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Course Name: Quantitative Techniques for Managers

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Mid Term Exam

Q1. Fill the following statements with appropriate words and options:

1. Parametric data is the word which use to measure
2. Figures belongs with Data
3. Attributive study of the data belongs with
4. is the process which separate data from heterogeneous to homogeneous groups.
5. The field which depends upon the utilization of human resource in data management is called as
6. The Grading score of the students belongs with measurement scale.
7. Today's temperature was recorded at 32° F, lies in the category ofmeasurement scale.
8. Quantitative study has very limited number of usage in advance research studies. (T/F)
9. Number of dots in a single line is very good example of countable data. (T/F)
10. Qualitative data do not belong with the field of Statistics. (T/F)

Solutions.

1. Parametric data is the word which use to measure **normal distribution of population.**
2. Figures belongs with **Quantitative** Data.
3. Attributive study of the data belongs with **Qualitative data**
4. **Classification** is the process which separate data from heterogeneous to homogeneous groups.
5. The field which depends upon the utilization of human resource in data management is called as **HRM data**
6. The Grading score of the students belongs with **Nominal** measurement scale.
7. Today's temperature was recorded at 32° F, lies in the category of **Interval** measurement scale.
8. Quantitative study has very limited number of usage in advance research studies. **(F)**
9. Number of dots in a single line is very good example of countable data. **(T)**
10. Qualitative data do not belong with the field of Statistics. **(F)**

Question No: 02

a) Describe the relevant fields and branches of Data Management.

Solution.

Data Management comprises all disciplines related to managing data as a valuable resource used arguments such as "a customer's home address is stored in 75 (or some other large number) places in our computer systems

Fields and branches of data management includes:

1. Data Governance

- Data asset
- Data governance
- Data steward
- Data Ethics

2. Data Architecture

- Data architecture
- Data flows

3. Data modeling and Design

4. Database & Storage Management

- Data maintenance
- Database administration
- Database management system
- Business continuity planning

5. Data Security

- Data access
- Data erasure
- Data privacy
- Data security

6. Reference and Master Data

- Data integration
- Master data management
- Reference data

7. Data Integration and Inter-operability

- Data movement (Extract, transform, load)
- Data Interoperability

8. Documents and Content

- Document management system
- Records management

9. Data Warehousing and Business Intelligence

- Business intelligence
- Data analysis and Data mining
- Data warehouse and Data mart

10. Metadata

- Metadata management
- Metadata
- Metadata discovery
- Metadata publishing
- Metadata registry

11. Data Quality

- Data cleansing
- Data integrity

- Data enrichment
- Data quality
- Data quality assurance
- Secondary data

b) How could you elaborate the “Importance and Applications of Quantitative study in Management” in business life.?

Answer. With increasing competition and scarce resources, how manager can increase the profits of the organization are some examples of problems faced in today’s business. Quantitative Techniques help in the field of production, marketing, finance and other activities of business. It is answer to such type of problems:

1. How to employ man and machine?
2. How much time customers wait for a service?
3. Can business deliver goods on time?
4. How effectively businesses use its resources?

Question No: 03

a) Find the number of outcomes during the following experiments:

i. 3 – Dice and 5- Coins

Solution:

The outcomes of one dice is equal to 6 then

1st Dice = 6 outcomes

2nd Dice = 6 outcomes

3rd Dice = 6 outcomes

Thus $6 \times 6 \times 6 = 216$ outcomes of dice

→ one Coin contains two outcomes i.e. Head and Tail.

1st Coin = 2 outcomes

2nd Coin = 2 outcomes

3rd Coin = 2 outcomes

4th Coin = 2 outcomes

5th Coin = 2 outcomes

= $2^5 = 32$ outcomes

Now total outcomes of 3 Dice and 5 Coins are $216 \times 32 = 6912$ outcomes

ii. 3- Shirts, 7- Ties and 2- Pants

Solution:

$$3p_1 \times 7p_1 \times 2p_1$$

$$\rightarrow 3p_1 = np_r = \frac{n!}{(n-r)!} = \frac{3!}{(3-1)!} = \frac{3!}{2!} = \frac{3 \times \cancel{2!}}{\cancel{2!}} = 3$$

$$\rightarrow 7p_1 = np_r = \frac{n!}{(n-r)!} = \frac{7!}{(7-1)!} = \frac{7!}{6!} = \frac{7 \times \cancel{6!}}{\cancel{6!}} = 7$$

$$\rightarrow 2p_1 = np_r = \frac{n!}{(n-r)!} = \frac{2!}{(2-1)!} = \frac{2!}{1!} = \frac{2 \times \cancel{1!}}{\cancel{1!}} = 2$$

Outcomes $3 \times 7 \times 2 = 42$ answer

b)

i. Three and 7 people standing in a line. How many ways to construct a line with 7 people?

By using combination

$$n = 7 \quad r = 3$$

$${}^n C_r = \frac{n!}{r!(n-r)!} = \frac{7!}{3!(7-3)!} = \frac{7!}{3! 4!} = \frac{7 \times \cancel{6} \times 5 \times \cancel{4!}}{\cancel{3} \times \cancel{2} \times \cancel{4!}} = 35 \text{ ways}$$

ii. There are 3 members (Principal, Headmaster & Clerk). How many arrangements could be possible for these members during selections.

Answer.

$$\text{Now arrangements} \quad n! = \times (n-1) \times (n-2) \times (n-3)$$

$$3! = \times (3-1) \times (3-2) \times (3-3)$$

$$3! = \times 2 \times 1$$

$$3! = \times 2$$

$$\text{Thus} \quad 3 \times 2 = 6$$

iii. How many arrangements could be possible for the word "Probability" and "Statistics"?

Required Arrangements

$$\rightarrow \text{Probability} \quad \frac{n!}{p!q!}$$

$$b = 2 \text{ time} \quad i = 2 \text{ time}$$

$$\begin{aligned} &= \frac{11!}{2!2!} = \frac{11!}{2 \times 1!2 \times 1!} = \frac{11 \times 10 \times 9 \times 8 \times 7 \times 6 \times 5 \times \cancel{4} \times 3 \times 2!}{\cancel{2!} \cancel{2!}} \\ &= 9,979,200 \end{aligned}$$

$$\rightarrow \text{Statistics} \quad \text{here are } n = 10$$

$$\rightarrow S = 3 \quad T = 3 \quad i = 2$$

$$= \frac{10!}{3!3!2!} = \frac{10 \times 9 \times 8 \times 7 \times \cancel{6} \times 5 \times \cancel{4} \times \cancel{3!}}{\cancel{3!} \cancel{3} \times \cancel{2} \times \cancel{2} \times 1}$$

$$\text{Thus} \quad = 10 \times 9 \times 8 \times 7 \times 5 \times 2 = 50400$$