SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code: PROBABILITY&STATISTICS(18HS0835) **Branches:MECH,CSE,CS&IT**
Year &Sem: II-B.Tech&I-Sem **Regulation:** R18

UNIT –I

1. a) If $P(A)=\frac{1}{2},\ P(B)=\frac{1}{4}\ P(A\cap B)=\frac{1}{8}$ *then* $P(A\cup B)$. [2 M]

   b) If $P(A^c)=\frac{3}{8},\ P(B^c)=\frac{1}{2}$ *and* $P(A\cap B)=\frac{1}{4}$ *then find* $P\left(\frac{A}{B}\right)$. [2 M]

   c) State Bayes theorem. [2 M]

   d) If the Probability density of a random variable is given by $f(x)=\begin{cases}k(1-x^2), & for 0<x<1\\ 0, & elsewhere\end{cases}$

   Find the value of k. [2 M]

   e) A random variable X has the following probability function

x	1	2	3	4	5	6	7	8
P(x)	1/36	2/36	3/36	4/36	5/36	6/36	7/36	8/36

   Find the value of P(x≤2) [2 M]

2. a) A class consists of 6 girls and 10 boys. If a committee of 3 is chosen at random from the class, Find the Probability that (i) 3 boys are selected (ii) exactly 2 girls are selected [4 M]

   b) Two cards are selected at random from 10 cards numbered 1 to 10. Find the probability that the sum is even if (i) the two cards are drawn together. (ii) The two cards drawn one after other with replacement. [6 M]

3. a) Three students A, B, C are in running race. A and B have the same Probability of winning and each is twice as likely to win as C. Find the Probability that B or C wins [5 M]

   b) Determine (i) $P\left(B/A\right)$ (ii) $P\left(A/B^C\right)$ if A and B are events with $P(A)=\frac{1}{3},\ P(B)=\frac{1}{4}$,

   $P(A\cup B)=\frac{1}{2}$. [5 M]

4. a) In a certain town 40% have brown hair, 25% have brown eyes and 15% have both brown hair and brown eyes. A person is selected at random from the town.

   i) If he has brown hair, what is the probability that he has brown eyes also?

   ii)If he has brown eyes, determine the probability that he does not have brown hair? [6 M]

   b) The probability that students A, B, C, D solve the problem are $\frac{1}{3},\frac{2}{5},\frac{1}{5}$ and $\frac{1}{4}$ respectively If all of them try to solve the problem, what is the probability that the problem is solved. [4M]

5. Two dice are thrown. Let A be the event that the sum of the point on the faces is 9. Let B be the event that at least one number is 6.Find (i) $P(A\cap B)$ (ii) $P(A\cup B)$ (iii) $P(A^c\cup B^c)$ (iv) $P(A^c\cap B^c)$ (v) $P(A\cap B^c)$ [10 M]

6. In a certain college 25% of boys and 10% of girls are studying mathematics. The girls Constitute 60% of the student body. (a) What is the probability that mathematics is being studied? (b) If a student is selected at random and is found to be studying mathematics, find the probability that the student is a girl? (c) a boy [10 M]
7. Two dice are thrown. Let X assign to each point (a,b) in S the maximum of its numbers i.e., X (a, b) = max (a, b). Find the probability distribution. X is a random variable With X(s) = {1,2,3,4,5,6}. Also find the mean and variance of the distribution. [10 M]
8. A random variable X has the following probability function

X	0	1	2	3	4	5	6	7
P(x)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2+K$

Determine (i) K (ii) Evaluate $P(X \geq 6)$ and P (0<X<5) (iii) if $P(X \leq K)>1/2$, find the minimum value of K (iv) variance. [10 M]

9. A) Find the mean and variance of the uniform probability distribution given by $f(x)=\frac{1}{n}$ for $x=1,2,...,n.$ [5 M]

b) If a random variable has a Probability density f(x) as $f(x)=\begin{cases}2e^{-2x}, \text{ for } x>0\\ 0, \text{ for } x\leq 0\end{cases}$

Find the Probabilities that it will take on a value (i) Between 1 & 3 (ii) Greater than 0.5 [5 M]

10. Probability density function of a random variable X is $f(x)=\begin{cases}\frac{1}{2}\sin x, \text{ for } 0\leq x\leq \pi\\ 0, \text{elsewhere}\end{cases}$. Find the mean, mode and median of the distribution and also find the probability between 0 and $\pi/2$. [10 M]

UNIT-II

1. a) Define Binomial distribution. [2 M]
   b) A fair coin is tossed six times. Find the Probability of getting four heads. [2 M]
   c) Define Poisson distribution. [2 M]
   d) If a bank received on the average 6 bad cheques per day, find the probability that it will receive 4 bad cheques on any given day. [2 M]
   e) Define Normal distribution. [2 M]
2. a) Derive mean and variance of Binomial distribution. [6 M]
   b) 20% of items produced from a factory are defective. Find the probability that in a sample of 5 Chosen at random (i) one is defective (ii) $p(1 < x < 4)$ [4 M]
3. a) Fit a Binomial distribution to the following frequency distribution: [8 M]

x	0	1	2	3	4	5
f	2	14	20	34	22	8

   b) The mean and variance of a binomial distribution are 4 and $\frac{4}{3}$. Find $p(X \geq 1)$. [2M]
4. a) Out of 800 families with 5 children each, how many would you expect to have (a) 3 boys (b) 5 girls(c) either 2 or 3 boys. Assume equal probabilities for boys and girls. [6M]
   b) Two dice are thrown five times. Find the probability of getting 7 as sum i) at least once (ii) $p(1 < x < 5)$ [4M]
5. a) Derive mean and variance of poisson distribution. [6 M]
   b) If 2% of light bulbs are defective. Find the probability that (i) At least one is defective (ii) $p(1 < x < 8)$ in a sample of 100 [4 M]
6. a) Fit a Poisson distribution to the following data [8 M]

x	0	1	2	3	4	5	Total
f	142	156	69	27	5	1	400

   b) If the mean of a Poisson distribution is 1.8 then find $p(X > 1)$. [2M]
7. a) An insurance agent policies of 5 men all of identical age and good in health. The probability that a man of this age will be alive 30 years is 2/3. Find the probability that in 30 years. (i) At least one man (ii) Almost three will be alive [6M]
   b) If X is a Poisson variate such that $3P(X = 4) = \frac{1}{2}P(X = 2) + p(X = 0)$, find (i) the mean (ii) $P(X \leq 2)$ [4 M]
8. Derive mean and variance of Normal distribution. [10 M]
9. Find the mean and variance of a Normal distribution in which 7% of items are under 35 and 89% are under 63. [10 M]
10. In a sample of 1000 cases, the mean of certain test is 14 and standard deviation is 2.5.Assuming the distribution to be normal find (i) how many students score between 12 and 15. (ii) How many students score above 18? (iii) How many students score below 18? [10 M]

UNIT-III

1. a) The weights of 6 competitors in a game are given below 58,62,56,63,55,61kgs. Find arithmetic mean of weight of competitors. [2M]
   b) Find the median of the following values 26, 8, 6,12,15,32. [2 M]
   c) Obtain mode of the values 10,12,15,20,12,16,18,15,12,10,16,20,12,24. [2 M]
   d) Write the formulas for correlation, rank correlation [2 M]
   e) Write the formulas for the lines of regression X on Y and Y on X. [2 M]

2. a) Find arithmetic mean to the following data using step deviation method [5M]

Marks	10-20	20-30	30-40	40-50	50-60
frequency	5	8	25	22	10

   b) Find the median to the following data [5M]

x	5	8	11	14	17	20	23
f	2	8	12	20	10	6	3

3. a) Find the median to the following data [5M]

Class intervals	40-50	50-60	60-70	70-80	80-90
frequency	5	12	23	8	2

   b) Find arithmetic mean to the following data [5M]

x	1	2	3	4	5
f	5	8	10	12	6

4. a)Find mode to the following data [5M]

X	0-10	10-20	20-30	30-40	40-50	50-60	60-70
F	4	13	21	44	33	22	7

   b) The first four moments of a distribution about the value 5 of the variables are 2, 20, 40 and 50. Calculate mean, variance, β_1 and β_2 of the distribution. [5M]

5. Compute Karl Pearson and Bowley's coefficient of Skewness to the following data [10M]

Class intervals	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
frequency	2	6	11	20	40	75	45	25	18	8

6. Compute the first four central moments to the following data and also find Sheppard's correction, β_1 And β_2 [10M]

Class intervals	0-10	10-20	20-30	30-40	40-50	50-60	60-70
frequency	2	8	12	40	20	15	3

7. a)Calculate correlation coefficient to the following data [5M]

X	10	15	12	17	13	16	24	14	22	20
Y	30	42	45	46	33	34	40	35	39	38

   b) Obtain the rank correlation coefficient for the following data: [5M]

X	48	60	72	62	56	40	39	52	30
Y	62	78	65	70	38	54	60	32	31

8. a)Ten competitors in a musical test were ranked by the three judges A,B and C in the following order: [5M]

Ranks by A	1	6	5	10	3	2	4	9	7	8
Ranks by B	3	5	8	4	7	10	2	1	6	9
Ranks by C	6	4	9	8	1	2	3	10	5	7

Using rank correlation coefficient method, discuss which pair of judges has the nearest approach to common likings in music.

b) If the two lines of regression are 4X-5Y+30=0 and 20X-9Y-107=0 which of these is the line of regression of X on Y. Find r and σ_y when $\sigma_x = 3$ [5M]

9. a) Obtain the rank correlation coefficient for the following data : [5M]

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

b) Find two regression equations from the following data: [5M]

X	10	25	34	42	37	35	36	45
Y	56	64	63	58	73	75	82	77

11. a) Calculate the correlation coefficient for the following heights(in inches) of fathers(X) and their sons(Y) [6M]

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

b) From the following regression equations, calculate $\bar{X}, \bar{Y}$ and r 20X-9Y=107, 4X-5Y=-33 [4M]

UNIT –IV

1. a) write normal equations to $y = ax + b$ [2M]

   b) write normal equations to $y = ax^2 + bx + c$ [2M]

   c) Define parameters statistics [2M]

   d) Define Null hypothesis, Alternative hypothesis. [2M]

   e) If $n = 100, \sigma = 5.1, \bar{x} = 21.6$ construct 95% confidence interval for population mean μ. [2M]

2. a)By method of least squares fit a straight line to the following data [5M]

x	1	2	3	4	5
y	14	27	40	55	68

   b) Fit a second degree polynomial to the following data by method of least squares [5M]

x	0	1	2	3	4
y	1	1.8	1.3	2.5	6.3

3. a) Fit a parabola to the data given below [5M]

x	1	2	3	4	5 4
y	10	12	8	10	14

   b) Obtain a relation of the form $y = ab^x$ for the following data by method of least squares [5M]

x	2	3	4	5	6
y	8.3	15.4	33.1	65.2	127.4

4. a) Find the curve of best fit of the type $y = ae^{bx}$ to the following data by method of least squares [5M]

x	1	5	7	9	12
y	10	15	12	15	21

   b) Fit a straight line $y = ax + b$ for the following data [5M]

x	6	7	7	8	8	8	9	9	10
y	5	5	4	5	4	3	4	3	3

5. a) Fit a $y = ax^b$ to the following data, also calculate $y(2.5)$ [5M]

x	1	2	4	6
y	6	4	2	2

   b) Fit a second degree polynomial to the following data by method of least squares [5M]

x	0	1	2	3	4
y	1	5	10	22	38

6. a) A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40.Test whether the sample has come from a population with mean 38. [5M]

   b) The means of two large samples of sizes 1000 and 2000 members are 67.5 inches and 68.0 inches respectively. Can the samples be regarded as drawn from the same population of standard deviation 2.5 inches? [5M]

7. a) It is claimed that a random sample of 49 tyres has a mean life of 15200 km. This sample was drawn from a population whose mean is 15150kms and standard deviation of 1200 km. Test the Significance at 0.05 level. [5M]

b) Samples of students were drawn from two universities and from their weights in kilograms, mean and standard deviations are calculated and shown below. Make alarge sample test to test the Significance of the difference between the means. [5M]

	Mean	S.D	Size of the sample
University A	55	10	400
University B	57	15	100

8. a) In a random sample of 125 cool drinkers 68 said they prefer thumsup to pepsi. Test thus null hypothesis $P = 0.5$ against the alternative hypothesis is $P > 0.5$ [5M]

   b) On the basis of their total scores, 200 candidates of a civil service examination are divided in to two groups, the upper 30% and the remaining 70%.consider the first question of the examination. Among the first group,40 had correct answer, where as among the second group, 80 had correct answer. On the basis of these results, can one conclude that the first question is not good at discriminating ability of the type being examined here? [5M]

9. a) A die was thrown 9000 times and of these 3220 yielded a 3or 4. Is this consistent with the hypothesis that the die was unbiased? [5M]

   b) In two large populations, there are 30%, and 25% respectively of fair haired people. Is this difference likely to be hidden in samples of 1200 and 900 respectively from the two populations.

10. a) A random sample of size 50 has standard deviation 11.8 drawn from a normal population. can we assume that the sample has been drawn from the population with S.D 10. [5M]

    b) Two random samples of sizes 100 each are drawn from two populations with the standard deviations 2.823 and 1.548. Test the significance difference between the sample standard deviations, if the population standard deviation is 2. [5M]

UNIT-V

1. a) Define degrees of freedom. [2M]
   b) Define Student's t-test. [2M]
   c) Write the formula for Paired t-test. [2M]
   d) Write the formula for Student's t-test for difference of means. [2M]
   e) Define Chi-square test. [2M]
2. a) A sample of 26 bulbs gives a mean life of 990 hours with a S.D of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hours. Is the sample not up to the standard. [5M]
   b)A pair of dice are thrown 360 times and the frequency of each sum is indicated below: [5M]

Sum	2	3	4	5	6	7	8	9	10	11	12
Frequency	8	24	35	37	44	65	51	42	26	14	14

   Would you say that the dice are fair on the basis of the chi-square test at 0.05 level of significant?
3. To examine the hypothesis that the husbands are more intelligent than the wives, an investigator took a sample of 10 couples and administered them a test which measures the I.Q. The results are as follows: [10M]

Husbands	117	105	97	105	123	109	86	78	103	107
Wives	106	98	87	104	116	95	90	69	108	85

   Test the hypothesis with a reasonable test at the level of significant of 0.05 and also calculate F-test.
4. A random sample of 10 boys had the following I.Q's: 70, 120, 110, 101, 88,83,95,98,107 and 100
   a) Do these data support the assumption of a population mean I.Q of 100? [10M]
   b) Find a reasonable range in which most of the mean I.Q values of samples of 10 boys lie.
5. a) Blood pressure of 5 women before and after intake of a certain drug are given below [5M]

Before	110	120	125	132	125
After	120	118	125	136	121

   Test whether the significant change in blood pressure at 1% level of significance.

   b. In one sample of 8 observations the sum of the squares of deviations of the sample values from the sample was 84,4 and in the other samples of 10 observations it was 102.6. Test whether this difference is significant at 5% level [5M]
6. Two random samples reveal the following results: [10M]

Sample	Size	Sample Mean	Sum of squares of deviations from the mean
1	10	15	90
2	12	14	108

   Test whether the samples came from the same normal population.
7. The nicotine in milligrams of two samples of tobacco were found to be as follows. [10M]

Sample A	24	27	26	23	25	---
Sample B	29	30	30	31	24	36

   Can it be said that the two samples have come from the same normal population.
8. a) A die is thrown 264 times with the following results. Show that the die is biased. (ψ^2 = 11.07 at 5 d.f & 5% L.S) [5M]

Number on the die	1	2	3	4	5	6
Frequency	40	32	28	58	54	52

   b) Scores obtained in a shooting competition by 10 soldiers before and after intensive training are given below: [5M]

Before	67	24	57	55	63	54	56	68	33	43
After	70	38	58	58	56	67	68	75	42	38

Test whether the intensive training is useful at 0.05 level of significance.

9. a) Find the maximum difference that we can expect with probability 0.95 between the mean of samples of sizes 10 and 12 from a normal population if their standard deviations are found to be 2 and 3 respectively. [5M]

b) The following table gives the classification of 100 workers according to sex and nature of work. Test whether the nature of work is independent of the worker ($\psi^2 = 3.84$ at 1d.f) [5M]

	Stable	Unstable	Total
Males	40	20	60
Females	10	30	40
Total	50	50	100

10.a) Samples of two types of electrical light bulbs were tested for length of life and following data were obtained [5M]

	Type I	Type II
Sample numbers	8	7
Sample mean	1234 hrs	1036 hrs
Sample S.D	36 hrs	40 hrs

Is the difference in the means sufficient to warrant that type I is superior to type II regarding length of life

b) The number of automobile accidents per week in a certain community is as follows: 12, 8, 20, 2, 14, 10, 15, 6, 9, 4. Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period. [5M]

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BIT BANK

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UNIT-I

1. $P(A' \cap B) =$ _____ [ ]
   A) $P(A) - P(A' \cap B)$ B) $P(B) - P(A' \cap B)$ C) $P(A) - P(A \cap B)$ D) $P(B) - P(A \cap B)$
2. If X is a continuous random variable and $Y = aX + b$ constant then $E(Y)$=_____[ ]
   A) $aE(X) + b$ B) $E(X) + b$ C) $aE(X) - b$ D) $aE(X)$
3. If a dice is thrown then probability of getting 4 or 5 is [ ]
   A) $\frac{1}{6}$ B) $\frac{5}{6}$ C) $\frac{1}{3}$ D) $\frac{2}{3}$
4. If $P(A) = \frac{1}{3}, P(B) = \frac{1}{4}, P(A \cup B) = \frac{1}{3}$ then $P(B/A) =$ _____ [ ]
   A) 1 B) $\frac{1}{6}$ C) $\frac{3}{4}$ D) $\frac{2}{3}$
5. If a dice is thrown then probability of getting 5 or 6 is [ ]
   A) $\frac{1}{6}$ B) $\frac{5}{6}$ C) $\frac{1}{3}$ D) $\frac{2}{3}$
6. The chance that a non-leap year contains 53 Mondays is [ ]
   A) $\frac{1}{7}$ B) $\frac{2}{7}$ C) $\frac{1}{365}$ D) $\frac{2}{365}$
7. If K is any constant then E(K) =_____ [ ]
   A) 0 B) K C) 1 D) -1
8. Maximum value of the probability is _____ [ ]
   A) 0 B) 0.1 C) 1 D) -1
9. If A and B are mutually exclusive events then $P(A \cup B) =$_____ [ ]
   A) $P(A) + P(B)$ B) $P(B) - P(A)$ C) $P(A) - P(A \cap B)$ D) $P(B) - P(A \cap B)$
10. If $P(A) = \frac{1}{3}, P(B) = \frac{1}{4}, P(A \cup B) = \frac{1}{3}$ then $P(B/A) =$ _____ [ ]
    A) $\frac{1}{2}$ B) $\frac{1}{6}$ C) $\frac{3}{4}$ D) $\frac{2}{3}$
11. If X and Y are independent random variable then $E(XY)$=_____ [ ]
    A) $E(X) + E(Y)$ B) $E(X) - E(Y)$ C) $E(X)\,E(Y)$ D) $YE(X)$
12. Two dice are thrown. The probability of getting at least one six is_____ [ ]
    A) $\frac{7}{36}$ B) $\frac{10}{36}$ C) $\frac{11}{36}$ D) $\frac{5}{36}$
13. If K is any constant then V(K) =_____ [ ]
    A) 0 B) K C) 1 D) -1
14. If $P(A) = a$, $P(B) = b$ and $P(A \cap B) = c$ then $P(A^C \cup B^C) =$ _____ [ ]
    A) 1-a B)1-b C) 1-c D) c

15. $P(A' \cap B') =$_____ [ ]
A) $1-P(A \cup B)$ B) $1-P(A \cap B)$ C) $1-P(A' \cap B)$ D) $1-(A \cap B')$

16. The property of an event is always between _____ [ ]
A) -1 and 0 B) -1 and 1 C) 0 and1 D) -1

17. If X is a random variable then $E(2X)$=_____ [ ]
A) $E(X)$ B) $-E(X)$ C) $2E(X)$ D) $4E(X)$

18. The probability that a leap year will have 53 Tuesdays is [ ]
A) $\frac{1}{7}$ B) $\frac{2}{7}$ C) $\frac{1}{365}$ D) $\frac{2}{365}$

19. If A and B are mutually exclusive events then $P(A \cap B) =$_____ [ ]
A) $P(A)+P(B)$ B) $P(B)-P(A)$ C) 0 D) $P(A)P(B)$

20. If X is a continuous random variable and $Y = aX + b$ constant then $V(Y)$=_____[ ]
A) $a^2 V(X)+b$ B) $a^2 V(X)$ C) $aV(X)+b$ D) $a^2 V(X)+b^2$

21. Two dice are thrown. The probability of getting at least one five is_____ [ ]
A) $\frac{7}{36}$ B) $\frac{10}{36}$ C) $\frac{11}{36}$ D) $\frac{5}{36}$

22. If $P(A)=a$, $P(B)=b$, $P(A \cap B)=c$ then $P(A^C \cup B^C)$=_____ [ ]
A) c B) $1+c$ C) $1-c$ D) 1

23. An event that must occur is called _____ [ ]
A) a certain B) a possible C) an impossible D) a finite

24. $P(A' \cup B') =$_____ [ ]
A) $P(A)-P(A' \cap B)$ B) $1-P(A \cup B)$ C) $P(A)-P(A \cup B)$ D) $1-P(A \cap B)$

25. If a dice is thrown then probability of getting 1 or 2 is [ ]
A) $\frac{1}{6}$ B) $\frac{5}{6}$ C) $\frac{1}{3}$ D) $\frac{2}{3}$

26. If K is any constant then E(2K) =_____ [ ]
A) 0 B) 2 k C) k D) -1

27. The chance that a leap year contains 52 Mondays and 53 Sundaysis [ ]
A) $\frac{1}{7}$ B) $\frac{2}{7}$ C) $\frac{1}{365}$ D) $\frac{2}{365}$

28. If A and B are mutually exclusive events then $P(A' \cup B') =$_____ [ ]
A) 1 B) 0 C) $1-P(A \cap B)$ D) $P(B)-P(A \cap B)$

29. If X and Y are independent random variable then $E(X+Y)$=_____ [ ]
A) $E(X)+E(Y)$ B) $E(X)-E(Y)$ C) $E(X)\,E(Y)$ D) $Y\,E(X)$

30. If $P(A)=\frac{1}{2}, P(B)=\frac{1}{4}, P(A \cap B)=\frac{1}{2}$ then $P(B/A)$ = _____ [ ]
A) $\frac{1}{2}$ B) $\frac{1}{6}$ C) 1 D) 0

31. If X is a continuous random variable and $Y = 2X + 3$ constant then $E(Y)$=_____[ ]
A) $2E(X)+3$ B) $E(X)+3$ C) $2E(X)-3$ D) $2E(X)$

32. Two dice are thrown. The probability of getting at least one four is_____ [ ]

A) $\frac{7}{36}$ B) $\frac{10}{36}$ C) $\frac{11}{36}$ D) $\frac{5}{36}$

33. If $P(A)=a$, $P(B)=b$ and $P(A\cap B)=c$ then $P(A^C)=$_____ [ ]

A) 1-a B)1-b C) 1-c D) a

34. $P(A\cap B')=$_____ [ ]

A) $P(A)-P(A'\cap B)$ B) $P(B)-P(A'\cap B)$ C) $P(A)-P(A\cap B)$ D) $P(B)-P(A\cap B)$

35. If a dice is thrown then probability of getting 2 or 3 is [ ]

A) $\frac{1}{6}$ B) $\frac{5}{6}$ C) $\frac{1}{3}$ D) $\frac{2}{3}$

36. Event b is said to be independent of event a if $P(B/A)=$ _____ [ ]

A) $P(A)P(B)$ B) $P(B)$ C) $P(A)$ D) 1

37. If K is any constant then V(2K) =_____ [ ]

A) 0 B) K C) 1 D) -1

38. The probability of an event that must occur is _____ [ ]

A) 0 B) 0.1 C) 1 D) -1

39. If A and B are independent events then $P(A\cap B)=$_____ [ ]

A) $P(A)P(B)$ B) $P(B)-P(A)$ C) 0 D) $P(A')P(B)$

40. If $P(A)=\frac{1}{4}, P(B)=\frac{1}{2}, P(A\cap B)=\frac{1}{4}$ then $P(B/A)=$ _____ [ ]

A) 1 B) $\frac{1}{6}$ C) $\frac{3}{4}$ D) $\frac{2}{3}$

41. If X is a continuous random variable and $Y=2X+3$ constant then $V(Y)=$_____ [ ]

A) $4V(X)+3$ B) $4V(X)$ C) $2V(X)+3$ D) $4V(X)+9$

42. Two dice are thrown. The probability of getting at least one four is____ [ ]

A) $\frac{7}{36}$ B) $\frac{10}{36}$ C) $\frac{11}{36}$ D) $\frac{5}{36}$

43. If X is a random variable then $E(6X)=$_____ [ ]

A) $E(X)$ B) $-E(X)$ C) $6E(X)$ D) $36E(X)$

44. If $P(A)=a$, $P(B)=b$, $P(A\cap B)=c$ then $P(A\cup B)=$_____ [ ]

A) $a+b+c$ B) $a+c$ C) $a+b-c$ D) $a-b+c$

UNIT-II

1. The mean of uniform probability distribution $f(x)=\frac{1}{n}$ for $x=1,2,3....n$ is [ ]

   A) 0 B) n^2 C) $\frac{n-1}{2}$ D) $\frac{n+1}{2}$

2. In a Poisson distribution if $2P(x=1)=P(x=2)$ then the variance is [ ]

   A) 0 B) 4 C) 2 D) -4

3. The mean of the Normal distribution is [ ]

   A) 0 B) μ C) μ^2 D) 1

4. The graph of the normal distribution is symmetrical with respect to the line_____ [ ]

   A) 0 B) $x=\mu$ C) $x\neq\mu$ D) 1

5. If mean of the binomial distribution is 8 and variance is 6, the mode of the distribution is [ ]

   A) 8 B) 6 C) 7 D) 5

6. The area under the whole normal curve is _____ [ ]

   A) 0 B) 0.1 C) unity D) -1

7. Mean of the binomial distribution is 6 and variance is 2 then "n" is _____ [ ]

   A) 0.33 B) 1.33 C) -0.33 D) -1.33

8. The standard normal variate z is =_____ [ ]

   A) 0 B) $\frac{x+\mu}{\sigma}$ C) $\frac{x-\sigma}{\mu}$ D) $\frac{x-\mu}{\sigma}$

9. If the mean of a poisson distribution is 8, then its variance is_____ [ ]

   A) 8 B) -8 C) 1 D) -1

10. The variance of uniform probability distribution $f(x)=\frac{1}{n}$ for $x=1,2,3....n$ is [ ]

    A) 0 B) $\frac{n^2-1}{6}$ C) $\frac{n^2+1}{12}$ D) $\frac{n^2-1}{12}$

11. The area under the whole normal curve is _____ [ ]

    A) 0 B) 0.1 C) unity D) -1

12. The variance of the Normal distribution is [ ]

    A) 0 B) σ C) σ^2 D) 1

13. If mean of the binomial distribution is 3 and variance is $\frac{9}{4}$, the value of n is [ ]

    A) 12 B) 10 C) 11 D)3

14. The mode of normal distribution is [ ]

    A) 0 B) μ C) $x\neq\mu$ D) 1

15. In a Poisson distribution if $2P(x=0)=P(x=2)$ then the variance is [ ]

    A) 0 B) 2 C) -2 D) -4

16. If mean of the Poisson distribution is 6 then the variance is_____ [ ]

    A) 6 B) 5 C) -6 D) 0

17. The graph of the normal distribution is symmetrical with respect to the line_____ [ ]

    A) 0 B) $x=\mu$ C) $x-\mu$ D) 1

18. If the mean of a poisson distribution is 8, then its variance is_____ [ ]

    A) 8 B) -8 C) 1 D) -1

19. The standard normal curve is _____ about 0 [ ]

    A) shape B) standard deviation C) not symmetrical D) symmetrical

20. If the mean of a poisson distribution with parameter $\lambda=2$ is___ [ ]

A) 0 B) 2 C) -2 D) 1

21. If mean of the binomial distribution is 8 and variance is 6, the mode of the distribution is [ ]
A) 8 B) 6 C) 7 D) 5

22. The area under the whole normal curve is _____ [ ]
A) 0 B) 0.1 C) unity D) -1

23. In a Poisson distribution if $3P(x=2)=P(x=4)$ then the variance is [ ]
A) 0 B) 4 C) 2 D) 6

24. Mean of the binomial distribution is 6 and variance is 2 then mode= _____ [ ]
A) 6 B) 5 C) -6 D) -5

25. The standard normal variate z is =_____ [ ]
A) 0 B) $\frac{x+\mu}{\sigma}$ C) $\frac{x-\sigma}{\mu}$ D) $\frac{x-\mu}{\sigma}$

26. The total area of under the standard normal curve is _____ [ ]
A) 0 B) $x=\mu$ C) $x\neq\mu$ D) 1

27. If the variance of a binomial distribution is_____ [ ]
A) np B) -np C) npq D) - npq

28. The variance of uniform probability distribution $f(x)=\frac{1}{n}$ for $x=1,2,3....n$ is [ ]
A) 0 B) $\frac{n^2-1}{6}$ C) $\frac{n^2+1}{12}$ D) $\frac{n^2-1}{12}$

29. If the variance of a poisson distribution with parameter $\lambda=2$ is___ [ ]
A) 0 B) 2 C) -2 D) 1

30. The mode of normal distribution is [ ]
A) 0 B) μ C) $x\neq\mu$ D) 1

31. If mean of the binomial distribution is 5 and variance is $\frac{10}{3}$, the value of n is [ ]
A) 12 B) 10 C) 11 D) 15

32. The area under the whole normal curve is _____ [ ]
A) 0 B) 0.1 C) unity D) -1

33. In a Poisson distribution if $3P(x=2)=P(x=4)$then the mean is [ ]
A) 0 B) 4 C) 2 D) 6

34. A normal distribution is completely determined by the mean and_____ [ ]
A)shape B) standard deviation C) symmetric D) not symmetric

35. If the mean of a binomial distribution is _____ [ ]
A)np B) -np C)npq D) -npq

36. If mean of the Poisson distribution is 6 then the variance is_____ [ ]
A) 6 B) 5 C) -6 D) 0

UNIT-III

1. Number of observations are 30 and value of arithmetic mean is 15 then sum of all values is [ ]
   A) 15 B) 450 C) 200 D) 45
2. In arithmetic mean, sum of deviations of all recorded observations must always be [ ]
   A) 0 B) 1 C) 2 D) 3
3. Arithmetic mean is 25 and all sum of observations is 350 then number of observations are [ ]
   A) 14 B) 450 C) 200 D) 45
4. Arithmetic mean is 12 and number of observations are 20 then sum of all values is [ ]
   A) 15 B) 450 C) 240 D) 45
5. Arithmetic mean is multiplied to coefficient of mean absolute deviation to calculate the [ ]
   A) absolute mean deviation B) absolute median deviation
   C) relative mean deviation D) relative median deviation
5. The arithmetic mean of a set of 10 numbers is 20. If each number is first multiplied by 2 and then increased by 5, then what is the mean of new numbers [ ]
   A) 20 B) 25 C) 40 D) 45
6. Sum of mode and median of the data [ ]
   A) 26 B) 31 C) 36 D) 25
7. The arithmetic mean of the first ten whole numbers is [ ]
   A) 5.5 B) 5 C) 4 D) 4.5
8. Find mode value of 2,3,4,5,2,7,2,9 [ ]
   A) 3 B) 4 C) 2 D) 5
9. Find median of 1,2,3,4,5,6,7 [ ]
   A) 5 B) 4 C) 2 D) 7
10. Moments about μ_1 [ ]
    A) 1 B) 0 C) 2 D) 45
11. β_1 = [ ]
    A) μ_1/μ_2 B) $\frac{\mu_3^2}{\mu_2^3}$ C) $\frac{\mu_1^2}{\mu_2^3}$ D) None
12. β_2 = [ ]
    A) μ_1/μ_2 B) $\frac{\mu_3^2}{\mu_2^3}$ C) $\frac{\mu_4}{\mu_2^2}$ D) None
13. If β_2 =3 and γ_2=0 then the curve is [ ]
    A) Mesocurtic B) Platykurtic C) Leptokurtic D) None
14. Find mode value of 2,3,4,5,7,9,5,1 [ ]
    A) 3 B) 4 C) 2 D) 5
15. Find median of 1,2,3,4,5,6,7,8,9 [ ]
    A) 5 B) 4 C) 2 D) 7
16. μ_1^1 = [ ]
    A) $\bar{x}$ -A B) $\bar{x}$ +A C) $\bar{x}$ D)0
17. If β_2 < 3 and γ_2< 0 then the curve is [ ]
    A) Mesocurtic B) Platykurtic C) Leptokurtic D) None
18. Find β_1 where μ_3=3, μ_2 =2 [ ]
    A) 1.125 B) 0.59 C) 0.2 D) 0.224
19. Find mode value of 3,4,5,4,7,2,9,4 [ ]
    A) 3 B) 4 C) 2 D) 5
20. If β_2 > 3 and γ_2> 0 then the curve is [ ]
    A) Mesocurtic B)Platykurtic C)Leptokurtic D)None
21. Find β_1 where μ_3=4, μ_2 =3 [ ]
    A) 1.125 B) 0.59 C) 0.2 D) 0.224

22. Find median of 1, 2, 3, 4, and 5 [ ]
A) 5 B) 4 C) 2 D) 3

23. Find μ_1^1 where $\bar{x}$ =5 and A=5 [ ]
A) 15 B) 450 C) 200 D) 10

24. Find μ_1^1 where $\bar{x}$ =50 and A=5 [ ]
A) 15 B) 45 C) 200 D) 10

25. Find β_1 where μ_3=5, μ_2 =5 [ ]
A) 1.125 B) 0.59 C) 0.2 D) 0.224

26. Find μ_1^1 where $\bar{x}$ =15 and A=5 [ ]
A) 15 B) 45 C) 200 D) 10

27. Find β_1 where μ_3=7, μ_2 =6 [ ]
A) 1.125 B) 0.59 C) 0.2 D) 0.224

28. Increase in one variable leads to Increase the other variable then the correlation is [ ]
A) Positive B) Negative C) Uncorrelated D) None

29.Find μ_1^1 where $\bar{x}$ =10 and A=10 [ ]
A)15 B)45 C)0 D)10

30. Find μ_1^1 where $\bar{x}$ =50 and A=40 [ ]
A)15 B)45 C)2 D)10

31. The arithmetic mean (average) of the first 12 whole numbers is [ ]
A)5.5 B)5 C)6.5 D)4.5

32. Increase in one variable leads to Increase the other variable then the correlation is [ ]
A)Positive B)Negative C)Uncorrelated D)None

33.Increase in one variable leads to decrease the other variable then the correlation is [ ]
A)Positive B)Negative C)Uncorrelated D)None

34. There is no relation between two variable then the correlation is [ ]
A)Positive B)Negative C)Uncorrelated D)None

35.Rank correlation is denoted by [ ]
A)α B)β C)γ D)ρ

36. Correlation coefficient is denoted by [ ]
A)α B)β C)r D)ρ

37. Find mean value of 1,2,3,4 [ ]
A)2.4 B)2.5 C)2.6 D)2.7

38.Regression coefficient b_{xy}= [ ]
A) $r\frac{\sigma_x}{\sigma_y}$ B) $r\frac{\sigma_z}{\sigma_y}$ C) $r\frac{\sigma_y}{\sigma_x}$ D)0

39. Regression coefficient r is [ ]
A)b_{xy} X b_{yx} B) b_{xy} - b_{yx} C) b_{xy} + b_{yx} D) b_{xy} / b_{yx}

40. Regression coefficient b_{yx}= [ ]
A) $r\frac{\sigma_x}{\sigma_y}$ B) $r\frac{\sigma_z}{\sigma_y}$ C) $r\frac{\sigma_y}{\sigma_x}$ D)0

UNIT-IV

1.If $y = a_0 + a_1x + a_2x^2$ then the third normal equation by least squares method is $\sum x^2y =$ [ ]

A)$na_0 + a_1\sum x + a_2\sum x^2$ B)$a_0\sum x^2 + a_1\sum x^3 + a_2\sum x^4$

C)$a_0\sum x + a_1\sum x^2 + a_2\sum x^3$ D)$a_0\sum x^2 + a_1\sum x^4 + a_2\sum x^3$

2. If $y = a + bx$ then first normal equation by least square method is$\sum y =$_____ [ ]

A)$a + bx$ B)$na + b\sum x$ C)$\sum x + b\sum x^2$ D) $a\sum x + b\sum x^2$

3. If $y = a + bx + cx^2$ then the second normal equation is [ ]

A)$a\sum x^2 + b\sum x^3 + c\sum x^4$ B)$na + b\sum x + c\sum x^2$

C) $a\sum x + b\sum x^2 + c\sum x^3$ D) $na + b\sum x^2 + c\sum x$

4.If $y = a_0 + a_1x + a_2x^2$ then the first normal equation by least square method is $\sum y =$ [ ]

A) $na_0 + a_1\sum x + a_2\sum x^2$ B) $a\sum x + b\sum x^2 + c\sum x^3$

C) $na + b\sum x$ D)$a_0\sum x + a_1\sum x^2$

5.If $\sum x_i = 15, \sum y_i = 30, \sum x_iy_i = 110, \sum x^2 = 55$ and $y = a_0 + a_1x$ then $a_0 =$ [ ]

A)2.2 B)1.52 C)1.2 D)0

6.If $y = a_0 + a_1x$ and $\sum x = 15, \sum y = 30. \sum xy = 110, \sum x^2 = 55$ then $a^1 =$ [ ]

A)1.89 B)2.5 C)1.2 D)2

7. If $y = a + bx + cx^2$ then first normal equation of below data is [ ]

X	0	1	2	3	4
y	1	1.8	1.3	2.5	6.3

A) 12.9=5a+10b+30c B) 15=5a+10b+31c

C) 15=5a+10b+29c D) 35.1=5a+10b+28c

8. If $y = a + bx + cx^2$ then second normal equation of below data is [ ]

X	0	1	2	3	4
y	1	1.8	1.3	2.5	6.3

A) 37.1=8a+28b+100c B)35.1=10a+28b+10c

C) 37.1=10a+30b+100c D)37=10a+10b+28c

9. The power curve is _____ [ ]

A) $y = a + bx + cx^2$ B)$y = ae^x$ C)$y = ax^b$ D)$y = a + bx$

10. The probability of committing type-I error is denoted by [ ]

A) α B)1-α C)β D)1-β

11. The probability of committing type-II error is denoted by [ ]

A) α B)1-α C)β D)1-β

If n=144, σ=4&x=150 then 95% confidence interval for μ is [ ]

A) (149.35,150.65) B)(139.7,140.2) C)(172.1,182.12) D)(170.1,182.2)

12. In testing of significance for single proportion, then test statistic is [ ]

A) $\frac{P-p}{\sqrt{\frac{PQ}{n}}}$ B)$\frac{p-P}{\sqrt{\frac{pq}{n}}}$ C)$\frac{p-P}{\sqrt{\frac{PQ}{n}}}$ D) $\frac{P-p}{\sqrt{npq}}$

13. Whether the test is one tailed or two tailed depends on __ hypothesis [ ]

A) Null B) Alternative C)Simple D)None

14. When null hypothesis is accepted, then the result is said to be ____ [ ]

A) Non significant B) Significant C) Error D) None

15. When null hypothesis is rejected, then the result is said to be ____ [ ]

A) Non significant B) Significant C) Error D) None

16.If $\bar{x} = 116, \mu = 120, \sigma^2 = 225$ & $n = 100$ then Z=_____ [ ]

A)2.2 B)0.92 C)1.85 D)3.1

17.Amoung 900 people in a state 90 are found to be chapathi eaters, The 99% Confidence interval for the true proportion is [ ]

A)(0.07,0.13) B)(0.8,0.12) C)(0.8,1.2) D)None

18.A hypothesis is true, but is rejected, this is an error of type [ ]

A)I B)II C)I&II D)None

19. A hypothesis is false, but is accepted, this is an error of type [ ]

A)I B)II C)I&II D)None

20.The Z-test is applicable when the sample sizes are _____ [ ]

A) Small B) Equal C) Large D)None

21. Normal curve varies from _____ [ ]

A)-∞to∞ B) 0to∞ C) -∞to0 D) None

22.The value of $Z_{\frac{\alpha}{2}}$ at 5% level of significance is [ ]

A)1.65 B)1.96 C)2.57 D)2.5

23.In testing of significance for single mean then the test statistic is [ ]

A)$\frac{\bar{X}-\mu}{\frac{\sigma}{\sqrt{n}}}$ B)$\frac{X-\mu}{\frac{\sigma}{\sqrt{n}}}$ C)$\frac{X-\mu}{\frac{\sigma}{n}}$ D)None

24.The N.c is _____ about Z=0 [ ]

A) Symmetric B)Assymmetric C)Uniform D)None

25.A sample of size 100 is taken whose standard deviation is 5. What is the maximum error with probability 0.95 [ ]

A) 0.8 B)0.7 C)1 D)0.98

26.If n=100,σ=5.1,$\bar{x}$=21.6, 95% confidence interval for population mean μ is [ ]

A) (20.60, 22.59) B) (80.23, 83.76) C) (2.6, 2.2) D) None

27. Find the value of the finite population correction factor for n=10&N=100 [ ]

A) 9.9 B) 0.99 C) 0.09 D) None

28.A sample of size 64 and mean 60 was taken from a population whose S.d is10. Find 95% confidence interval for the mean [ ]

A) (55.57, 62.45) B)(57.55,45.62) C)(57.55,62.45) D)None

29. The value of $Z_{\frac{\alpha}{2}}$ at 1% level of significance is ------ [ ]

A) 2.58 B) 1.96 C) 1.57 D) 2.5

30. The value of $Z_{\propto}$ at 1% level of significance is ------ [ ]

A) 2.98 B) 2.33 C) 1.57 D) 1.96

31. The value of $Z_{\propto}$ at 5% level of significance is ------ [ ]

A) 2.98 B) 2.33 C) 1.64 D) 2.51

32. If $n > 30$, ------distribution is used [ ]

A) Z-test B) F-test C)t-testD) χ -test

33.In testing of two means the test statistic is------ [ ]

A) $\frac{\overline{x_1}-\overline{x_2}}{\sqrt{\frac{\sigma_1^2+\sigma_2^2}{n}}}$ B) $\frac{\overline{x_1}-\overline{x_2}}{\sqrt{\frac{\sigma_1^2}{n_1}+\frac{\sigma_2^2}{n_2}}}$ C) $\frac{\overline{x_1}-\overline{x_2}}{\sqrt{\frac{\sigma_1^2}{n_1}-\frac{\sigma_2^2}{n_2}}}$ D) $\frac{\overline{x_1}+\overline{x_2}}{\sqrt{\frac{\sigma_1^2}{n_1}+\frac{\sigma_2^2}{n_2}}}$

34. If $n < 30$,------distribution is used [ ]

A) Z-test B) F-test C)t-testD) χ -test

35. If $n = 40,\ \bar{x} = 59.1, \sigma = 5.2\ \ \mu = 57.4$ *then* $z = ---$ [ ]

A) 2.06 B) 3.06 C) 4.06 D) 0.06

36. If $n = 400,\ \bar{x} = 40, \sigma = 10, \mu = 38$ then 95% confidence Interval for population mean is----- [ ]

A) (2.06, 0.98)B) (39.02, 40.98) C) (2.06, 0.98)D) (2.06, 0.98)

37. If $n_1 = 42,\ \overline{x_1} = 15,\ n_2 = 80,\ \overline{x_2} = 11.5,\ \sigma_1^2 = 2.0,\ \sigma_2^2 = 1.5$ *then* $Z = --$ [ ]

A) 2.58 B) 1.58 C) 13.58 D) 20.58

38. If n=5 $\sum x = 15, \sum y = 204, \sum xy = 748, \sum x^2 = 55$, and y=a+bx then by the method of least squares, a=_____ [ ]

A) 0 B) 1 C) 2 D) None

39.If n=5 $\sum x = 15, \sum y = 204, \sum xy = 748, \sum x^2 = 55$, and y=a+bx then by the method of least squares, b=_____ [ ]

A) 0 B) 13.6 C) 2 D) None

40. If n=9$\sum x = 72, \sum y = 36, \sum xy = 282, \sum x^2 = 588$, and y=a+bx then by the method of least squares,a=_____ [ ]

A)8 B)9 C)10 D)20

UNIT-V

1. A t-curve is_____about 0 [ ]
   A) Symmetric B) Asymmetric C) Uniform D) Multimodal

2. Chi-square distribution_____ [ ]
   A) Symmetrical B) Continuous C) Uniform D) Multimodal

3. In a t-distribution of sample size n, the degrees of freedom are_____ [ ]
   A) n B) $n-1$ C) $n+1$ D) $n-2$

4. If $\bar{x} = 17.85, \mu = 18.5, s = 1.955$ and the sample size is 14 then $|t|$ = [ ]
   A) 1.199 B) 2.199 C) 3.199 D) 4.199

5. The deviations of observed frequencies from expected frequencies are used in _test [ ]
   A) Chi-square B) F C) t D) None

6. If $\bar{x} = 14.9, \mu = 14, s = 0.42$ and the sample size is 5 then t = [ ]
   A) 4.29 B) 3.29 C) 2.29 D) 1.29

7. If $\bar{x} = 31, \bar{y} = 28, s = 2.13, n_1 = 6 and\ n_2 = 7$ then t = [ ]
   A) 1.53 B) 2.53 C) 3.53 D) 4.53

8. If $S_1^2 = 666.7, S_2^2 = 1109.33\ then\ F =$ [ ]
   A) 0.66 B) 1.66 C) 2.66 D) 3.66

9. If $S_1^2 > S_2^2$ then F=_____ [ ]
   A) $\frac{S_1^2}{S_2^2}$ B) $\frac{S_2^2}{S_1^2}$ C) $\frac{S_1}{S_2^2}$ D) $\frac{S_2}{S_1^2}$

10. Range of F-distribution is_____ [ ]
    A) $0 to \infty$ B) $-\infty to \infty$ C) $-\infty to 0$ D) None

11. In a goodness of fit test, the degrees of freedom are_____ [ ]
    A) k-1 B) k+1 C) n-k D) n+k

12. The t-test is applicable to samples for which n is _____ [ ]
    A) =30 B) >30 C) <30 D) None

13. Which distribution is used to test the equality of population variance [ ]
    A) Chi-square B)t C) F D) None

14. The shape of t-distribution is similar to that of____ distribution [ ]
    A) Chi-square B) Uniform C) t D) Normal

15. If $\bar{x} = 46, \bar{y} = 57, S = 11.03, n_1 = 5 and\ n_2 = 7$ then $|t|$ = [ ]

A) 0.7 B) 1.7 C) 3.7 D) 4.7

16. If $S_1^2 = 1109.33, S_2^2 = 666.7$ *then* $F =$ [ ]
A) 0.66 B) 1.66 C) 2.66 D) 3.66

17. If $S_2^2 > S_1^2$ then F=_____ [ ]
A) $\frac{S_1^2}{S_2^2}$ B) $\frac{S_2^2}{S_1^2}$ C) $\frac{S_1}{S_2^2}$ D) $\frac{S_2}{S_1^2}$

18. The F-distribution is _____ [ ]
A) Uniform B) Continuous C) Discrete D) None

19. A Chi-square is_____skewed [ ]
A) Positive B) Left C) Right D) Negative

20. The unit of the F-distribution are always ____ [ ]
A) Right B) Left **C)** Positive D) Negative

21. Which distribution is used to test the equality of population means [ ]
A) Chi-square B) F **C)** t D) None

22. $t_{1-\alpha}$ =_____ [ ]
A) t_α **B)** $-t_\alpha$ C) $t_{\alpha-1}$ D) $-t_{\alpha-1}$

23. If $\bar{x} = 17.85, \mu = 18.5, s = 1.955$ and the sample size is 10 then $|t|$ = [ ]
A) 0.05 **B)** 1.05 C) 2.05 D) 3.05

24. If $\bar{x} = 46, \bar{y} = 57, S = 11.03, n_1 = 6$ *and* $n_2 = 7$ then $|t|$ = [ ]
A) 0.78 B) 4.79 C) 3.79 **D)** 1.79

25. If $S_1^2 = 1100.99, S_2^2 = 1200$ *then* $F =$ [ ]
A) 1.09 B) 2.09 C) 4.09 D) 3.09

26. In a t-distribution of sample size n, the degrees of freedom are_____ [ ]
A) n **B)** $n-1$ C) $n+1$ D) $n-2$

27. The range variable chi-square assumes only_____values [ ]
A) Positive B)Negative C) Non-negative D) Zero

28. $F_{1-\alpha}(\nu_1, \nu_2)$= _____ [ ]
A) $F_\alpha(\nu_2, \nu_1)$ **B)** $\frac{1}{F_\alpha(\nu_1, \nu_2)}$ C) $F_\alpha(\nu_1, \nu_2)$ D) $\frac{1}{F_\alpha(\nu_2, \nu_1)}$

29. The t-test is applicable to samples for which n is _____ [ ]
A) =30 B) >30 **C)** <30 D) None

30. Range of t-distribution is_____ [ ]
A) $0 to \infty$ **B)** $-\infty to \infty$ C) $-\infty to 0$ D) None

31. ____ distribution is used to make inferences for one population standard deviation [ ]
A) Chi-square **B)** F C) t D) None

32. If $\bar{d} = 2, S^2 = 30, n = 5$ then $|t|$= [ ]
A) 0.82 B) 3.82 C) 2.82 D) 1.82

33. The total area under a t-curve equals_____ [ ]
A) 0 B) -1 **C)** 1 D) None

34. ____ distribution is used to make inferences for one population standard deviation [ ]
A) Chi-square **B)** F C) t D) None

35. If $\bar{x} = 1.77, \bar{y} = 1.93, S = 0.157, n_1 = 6 \text{ and } n_2 = 6$ then $|t|$ = [ ]
A) 0.77 B) 2.77 C) 3.77 **D)** 1.77

36. If $S_1^2 = 10, S_2^2 = 9.82$ *then* $F =$ [ ]
A) 1.018 B) 2.018 C) 3.018 **D)** 1.77

37. Whether the test is one tailed or two tailed depends on _____ hypothesis [ ]
A) Null B) Alternate C) Simple D) none

38. If arrival rate is 3 per hour &service rate is 5 per hour then traffic intensity is [ ]
A) $\frac{4}{5}$ B) $\frac{3}{2}$ C) $\frac{3}{5}$ D) none

39. The shape of t- distribution is similar to that of [ ]
A) Chi – square distribution B) F- distribution C) Normal distribution D) none

40. If null hypothesis is accepted, then the result is said to be [ ]
A) Null significant B) Significant C) Error D) none