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प्रश्नपुस्तिका क्रमांक
Question Booklet No.

O.M.R. Serial No. | | | | | | | | |

प्रश्नपुस्तिका सीरीज
Question Booklet Series
B

M.Sc Industrial Chemistry (First Semester) Examination, February/March-2022
MSIC-102
Research Methodology, Statistical Techniques and Computer Applications

Time : 1:30 Hours **Maximum Marks-100**

जब तक कहा न जाय, इस प्रश्नपुस्तिका को न खोलें

निर्देश : –

1. परीक्षार्थी अपने अनुक्रमांक, विषय एवं प्रश्नपुस्तिका की सीरीज का विवरण यथास्थान सही– सही भरें, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
2. **इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमे से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने है। प्रत्येक प्रश्न के चार वैकल्पिक उत्तर प्रश्न के नीचे दिये गये हैं। इन चारों में से केवल एक ही उत्तर सही है। जिस उत्तर को आप सही या सबसे उचित समझते हैं, अपने उत्तर पत्रक (O.M.R. ANSWER SHEET)में उसके अक्षर वाले वृत्त को काले या नीले बाल प्वांइट पेन से पूरा भर दें। यदि किसी परीक्षार्थी द्वारा निर्धारित प्रश्नों से अधिक प्रश्नों के उत्तर दिये जाते हैं तो उसके द्वारा हल किये गये प्रथमतः यथा निर्दिष्ट प्रश्नोत्तरों का ही मूल्यांकन किया जायेगा।**
3. प्रत्येक प्रश्न के अंक समान हैं। आप के जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
4. सभी उत्तर केवल ओ०एम०आर० उत्तर पत्रक **(O.M.R. ANSWER SHEET)** पर ही दिये जाने हैं। उत्तर पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
5. ओ०एम०आर० उत्तर पत्रक **(O.M.R. ANSWER SHEET)** पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाय।
6. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी प्रश्नपुस्तिका बुकलेट एवं ओ०एम०आर० शीट पृथक–पृथक उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें।
7. निगेटिव मार्किंग नहीं है।

महत्वपूर्ण : – **प्रश्नपुस्तिका खोलने पर प्रथमतः जॉच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभॉति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।**

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1. If σ is variance and SD is standard deviation then :

(A) $SD = \sigma^2$

(B) $\sigma = SD^2$

(C) $SD = \sigma$

(D) $\sigma = \sqrt{SD}$

2. If σ is standard deviation then which is correct :

(A) $\sigma = \frac{\Sigma x_i^2}{N} - (\overline{X})^2$

(B) $\sigma^2 = \frac{\Sigma x_i^2}{N} - (\overline{X})^2$

(C) $\sigma = \frac{\Sigma x_i}{N} - (\overline{X})^2$

(D) None

3. Earning per share for an industry are as follow (in Rs.)

5, 7, 7, 8, 9, 12, 15, 18, 22

Find out variance of this data.

(A) 39.57

(B) 29.57

(C) 49.57

(D) 19.57

4. In question 53, the standard deviation is :

(A) 5.438

(B) 15.438

(C) 18.412

(D) 29.57

5. Skewed data means that there are few extreme values on :

(A) Either side of data

(B) Neither side of data

(C) One one side only

(D) None

6. The Peakness of data indicate the proportion of data :

(A) Variant to central tendency

(B) Similar to central tendency

(C) Variant to dispersion

(D) Similar to dispersion

7. Leptokurtic Peak tells about a pointed peak with very little data and …….. frequency.

(A) Constant

(B) Minimum

(C) Moderate

(D) Maximum

8. "In statistical analysis it is assumed that normal distribution of data is present." Above sentence is :

(A) False

(B) True

(C) Depends on type of data

(D) None

9. In distribution of data a flat peak depicts majority of data :

(A) Similar to central tendency

(B) Dissimilar to central tendency

(C) Cannot be accurately calculated

(D) None

10. In question 59, the Flat Peak is called :

(A) Patykurtic

(B) Mesokurtic

(C) Platykurtic

(D) None

11. If the Peak is normal, it is called :

(A) Mesokritic

(B) Mesokurtic

(C) Mesopetic

(D) Mesosetic

12. A pointed peak of data distribution indicates a very :

(A) Elaborated data with Maximum frequency

(B) Elaborated data with Minimum frequency

(C) Little data with Maximum frequency

(D) Little data with little frequency

13. In negatively Skewed data, there are extreme values on :

(A) Right hand side

(B) Left hand side

(C) Middle

(D) None

14. In positively Skewed data, there are extreme values on :

(A) Right hand side

(B) Left hand side

(C) Middle

(D) None

15. Standard error is defined as the standard deviation of sampling distribution of :

(A) Means

(B) Medians

(C) Modes

(D) Variances

16. Mean of sampling distribution of means is always equal to the population mean is based on the following :

(A) Sample size

(B) Sample shape

(C) Both

(D) None

17. Which of the following is the best representation of calculation of coefficient of variance to find out dispersion of data :

(A) Coefficient of variance $= \frac{Mean}{Standard\ variation} \times 100$

(B) Coefficient of variance $= \frac{Standard\ variation}{Mean} \times 100$

(C) Coefficient of variance $= \frac{variance}{Mean} \times 100$

(D) None

18. "Coefficience of variance is defined as % of variation of mean in terms of standard deviation." the above sentence is true for :

(A) Special condition

(B) All the condition

(C) Most of the condition

(D) All

19. Higher coefficient of variance denotes higher data :

(A) Similarity

(B) Dispersion

(C) 50% Similarity and 50% Dispersion

(D) None

20. Test of independence of attributes determines that whether two attributes are :

(A) Linked

(B) Not linked

(C) Both

(D) None

21. Formula for F-value is given below. Which one is incorrect :

(A) F-value $= \frac{variance\ between\ samples}{variance\ within\ samples}$

(B) F-value $= \frac{variance\ within\ samples}{variance\ between\ samples}$

(C) Both

(D) None

22. Which one is the assumption of ANOVA application :

(A) All samples are taken randomly

(B) Variance of different population is similar

(C) Samples are independent

(D) All

23. If 'T' denotes Sum of all observations and 'CF' denotes correction factor and 'n_T' denotes total number of observations then which of the following relation is correct:

(A) $n_T = \frac{CF}{T^2}$

(B) $T^2 = \frac{CF}{n_T}$

(C) $CF = \frac{n_t}{T^2}$

(D) $CF = \frac{T^2}{n_T}$

24. Which of the following relation shows one way ANOVA short cut method :

(A) $n_T = \frac{CF}{T^2}$

(B) $T^2 = \frac{CF}{n_T}$

(C) $CF = \frac{n_t}{T^2}$

(D) $CF = \frac{T^2}{n_T}$

25. Correlation may be :

(A) Positive only

(B) Negative only

(C) Both

(D) None

26. In correlation two variables may be :

(A) Increasing

(B) Decreasing

(C) May not be related

(D) All

27. In computer, Hardware refers to :

(A) All hard components

(B) All physical components of computer

(C) Storage devices only

(D) None

28. Integrated circuit is an electronic circuit fabricated on single chip of :

(A) Carbon

(B) Sodium

(C) Silicon

(D) All

29. Memory chips of computer are :

(A) Isolated circuits

(B) Inserted circuits

(C) Integrated circuits

(D) None

30. The Transistors on an integrated circuits have two states :

(A) ON and OFF

(B) ON and Shut down

(C) ON and Stand by

(D) None

31. Which of the following is correct :

(A) 1 Byte = 1 Bit

(B) 1 Byte = 6 Bit

(C) 1 Byte = 8 Bit

(D) 1 Byte = 2 Bit

32. A chip may be of how many Bits :

(A) 2, 4, 6, 8 Bits

(B) 8, 16, 32, 64 Bits

(C) 1, 3, 5, 7, 9 Bits

(D) All

33. RAM stands for

(A) Read all Memory

(B) Random all Memory

(C) Random Access Memory

(D) None

34. Which one is more faster :

(A) RAM

(B) ROM

(C) Both are same

(D) None

35. Primary storage devices are :

(A) Temporary data storing

(B) Permanent data storing

(C) Semi permanent data storing

(D) All

36. Which one is not an input device :

(A) Barcode reader

(B) Plotter

(C) Both

(D) None

37. 'www' stands for :

(A) World with web

(B) World without web

(C) World Witholding web

(D) World wide web

38. Find decimal value of 101 from the following :

(A) 101

(B) 15

(C) 5

(D) 20

39. Which one is volatile in nature :

(A) ROM

(B) RAM

(C) Both

(D) None

40. Which of the following is used for the startup of computer :

(A) ROM

(B) RAM

(C) Both

(D) None

41. Central Processing Unit of computer can be divided into :

(A) Two parts

(B) Three parts

(C) Four parts

(D) None

42. Which one is not a web browser :

(A) Mozilla Firefox

(B) Google

(C) Chrome

(D) None

43. Rich text files contains characters such as :

(A) Font size

(B) Alignment

(C) Page specification

(D) All

44. Rich text files can be saved in :

(A) Binary format

(B) Mark-up-file

(C) Both

(D) None

45. (.XML) is a :

(A) Binary format

(B) Mark-up-file

(C) Hybrid format of both

(D) None

46. Rich text file can be saved in :

(A) (.doc) only

(B) (.rtf) only

(C) Both

(D) None

47. Each individual web page or image has a :

(A) Same value of URL

(B) Distinct value of URL

(C) Cannot be said correctly

(D) None

48. Translation of user program into binary format is done by which device :

(A) Input

(B) Output

(C) Hardware

(D) Software

49. Computer helps us in :

(A) Tabulating data

(B) Understanding data

(C) Both

(D) None

50. Flow chart is a type of diagram that represent a/an :

(A) Algorithm

(B) Work Flow

(C) Process

(D) All

51. Qualitative research data is based on :

(A) General phenomenon

(B) Observations

(C) Both

(D) None

52. Quantitative research is based on nature :

(A) Quantitative

(B) Qualitative

(C) 50% of both

(D) None

53. Characteristics of good research are :

(A) Promote logical thinking

(B) Ethical standards

(C) Both

(D) None

54. Good research work should be :

(A) Precise and accurate

(B) Systematic

(C) Logical

(D) All of above

55. Which research has direct impact on problem ?

(A) Pure

(B) Applied

(C) Both

(D) None

56. Review literature involves :

(A) Reading only

(B) Discussion of Past

(C) Identification of future

(D) All

57. Critical Review of literature involves :

(A) Identification of only broad area

(B) Identification of only narrow objectives

(C) Both

(D) None

58. Critical review of literature can be divided into following type :

(A) Primary

(B) Secondary

(C) Tertiary

(D) All

59. Second hand information's are characteristic of :

(A) Primary source of literature

(B) Secondary Source of literature

(C) Both

(D) None

60. Secondary sources of literature are :

(A) First hand information

(B) Second hand information

(C) Both

(D) None

61. Tertiary sources of literature are :

(A) Very important

(B) Least important

(C) Depend on data

(D) None

62. Which of the following is true :

(A) Type-I-α- error

(B) Type – II – β – error

(C) Type III – γ-error

(D) None

63. False hypothesis get proved true by collected data in type

(A) I α - error

(B) II β -error

(C) Both

(D) None

64. Which of the following is associated with collection of DATA :

(A) Survey

(B) Field research

(C) Both

(D) None

65. Non Probability sampling depends on judgment of :

(A) Researcher

(B) People

(C) Any Person

(D) None

66. Non Probable Sampling is used in :

(A) Political Science

(B) Social Studies

(C) Scientific

(D) None

67. Type of Non probability Sampling is :

(A) Simple

(B) Stratified

(C) Double

(D) None

68. Convenience sampling is :

(A) Convenient to researcher

(B) Least expensive

(C) Both

(D) None

69. Convenience sampling is :

(A) Time consuming

(B) Minimum time consuming

(C) Both

(D) None

70. Judgemental Sampling is :

(A) High cost, convinient, quick

(B) Low cost, inconvinient, quick

(C) Low cost, convinient, quick

(D) None

71. For Probability Sampling classification type, which of the following is incor ?

(A) Simple

(B) Stratified

(C) Sequential

(D) None

72. "The strata are homogenous with them selves and heteroge nous with others." The said sentence is :

(A) True

(B) False

(C) Depend on given data

(D) None

73. More elements are taken from large strata and less element are taken from smaller strata in the sampling type :

(A) Systematic

(B) Double

(C) Cluster

(D) Proportional stratified

74. Disproportionate stratified sampling can be calculated using formula :

(A) $\frac{n_1}{N_1-1} = \frac{n_2}{N_2-2}$ ... ...

(B) $\frac{n_1}{N_1-100} = \frac{n_2}{N_2-100}$ ... ...

(C) $\frac{n_1}{N_1} = \frac{n_2}{N_2} = \cdots$

(D) None

75. Formula $n_1 = \frac{Sample\ Size \times N_1}{N_1\sigma_1 + N_2\sigma_2 + N_3\sigma_3}$ is used for :

(A) Proportionate sampling

(B) Disproportionate sampling

(C) Both

(D) None

76. A population have three strata 5000, 2000, 3000 and standard deviations are 15, 18, 15 respectively. How should sample size of 84 be choosen from there strata ?

(A) 50, 48, 10

(B) 100, 24, 10

(C) 50, 24, 20

(D) 50, 24, 10

77. In cluster sampling clusters are :

(A) Reverse of strata

(B) Same as strata

(C) Both

(D) None

78. Cluster Sampling is feasible for highly :

(A) Homogenous population

(B) Heterogenous population

(C) Mix population

(D) None

79. Data coding is :

(A) Easier method

(B) Lengthy method

(C) Not confirmed

(D) None

80. Coding helps in looking _____ data in a compact form :

(A) Small

(B) Large

(C) Coding

(D) All

81. Univariant data can be depicted by following :

(A) Bar chart

(B) Pie chart

(C) Horizontal

(D) All

82. Contigency table and side by side Bar chart are depicting form of which of the following :

(A) Univariant data

(B) Bivariant data

(C) Multivariant data

(D) None

83. Find Arethamatic mean of following data :

21, 21, 21, 11, 12, 14, 16, 12, 17, 16, 16, 18

(A) 20

(B) 25

(C) 15.42

(D) 16.25

84. In Question 33 which formula is applicable :

(A) Arethamatic Mean $= \frac{\Sigma f_i x_i^2}{\Sigma f_i x_i}$

(B) Arethamatic Mean $= \frac{\Sigma x_i}{\Sigma f_i}$

(C) Arethamatic Mean $= \frac{\Sigma f_i x_i}{\Sigma f_i}$

(D) None

85. Arethamatic mean for classified data is calculated using following formula :

(A) $\bar{x} = \frac{\Sigma d_i^2 f_i^2}{\Sigma f_i^2}$

(B) $\bar{x} = \frac{\Sigma d_i f_i^2}{\Sigma f_i^2}$

(C) $\bar{x} = \frac{\Sigma d_i^2 f_i}{\Sigma f_i}$

(D) $\bar{x} = \frac{\Sigma d_i f_i}{\Sigma f_i}$

86. Arethamatic mean is calculated by using Assumed mean method and step deviation method: it was found that answer in both the cases was :

(A) Same

(B) Dissimilar

(C) Opposite

(D) None

87. Formula for calculating Arethamatic mean by step deviation mean method is :

(A) $\bar{x} = a + \frac{h\sum_i x_i^2 f_i}{\sum_i f_i}$

(B) $\bar{x} = a + \frac{h\sum_i x_i {f_i}^2}{\Sigma_i f_i}$

(C) $\bar{x} = a + \frac{h\Sigma_i x_i f_i}{\sum_i f_i}$

(D) None

88. Find out average percentage of female teachers in a state from following data :

% of Female teacher	x_i	f_i
15-25	20	6
25-35	30	11
35-45	40	7
45-55	50	4
55-65	60	4
65-75	70	2
75-85	80	1

(A) 20

(B) 39.71

(C) 29.71

(D) 30

89. In question 38, if average is calculated by step deviation method then average percentage of female teachers is :

(A) 20

(B) 39.71

(C) 29.71

(D) 30

90. In question 38, if assume mean is taken 80, then deviation in answer from the actual value is by :

(A) 10

(B) 0

(C) 39.71

(D) None

91. Mode is defined as :

(A) Most frequency occurring observation

(B) Average frequency occurring observation

(C) Least frequency occurring observation

(D) None of above

92. Measurement with maximum frequency is called as :

(A) Mean

(B) Median

(C) Mode

(D) Variance

93. Calculate Mode of following observations :

0, 0, 1, 1, 2, 4, 4, 4, 5, 5, 7, 7, 8, 9, 10, 12, 12, 12, 12, 15

(A) 0

(B) 4

(C) 10.5

(D) 12

94. Formula for Mode is, Mode $= l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$. In above formula 'h' stand for :

(A) Lower Limit

(B) Upper Limit

(C) Class Hieght

(D) Frequency of modal class

95. Calculate Mode from following data :

Marks	Number of students
10-25	2
25-40	3
40-55	7
55-70	6
70-85	6
85-100	6

Mode is :

(A) 42

(B) 52

(C) 72

(D) 62

96. In question 45, the Mean has value :

(A) 42

(B) 52

(C) 62

(D) 72

97. If 'N' is the number of odd measurement then Median is :

(A) N^{th} item

(B) $\frac{N^{th}}{2}$ item

(C) $\left(\frac{N+1}{2}\right)^{th}$ item

(D) None of all

98. If 'N' is the number of even measurement then Median is :

(A) N^{th} item

(B) $\frac{N^{th}}{2}$ item

(C) $\left(\frac{N+1}{2}\right)^{th}$ item

(D) None

99. Empirical relationship between Mean, median & mode is :

(A) 3 Median = 3 mode + 3 mean

(B) 3 Median = mode + mean

(C) 3 Median = 2 mode + mean

(D) 3 Median = mode + 2 mean

100. "Variance is equal to square of standard deviation." Above sentence is :

(A) Always True

(B) Some time True

(C) Always False

(D) Some time False

******

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Rough Work / रफ कार्य

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