

Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021)

Course Name - –Probability and Statistics

Course Code - GEBS(AI)201

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Answer all the questions. Each question carry one mark.

9. 1. Which of the following statistical measurement is not associated with grouped frequency observation?

Mark only one oval.

- Pie chart
- Histogram
- Ogive
- Median

10. 2.

The A.M. of 2, 4, 6, ..., $2n$ is
Mark only one oval.

 $n+1$ $n(n+1)$
$$\frac{n+1}{2}$$

$$\frac{n(n+1)}{2}$$
 Option 3 Option 4

11. 3.

The mean of the following distribution is:

Marks	:	20-39	40-59	60-79	80-99
No. of students	:	10	12	8	10

Mark only one oval.

68.5

39.5

58.5

60

12. 4.

The variance of the following distribution is:

x_i	:	-1	0	3	4
f_i	:	3	2	1	4

Mark only one oval.

56.8

0.568

5.68

2.383

13. 5. The mode of the following data 2, 1, 3, 2, 1, 5, 2, 2, 1, 6, 4, 21, 3 is:

Mark only one oval.

5

2

3

1

14. 6. The median of the following distribution 10, 13, 9, 7, 37, 16, 27, 32 is:

Mark only one oval.

- 16
- 14.5
- 13
- 15.5

15. 7. The relation between mean, median and mode is

Mark only one oval.

- Mode=3Median - 2Mean
- Mode=3Median + 2Mean
- Mode=2Median - 3Mean
- Mode=2Median + 3Mean

16. 8.

If $10y_i = x_i - 85$ and $\bar{y} = -0.523$ then $\bar{x} =$

Mark only one oval.

- 80
- 79.77
- 78.77
- 77.77

17. 9. A.M of a group of 'n' observation is 540; that of a group of 'm' observation is 460. If the A.M of the merged group is 520 then n:m is

Mark only one oval.

- 2:1
- 2:2
- 3:1
- none of these

18. 10.

Two set of datas $\{x_i\}$ and $\{y_i\}$ are related by $y_i = 12 x_i - 311.5$. If the median of the first set is 130 then the median of the second set is

Mark only one oval.

- 124.5
- 130.5
- 140.5
- none of these

19. 11.

The mode of the following frequency distribution are

n:	0	1	2	3	4
f:	23	24	21	24	20

Mark only one oval.

- 0
- 1
- 2
- 4

20. 12. The A.M. of 100 observations is 2.5. So the A.M. of 50 of these observations is more than 2.5

Mark only one oval.

- false
- true
- may be true
- not determinable

21. 13.

If the relations between two set of observations $\{x_i\}$ and $\{y_i\}$ is $2y_i - 6x_i = 6$ and mode of the first set is 21 then the mode of the second set is

Mark only one oval.

- 13
- 29
- 55
- none of these

22. 14. The AM of the datas 5, 55, 555, ... upto nth term is

Mark only one oval.

$$\frac{50}{n}(10^n - 1) - \frac{5}{9}$$

Option 1

$$\frac{50}{81n}(10^n - 1) - \frac{5}{9}$$

Option 2

$$\frac{1}{8n}(10^n - 1)$$

Option 3

none of these

23. 15.

The datas of the two groups $\{x_i\}$ and $\{y_i\}$ are related by $y_i = \frac{x_i - 800}{50}$ and if s.d. of the second group is 2.6257 then the s.d. of the first group is

Mark only one oval.

131.29

135.16

134

none of these

24. 16. The s.d. of maximum daily temperatures in Centigrade scale is 3.16. Then the s.d. of those of in Fahrenheit scale is

Mark only one oval.

- 5
- 7.1
- 5.69
- 6.69

25. 17. The variance of first n natural numbers is

Mark only one oval.

$$n^2 - 1$$

Option 1

$$\frac{n^2 - 1}{10}$$

Option 2

$$\frac{n^2}{12}$$

Option 3

$$\frac{n^2 - 1}{12}$$

Option 4

26. 18. The first four moments of a distribution are 1, 4, 10 and 46 respectively. Then the third central moment is

Mark only one oval.

- 1
 2
 3
 4

27. 19. The second moment about 4 of the set of numbers 2, 4, 6, 8 is

Mark only one oval.

- 0
 4
 6
 7

28. 20. The third moment about of 4 of the set of numbers 2, 4, 6, 8 is

Mark only one oval.

- 1
 4
 16
 12

29. 21.

The variance of the following frequency distribution is

$x:$	1	2	3	...	n
$f_i:$	1	2	3	...	n

Mark only one oval.

$$\frac{(n+2)(n-1)}{18}$$

Option 1

$$\frac{(n+2)(n+1)}{18}$$

Option 2

$$\frac{(n-2)(n-1)}{18}$$

Option 3

none of these

30. 22. If the mean and the mode of a given distribution are equal then skewness is

Mark only one oval.

0

-1

∞

1

Option 4

31. 23. If kurtosis has a value less than 3 then the distribution is called

Mark only one oval.

leptokurtic

mesokurtic

normal

platykurtic

32. 24. The skewness cannot exceed

Mark only one oval.

-3

0

4

3

33. 25. What would be mean, median and mode of the marks obtained by the students?

Marks obtained by 100 students in an examination are given in the table

Sl. No. :	1	2	3	4
Marks obtained :	25	30	35	40
No. of students :	20	20	40	20

What would be mean, median and mode of the marks obtained by the students?

Mark only one oval.

mean=33, median=35, mode=40

mean=35, median=32.5, mode=40

mean=33, median=35, mode=35

mean=35, median=32.5, mode=35

34. 26. The spot speeds (expressed in km/hr) observed at a road section are 66, 62, 45, 79, 32, 51, 56, 60, 53 and 49. The median speed (expressed in km/hr) is

Mark only one oval.

53.5

51.5

55.5

56.5

35. 27. Weights (in kg) of six products are 3, 7, 6, 2, 3 and 4. The median weight (in kg, upto one decimal place) is

Mark only one oval.

- 3.5
- 4.5
- 5
- 5.5

36. 28. If x is the mean of data 3, x , 2 and 4 then the mode is

Mark only one oval.

- 2
- 3
- 4
- none of these

37. 29.

If $n = 10$, $\bar{x} = 12$ and $\sum x_i^2 = 1530$ then the coefficient of variation is

Mark only one oval.

- 36%
- 40%
- 30%
- 25%

38. 30.

The variance of first 11 even natural numbers is

Mark only one oval.

- 41
- 40
- $122/3$
- $121/3$

39. 31. The first moment about the points 3 for the set of numbers 4, 6, 8, 10 is

Mark only one oval.

- 2
- 3
- 4
- 5

40. 32. If mean, mode and s.d. of a distribution are 40, 30 and 5 respectively then Pearson's coefficient of skewness is

Mark only one oval.

- 1
- 2
- 3
- none of these

41. 33.

Which of the following is consistent and unbiased estimator of the population variance σ^2 if it is given that sample variance is s^2
Mark only one oval.

$$\frac{n}{n-1} s^2$$

 Option 1

$$\frac{n-1}{n} s^2$$

 Option 2

$$\frac{s^2}{n}$$

 Option 3 none of these

42. 34. If an estimator is good estimator of an unknown parameter then the estimator should not be

Mark only one oval.

- biased
- consistent
- sufficient
- efficient

43. 35. Among all consistent estimators, which estimator is of minimum variance?

Mark only one oval.

- BLUE
- Likelihood
- MVUE
- none of these

44. 36. Sample mean of a population is

Mark only one oval.

- Biased and consistent estimator of population mean
- Unbiased and inconsistent estimator of population mean
- Biased and inconsistent estimator of population mean
- Both unbiased and consistent estimator of population mean

45. 37.

The statistic $= \frac{\sqrt{n-1}(\bar{x}-m)}{s}$, where s is sample s.d. follows

Mark only one oval.

normal distribution

χ^2 distribution

Option 1

Option 2

t distribution with n degrees of freedom

t distribution with $(n-1)$ degrees of freedom

46. 38. In a hypothesis testing Type-I error increases then

Mark only one oval.

- Type-II error increases
- Option 2 Type-II error decreases
- Type-II error remains unchanged
- Type-II error either increases or decreases

47. 39. The value of power of a test is

Mark only one oval.

- Type-I error + Type-II error
- $1 - \text{Type-I error}$
- Type-II error
- none of these

48. 40. If the computed value lies outside the best critical region then

Mark only one oval.

- both hypothesis are to be accepted
- both hypothesis are to be rejected
- only null hypothesis is accepted
- only alternative hypothesis is accepted

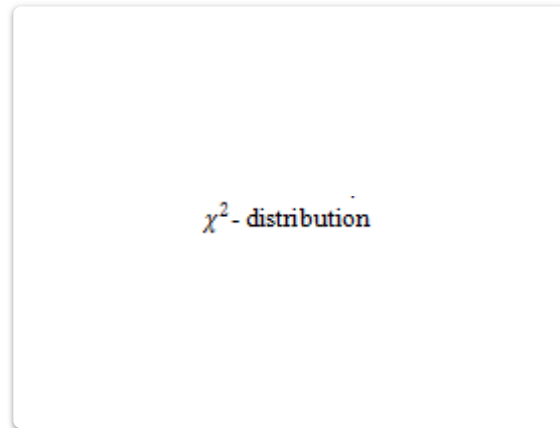
49. 41. The t-distribution is used for

Mark only one oval.

- large sample test
- small sample test
- both large and small sample test
- neither large nor small sample test

50. 42. To test equality of s.d. of two normal distribution, we need to use

Mark only one oval.



F - distribution

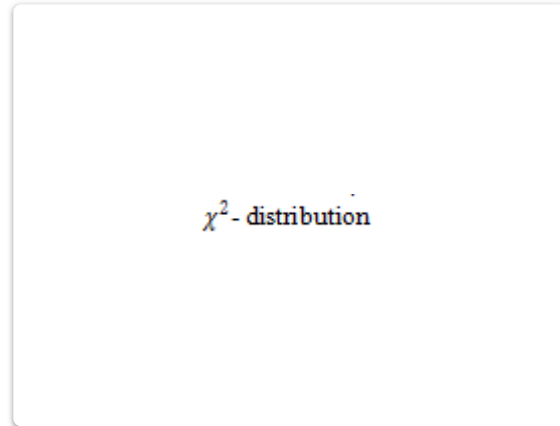
Option 2

t-distribution

Normal (0, 1) distribution

51. 43. To test s.d. of a normal distribution, we need to use

Mark only one oval.



F - distribution

Option 2

t-distribution

Normal (0, 1) distribution

52. 44. Which one of the following is correct?

Mark only one oval.

Sample is an element of Population

Population size < Sample size

Sample size \leq Population size

Population $<$ Sample

Option 3

Option 4

53. 45. Sample error depends on

Mark only one oval.

- size of the sample
- condition of mentality who draws samples
- size of the population
- none of these

54. 46. Sample standard deviation is

Mark only one oval.

- a fixed quantity
- a variable quantity
- always zero
- none of these

55. 47. Sampling distribution is the

Mark only one oval.

- distribution of population
- distribution of a sample
- distribution of a sample statistic
- distribution of a parameter

56. 48. The mean of the sample variance with sample size 9 drawn from an infinite population with s.d. 3 is

Mark only one oval.

- 6
- 7
- 9
- 8

57. 49. The possible number of samples of size two drawn with replacement from a population of size 25 is

Mark only one oval.

- 625
 600
 300
 none of these

58. 50. The mean weight of 500 guinea pigs is 5.02 gms and their s.d. is 0.30. Samples of 100 guinea pigs are drawn. The s.d. of the sample mean is

Mark only one oval.

- 0.27
 27
 0.027
 none of these

59. 51. In a test of hypothesis Type-I error is committed when

Mark only one oval.

- Null hypothesis is rejected though it was really false
 Null hypothesis is rejected though it was really true
 Null hypothesis is accepted though it was really false
 Null hypothesis is accepted though it was really true

60. 52. In a test of hypothesis Type-II error is committed when

Mark only one oval.

- Null hypothesis is rejected when it was really false
- Null hypothesis is rejected when it was really true
- Null hypothesis is accepted when it was really false
- None of these

61. 53.

For the function $f(x) = a + bx, 0 \leq x \leq 1$, to be a valid probability density function, which of the following statement is correct?

Mark only one oval.

- a=1, b=4
- a=0.5, b=1
- a=0, b=1
- a=1, b=-1

62. 54.

The value of the constant k for the pdf of a random variable X is

$$f(x) = \begin{cases} ke^{-\frac{x}{a}}, & x > 0 \text{ and } a \text{ is a parameter} \\ 0, & \text{elsewhere} \end{cases} \quad \text{is}$$

Mark only one oval.

- 1
- 1/a
- a
- none of these

63. 55.

In a Binomial distribution $\left(6, \frac{1}{2}\right)$ which of the following outcome is more rare to be occurred?

Mark only one oval.

- 3 successes
- both 6 successes and 6 failures
- only zero success
- only zero failure

64. 56. A pair of dice is thrown 4 times. If getting a doublet is considered a success, the probability of two successes is

Mark only one oval.

- 25/128
- 13/216
- 25/216
- 11/128

65. 57. Ten coins are tossed. Then the probability of getting at least 8 heads is

Mark only one oval.

- 1/128
- 1/256
- 7/128
- 3/256

66. 58. A man is known to speak truth 3 out of 4 times. He throws a die and reports that it is a six. The probability that it is actually a six is

Mark only one oval.

3/8

5/8

1/5

3/4

67. 59. Three of the six vertices of a regular hexagon are chosen at random. The probability that the triangle with these three vertices is equilateral is

Mark only one oval.

1/2

1/5

1/10

1/20

68. 60. A coin is tossed, events {H}, {T} are

Mark only one oval.

mutually exclusive

independent events

dependent

both mutually exclusive dependent

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