE DECISION VARIABLES AND CONSTRAINTS:**

In the second step we have to define the given problem and its main decision variables. When we identify this problem it helps in emerging model. For example, ABC company is built-up four merchandises a, b, c and d. let a=x1, b=x2, c=x3 and d=x4. X1, x2, x3 and x4 are the four decision variables in the given problem. The aim is to increase the profit. There are two machines with 100 hours and 120 hours respectively now these machines are the resource constraints.

1. **DEVELOPING A SUITABLE MODEL:**

Now this model is the mathematical representation of the given problem and it is in the form of equations as well as expressions which emulate the problem. For example

Total profit = (selling price – cost price) x

 = (60-30) x

Total profit= 30x

This the mathematical form of problem which helps us to identify the exact problem. This model helps in increasing profit and decreasing cost. There are wide varieties of models such as:

* Linear and non-linear programming model
* Goal programming
* Dynamic programming
* Inventory management techniques
* Integer programming
* Queuing programming
1. **ACQUIRING THE INPUT DATA:**

It is important that the input data is correct because it helps us in giving accurate results. So for accurate result the input data must be exact.

1. **SOLVING THE MODEL:**

We have to monitor each and every equation and expression for best result. In this step the method of trial and error is use in order to solve the problem.

1. **VALIDATING THE MODEL:**

In order to confirm that the result is accurate or not we validate the model which helps us in identifying how accurate the result. During this process the incorrect result can be sort out.

1. **IMPLEMENTING THE RESULT:**

After validating the model and testing the model, then it is implemented. It involves applications of solutions. After implementing the model it is monitored so as to report any future changes that call for modification, in real working form.

QUESTION 2:

Explain the following concepts?

ANSWER:

1. **SIMPLE REGRESSION MODEL**

It is a model with a single explanatory variable. Specifically, apprehensions two-dimensional sample points with one independent variable and one dependent variable that, as precisely as probable, forecasts the dependent variable standards as a purpose of the independent variable.

1. **MULTIPLE REGRESSION MODEL**

This is an addition of simple linear regression. We use this model when we need to calculate the assessment of a variable built on the value of two or more than two variables. Those variables which we need to predict are known as dependent variable.

1. **REGRESSION AND CORRELATION**

Regression is mostly used to form models as well as equations to forecast a vital retort, y, from a fixed of forecaster (x) variables. Whereas the correlation is mostly used to rapidly and briefly précis the course and power of the connections among a set of two or more than two variables.

When there is a negativity in correlation than the slope of regression will become negative but when the correlation is positive than the slope of regression will become positive. The regression creates the whole equation while the correlation is single statistic.

1. **SUBSET AND UNIVERSAL SET**

A subset is a set whose elements are all members of another set. The subset relative defines a limited order on set. While the universal set is a set which comprises all substances, including itself. In set theory as usually formulated.

QUESTION NO.3 (a)

Discuss the pearson chi square test and its steps?

ANSWER:

**PEARSON CHI SQUARE TEST;**

Chi square test is normally used for testing associations among categorical variables. It is used to calculate independence test when we use cross tabulation. The chi square distribution enables the students to measure whether the observed data is significantly different from expected data. In chi square we use degree of freedom.

**STEPS;**

1. State the null and alternate hypothesis
2. Build the contingency table for data
3. Analyze the degree of freedom
4. Make the estimated frequency table
5. Compare observed value with expected value
6. Compare p-value against significance level
7. State conclusion

**(b)** Discuss the discrete and continuous random variable?

* **DISCRETE VARIABLE:**
1. The discrete variable is that variable which we can count.
2. In discrete variable there is no decimal in between.
3. The discrete variable is in digital form.
4. The discrete variable is distinct and separate.
5. For example: number of employees, number of students
* **CONTINUOUS VARIABLE:**
1. The continuous variable is that variable which is infinite we cannot count it.
2. In continuous variable there I decimal in between.
3. The continuous variable is in analog form.
4. We can take any value in particular form.
5. For example: height, weight.