

MODEL PAPER

MB0040 Statistics for Management

(4 Credits)

Book code: B1129

Group A: 1 Marks Questions (Question Number 1-40)

Group B: 2 Marks Questions (Question Number 41-60)

Group C: 4 Marks Questions (Question Number 61-75)

Full Marks: 140

Please Answer All Questions – Only One Option is Correct

Group A

1. Statistics are collected in a

- a. Random Manner
- b. Whims & Fancies
- c. Systematic manner
- d. Haphazard manner

2. In industry Statistics is applied in the following areas

- a. Plant layout
- b. Quality control
- c. No. of vendors
- d. Transfers of Managers

3. In which of the following cases, we can make statistical analysis

- (a) Data only on winning margin of a legislative candidate**
- (b) Data on result of football final match in a tournament**
- (c) Mark-sheet of a student**
- (d) Number of people died in a bus accident**

4. Statistical Survey is a scientific process of
 - a. Collection of data
 - b. Collection and analysis of data
 - c. Analysis of data
 - d. Collection and analysis of numerical data
5. Control methods adopted in a survey at every stage is to check
 - e. Cost
 - f. Time consumed
 - g. Accuracy
 - h. Accuracy, measurement analysis and interpretation
6. The data collected for the first time is known as
 - a. Data
 - b. Primary data
 - c. Secondary data
 - d. Series
7. When the area to be covered is very large and periodic information is required then the method of collection is done by
 - a. Direct personal observation
 - b. Indirect oral interview
 - c. Through Questionnaires
 - d. Through local agencies
8. In classification each unit is allotted to
 - a. overlapping group
 - b. Only one group
 - c. Two or more groups
 - d. None of the groups
9. Data classified according to the time of occurrence is known as

- a. Qualitative classification
- b. Conditional classification
- c. Chronological classification
- d. Geographical classification

10. Classification of workers according to education and skill is called

- a. Two-way
- b. Manifold
- c. One-way
- d. Time series

11. Data arranged logically according to size is known as

- e. Chronological classification
- f. Quantitative classification
- g. Statistical series
- e. Manifold classification

12. Measure of central tendency are of

- a. Second order
- b. Zero order
- c. First order
- d. No order

13. A good measure of Average should be

- a. Affected by extreme values
- b. Affected by sampling fluctuations
- c. Based on all values
- d. Comparable

14. The average value of -4, -3, 0, 3, 4 is

- a. -1
- b. 2

- c. 3
- d. 0

15. Median of discrete even series is given by

- a. $[(n + 1) / 2]^{\text{th}}$ value
- b. $n / 2^{\text{th}}$ value
- c. 5^{th} value
- d. $[(n + 1) / 4]^{\text{th}}$ value

16. To find median value data should be arranged in

- e. Any order
- f. Alternatively high and low values
- g. Ascending order
- h. Haphazard way

17. Whenever data deals with speed, distance and time then the best average is

- a. Median
- b. Mode
- c. G.M.
- d. H.M.

18. Quartiles are

- a. Affected by extreme values
- b. Middle 20 % values
- c. Not affected by extreme values
- d. Affected by Modal value

19. A good measure of variation should be

- a. Based on some values
- b. Affected by extreme values
- c. Rigidly defined
- d. Fluctuating

20. If “m” outcomes are favorable to an event A and “n” are total outcomes of an experiment then $P(A) =$

- a. $m + n / n$
- b. $n - m / n$
- c. n / m
- d. m / n

21. Probability of getting head when a coin is thrown, comes under

- a. Conditional probability
- b. Prior approach
- c. Empirical approach
- d. Subjective approach

22. In real life it is always not possible to conduct experiment, because of

- a. Selection of units
- b. Lack of equipments
- c. High cost
- d. Low response

23. When A and B are any two events the probability of either A or B is represented by

- a. $P(A \cup B)$
- b. $P(A^c \cup B^c)$
- c. $P(A \cap B)$
- d. $P(A^c \cap B^c)$

24. To find the probability of the events A and B we use

- a. $P(A \cup B)$
- b. $P(A \cup B)^c$
- c. $P(A \cap B)^c$
- d. $P(A \cap B)$

25. If A_1, A_2, \dots, A_n are "n" mutually exclusive and exhaustive events and B is a common event, then Baye's theorem deals with

- a. $P(B / A_i)$
- b. $\sum P(B \cap A_i)$
- c. $P(A_i \cup B)$
- d. $P(A_i / B)$

26. In conditional probability it is

- a. Possible to incorporate latest information
- b. Possible to incorporate the cost aspects
- c. To find probability of getting a sample value given population value.
- d. To find population value, given sample value

27. The mean and variance of Binomial distribution are

- a. p, q
- b. np, npq
- c. np, \sqrt{npq}
- d. \sqrt{np}, \sqrt{npq}

28. The Poisson variate assumes values from

- a. $-\alpha$ to $+\alpha$
- b. 0 to n
- c. $-\alpha$ to n
- d. 0 to α

29. In short time we gather information about population by

- a. Enumeration
- b. Counting
- c. Sampling
- d. Observation

30. A sample design that permits us to obtain tests and estimation about population parameters is called

- a. Bernoulli principle
- b. Principle of validity
- c. Principle of persistence of small numbers
- d. Principle of optimization

31. Sampling errors are also known as

- a. Inherent error
- b. Forced errors
- c. Reading errors
- d. Measurement errors

32. Standard error of mode is 1.20 and that of median is 1.02, then efficient estimator is

- a. S.D
- b. Mean
- c. Mode
- d. Median

33. If the population value follows normal distribution then to have 95% confidence interval for estimate we use

- a. $Z = 1.645$
- b. $Z = 2.05$
- c. $Z = 1.96$
- d. $Z = 2.58$

34. Suppose we want to test the Null hypothesis that the population mean is 300, it is symbolized as

- a. $H_0: \mu = 300$
- b. $H_A: \mu = 300$
- c. $H_0: \mu > 300$

d. $H_0: \mu < 300$

35. χ^2 – Distribution is defined as

a. $(O - E)^2 / E$

b. $(O - E / E)^2$

c. $\sum \frac{(O - E)^2}{E}$

d. $\sum (O - E)^2 / E$

36. If $F \sim F(v_1, v_2)$ then $1/F \sim$

a. $F(v_2, v_1)$

b. $F(v_1, v_2)$

c. $F(v_1 / v_2)$

d. $F(v_1, v_2)$

37. The value of Karl Pearson's correlation coefficient always is

a. Less than one

b. Greater than one

c. Lies between minus one and plus one

d. $-2 \leq r \leq 2$

38. Time series deals with

a. Only secular trend

b. Short term fluctuation

c. Oscillation

d. Trend, seasonal, cyclical and irregular variations

39. Irregular variations are caused by

a. Floods

b. Booms and depression

c. Weather conditions

d. Festivals

40. Simple aggregative method comes under

- a. Implicit weighting method
- b. Explicit weighting method
- c. Weighted index
- d. Un-weighted index

Group B

41. In which of the following cases, we can make statistical analysis –

- (a) Data only on winning margin of a legislative candidate**
- (b) Data on result of football final match in a tournament**
- (c) Mark-sheet of a student**
- (d) Number of people died in a bus accident**

42. In which of the following cases, we cannot use statistics-

- (a) We have data on color likeness of a person**
- (b) We have temperature of a malaria patient at 1 hour interval for the last 2 days**
- (c) We have data on equity share value of a company for the last one year**
- (d) We have data on number of defectives in a lot of finished products**

43. Control methods are used to

- a. Determine sample size and reliability of results**
- b. Determine cost and time involved**
- c. Determine sample units to be studied and measurement**
- d. Check accuracy, coverage, analysis and interpretation**

44. Two functions of classification are

- a. Presentation and interpretation
- b. Scrutiny and editing
- c. Reduce bulk data and facilitate comparisons
- d. Forming trend and tendencies of data

45. Classifications done on the basis of attributes blindness and region are known as

- a. Two-way qualitative classification
- b. Two-way quantitative classification
- c. Two-way conditional classification
- d. Two-way qualitative and geographical classification

46. Find the mean value for the grouped data

C.I	10-20	20-30	30-40	40-50	50-60	60-70
Freq	15	10	8	12	16	9

- a. 35.44
- b. 34.8
- c. 33.2
- d. 40

47. The mean of the following distribution is

X	145	155	165	175
Freq	10	12	15	10

- a. 159.7

b. 160.3

c. 162.1

d. 165.9

48. An example of mutually exclusive events are

a. $A = \{1, 2\}$ $B = \{2, 3\}$

b. $A = \{1, 2\}$ $B = \{3, 4\}$

c. $A = \{1, 1\}$ $B = \{2, 1\}$

d. $A = \{2, 1\}$ $B = \{2, 2\}$

49. The 5th term in the expansion of $(q+p)^{12}$ are

a. ${}^{12}C_5 q^5 p^{10}$

b. ${}^{12}C_6 q^{10} p^5$

c. ${}^{12}C_5 q^5 p^8$

d. ${}^{12}C_4 q^8 p^4$

50. Examples for existent and hypothetical populations are

a. Number of leaves in three month old plants of same type and throwing a die infinite

number of time to observe an even number

b. Number of leaves in three month old plants of same type and tossing a coin once

c. Throwing a die twice and tossing a coin thrice

d. Getting defectives in a days production and height of people

51. The criteria for a good estimator are

a. Large sample size, accurate methods of collection

b. Sufficiency, Accuracy and large sample size

- c. Accuracy, large sample size, unbiasedness
- d. Efficiency, sufficiency, unbiasedness and consistency

52.

Testing of hypothesis

- a. Proves H_0 is true
- b. Does prove H_0 is false
- c. Accepts or Rejects H_0
- d. Accepts H_A

53. If $F \sim F(\alpha_1, \alpha_2)$ then $1/F \sim$

- a. $1 / F(\alpha_2, \alpha_1)$
- b. $F(\alpha_2, \alpha_1)$
- c. $1/F(\alpha_2)$
- d. $1 / F(\alpha_1)$

54. Correlation is said to be linear and non-linear if

- a. The ratio of change between the variables is constant
- b. The ratio of change between the variables is constant and change in one variable is equal to the percentage change in other variable respectively
- c. Change in variables are haphazard
- d. Change in one variable is equal to the percentage change in another variable

55. Steps in business forecasting involve the following in that order

- a. Understanding the past, determining the phase of business activity to be measured, selection and complication of data, Analysis

- b. determining the phase, analyzing data, determining the phase of business activity, selection and compilation**
- c. Determining the phase of business activity to be measured the phase, analysis and selection and compilation**
- d. Determining the phase of business activity to be measured, the phase selection and compilation and analysis**

56. Equation to modified exponential curve is of the form

- a. $Y = (ab)^x$**
- b. $Y = ax^b$**
- c. $Y = ab^x$**
- d. $Y = a \log x$**

57. Cross-cut analysis theory studies

- a. Combined effects of factors**
- b. The effect of each factor combinedly**
- c. The effect of each factor independently**
- d. Effects of different groups of factors**

58. Seasonal variations refers to

- a. Variation in time series that are periodic in nature**
- b. Variations in time series that are periodic in nature and occur regularly over short periods during a year**
- c. Variations in time series that are periodic in nature and occur regularly**
- d. Variations in time series that are not periodic in nature and occur regularly**

59. Method of least squares is based on

- a. $\sum (Y-Y_c) = 0$ and $\sum (Y-Y_c)^3$ is minimum
- b. $\sum (Y-Y_c)^2 = 0$ and $\sum (Y-Y_c)$ is minimum
- c. $\sum (Y-Y_c) = 0$ and $\sum (Y-Y_c)^2$ is minimum
- d. $\sum (Y-Y_c) = 0$ and $\sum (Y-Y_c)^2$ is maximum

60. The index number for 1998 is 120 and for 2002 is 150. Then index number 1998 calculated with 2002 as base year is

- a. 75
- b. 80
- c. 115
- d. 120

Group C

61. An advertising agency mailed 100 questionnaires to the viewers to know the impact level of the advertisement. It received only one questionnaire back. Choose the correct combination below.

i. It is not possible to apply statistics because

- a. It does not deal with qualitative data
- b. It does not deal with single result
- c. The answer replied is not clear
- d. It is not confidential

ii. The method adopted to collect information is

- a. Oral interview

b. Telephonic interview

c. Mailed questionnaire

d. Schedule

iii. Agency has adopted

a. Census method

b. Sampling method

c. Collection of data from secondary source

d. Complete enumeration

iv. The main disadvantage of questionnaire is

a. Uneducated respondents

b. Unnecessary questions

c. Confidential questions

d. Superfluous questions

62. A hospital wants to start some new department for treating patients. Since the cost will be high they decide to estimate the return.

i. The most appropriate units of observation will be .

a. Each number of the locality

b. Doctors of all hospitals

c. Patients

d. The return received by other hospitals having same department

ii. The data is collected by

a. Primary source

b. Secondary source

c. Indirect oral interview

d. Direct personal observation

iii. Unit of measurement will be

a. Net Return

b. Total Return

c. Percentage net return

d. Break-even point

iv. Another useful added information for the purpose of investigation is

a. Percentage of patients wanting such new department

b. Percentage of patients living in the locality

c. Number of Doctors in the locality

d. Number of Beds available in the hospital

63. There are 200 employees in a firm. 81 of them are Male and the rest Female. 12 of them are Doctorates 53 of them are Graduates and the rest Post graduates. Education level of females are as follows: 8 doctorates 89

Post graduates and the rest graduates

i. Without tabulating can we quickly say that

a. Male post graduates are more than female P.G

b. Female P.G's are more than Male P.G's

c. Both are equal

d. Difficult to say

ii. The above form of describing a situation is known as

a. Text form

b. Quantitative form

c. Tabulation

d. Classification

iii. In tabular form it is

a. Table 1

Education level	Male	Female	Total
Doctorates	4	8	12
P.G	31	22	135
Graduates	46	89	53
	81	119	200

b. Table 1

Education level	Male	Female	Total
-----------------	------	--------	-------

Doctorates	4	8	12
P.G	46	89	135
Graduates	31	22	53
	81	119	200

c. Information insufficient

d. Table 1

Education level	Male	Female	Total
Doctorates	4	8	12
P.G	56	84	140
Graduates	21	27	48
	81	119	200

a. c

b. b

c. d

d. a

iv. Tabulation

a. Brings out figures clearly

b. Brings out layout nicely

c. Make comparisons easier

d. Do not bring out trends

64.

Study the following table to answer sub questions (i) to (iv)

Component	Establishment cost	Prize amount	Agents commission	Profit
Amount (Rs'000)	10	25	20	45

i. The important parts of the table missing is

a. Body

b. Table No

c. Caption

d. Stub

ii. Agent's percentage commission on establishment cost is

a. 200

b. 180

c. 100

d. 250

iii. The suitable diagram for presentation is

a. Simple bar diagram

b. Multiple bar diagram

c. Subdivided bar diagram

d. Frequency curve

iv. The type of classification is

a. Manifold

b. Two-way

c. Geographical

d. One-way

65. Mr. Anil goes to a supermarket. He purchases 8 pieces of item A @ Rs.5/- each, 12 pieces of item B @ Rs.10/- each, 15 pieces of item C @ Rs.20/- each, 10 pieces of item D @ Rs.15/- each and 6 pieces of item E @ Rs.12/- each.

i. Form a frequency distribution

a. C. I 0-5 5-10 10-15

Freq 8 27 16

b. C. I 0-10 10-20 20-30

Freq 15 20 16

c. Rs. 5 10 12 15 20

Freq 8 12 6 10 15

d. Pieces X 8 12 6 15 10

Freq 5 10 12 15 12

a. Table b

b. Table c

c. Table d

d. Table a

ii. It is a Distribution

a. Discrete

b. Continuous

c. Relative

d. Cumulative

iii. The total amount spend by him is

a. 750

b. 682

c. 650

d. 600

iv. The average price per piece is

a. 12.05

b. 13.88

c. 14.88

d. 13.37

66. A sales manager has ten salesmen working under him. He moves with them closely and know the strengths and weakness of each. Under any new circumstances he knows that Rama, Ramu, Ranga and Rathan will succeed in the ratio 2:3:4:6

i. The probability that Ramu will succeed is

a. $2 / 15$

b. $3 / 15$

c. $4 / 15$

d. $6 / 15$

ii. The probability that Rama and Rathan will succeed is

a. $18 / 225$

b. $25 / 225$

c. $20 / 225$

d. $4 / 75$

iii. The probability that Ramu or Ranga will succeed is

a. $7 / 15$

b. $6 / 15$

c. $8 / 15$

d. $10 / 15$

iv. The type of approach followed by sales manager is

- a. **Classical**
- b. **Statistical**
- c. **Subjective**
- d. **Axiomatic**

67.

In a Binomial distribution $p = 0.4$ and $n = 6$ then

i. $P(x = 0)$ is

- a. **0.062**
- b. **0.078**
- c. **0.78**
- d. **0.008**

ii. $P(X \geq 4)$ is

- a. **0.007**
- b. **0.006**
- c. **0.008**
- d. **0.010**

iii. $P(X \leq 1)$ is

- a. **0.1202**
- b. **0.1313**

c. **0.1296**

d. **0.1206**

iv. $P(X = 3)$ is

a. **0.029**

b. **0.291**

c. **0.009**

d. **0.019**

68. From a population whose mean is 40, a random sample of 10 are taken. The sample mean is 39.2 and S.D 4.

i. Population parameter and sample Statistics are

a. **40, 10**

b. **10, 40**

c. **40, 39.2, 40**

d. **40, 39.2**

ii. Standard error of mean is

a. **0.9**

b. **1.33**

c. **1.25**

d. **2.0**

iii. 39.2 is known as

- a. Confidence value
- b. Internal estimate
- c. Point estimate
- d. Parameter

iv. The internal estimate can be found if

- a. Population size is known
- b. Population S.D is known
- c. If sample size is greater than 30
- d. Confidence level is given

69. A good Estimator should satisfy

i. The criteria

- a. Unbiasedness and consistency
- b. Unbiasedness and reliability
- c. Consistency and accuracy
- d. Consistency, Sufficiency, Efficiency and Unbiasedness

ii. By consistency we mean

- a. As $n \rightarrow \infty$, the sample value approaches parameter value

b. Mean of the sampling distribution is equal to population mean

c. Statistics calculated from sample is accurate

d. Statistics calculated from sample is reliable

iii. By sufficiency we mean

a. Sample size is sufficient

b. Accuracy is sufficient

c. The estimator makes much use of information given

d. Reliability is sufficient

iv. By efficiency we mean

a. Mean is very efficient estimator

b. Standard error of statistics is sufficient

c. Standard error of statistics is small

d. Standard error of statistics is reliable

70.

Mean of a sample size of 15 is 40. Its standard deviation is 8

i. Standard error of mean is.

a. 2.14

b. 1.42

c. 1.33

d. 1.25

ii. The standard deviation being same, for the standard error to be 1.07, the sample size should be

a. 50

b. 30

c. 57

d. 38

iii. 95% confidence interval for the mean is

a. 40 ± 3.2

b. 40 ± 4.6

c. 40 ± 5.0

d. 40 ± 3.5

iv. 90% confidence interval for the mean is

a. 40 ± 3.1

b. 40 ± 4.2

c. 40 ± 5.1

d. 40 ± 3.8

71.

Given

Observed frequency	7	10	12	11
Expected frequency	4	8	15	13

i. $\sum (O-E)^2$ value is

a. 26

b. -26

c. 0

d. 14

ii. χ^2 calculated value is

a. 4.02

b. 3.66

c. 3.94

d. 3.51

iii. The degrees of freedom to be taken is

a. 3

b. 4

c. 2

d. 5

iv. χ^2 tabulated value at 5% level of significance is

a. 3.84

b. 7.91

c. 11.12

d. 5.99

72. Out of 1400 people 800 belonged to Rural area out of 700 people 200 from urban liked a new movie

i. The information can be tabulated as

a.

	Liked	Disliked	Total
Rural	400	400	800
Urban	300	300	600
Total	700	700	1400

b.

	Liked	Disliked	Total
Rural	600	200	800
Urban	100	500	600
Total	700	700	1400

c.

	Liked	Disliked	Total
Rural	500	300	800
Urban	200	400	600
Total	700	700	1400

d.

	Linked	Disliked	Total
Rural	500	300	800
Urban	200	400	600
Total	700	700	1400

ii. The expected value of cell (Rural, liked) is

- a. 400
- b. 300
- c. 600
- d. 450

iii. $(O-E)^2$ for the cell (urban disliked) is

- a. 25
- b. 0
- c. 16
- d. 36

iv. The degrees of freedom for the test is

- a. 4
- b. 2
- c. 1
- d. 3

73. A Business man would like to know what is Business forecasting. He has the following doubts

i. In which one of the following cases forecast will not be applied

a. Temperature of the day

b. Buying Mango

c. Share prices

d. Amount of rain expected

ii. Business forecasting means

a. Just analysis of past economic conditions

b. Just analysis of present economic conditions

c. Past and present economic conditions

d. Analysis of data published by Government

iii. Objective of Business forecasting is

a. To give a measure for uncertainty and reduce uncertainty

b. To reduce wastages

c. To reduce labour effort

d. To increase efficiency of production

iv. What is a prediction

a. Estimate based on projection

- b. Estimate based on assumptions**
- c. Estimates based on Mathematical theories**
- d. Estimates based on past data**

74.

i. The export and import statistics of leather and leather related goods acts as a barometer for

- a. General Business activities**
- b. Specific Business activities**
- c. Specific individual**
- d. Specific firm only**

ii. Health statistics published by Government of India acts as a barometer for

- a. Local people**
- b. Some states**
- c. Planning health-care activities by Government**
- d. Planning health by Doctors**

iii. Business barometer is a

- a. Tool for measuring booms in business**
- b. Tool for measuring depressions in business**
- c. Scientific and reliable tool for making decisions**
- d. Tool for controlling unnecessary expenses**

iv. Extrapolation method of business forecasting assumes

a. Constant growth in Arithmetic trend

b. Constant growth in semi-log trend

c. Constant % increase in Arithmetic trend

d. Different rate of growth in Arithmetic trend

75. Mr.Ekabaram, the engineer of the firm, feels that the best fit for the following production data will be a second degree equation, Viz $Y = a+bx+cx^2$ the data is

Year	2003	2004	2005	2006	2007
No. of workers	25	28	33	39	45

i. The value of b is

a. 6.1

b. 5.1

c. 5.5

d. 6.5

ii. The value of $\sum x^2$ is

a. 55

b. 60

c. 65

d. 70

iii. The value of C is

a. 0.7

b. 0.6

c. 0.5

d. 0.4

iv. The final equation is

a. $Y = 33 + 5.1x + 0.5x^2$

b. $Y = 32 + 0.5x + 5.1x^2$

c. $Y = 33 + 0.56x + 4.8x^2$

d. $Y = 34 + 0.56x + 4.8x^2$