Test Booklet No. _____

This booklet consists of 100 questions and 16 printed pages.

RGUCET/2024/__/_

Series NIL

RGUCET 2024
Common Entrance Test, 2024

MASTER OF SCIENCE (STATISTICS)

Full Marks: 100 **Time: 2 Hours**

Roll No. | | | | | | | | |

Day and Date of Examination: _____

Signature of Invigilator(s) _____

Signature of Candidate _____

General Instructions:

PLEASE READ ALL THE INSTRUCTIONS CAREFULLY BEFORE MAKING ANY ENTRY.

1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. Candidate must write his/her Roll Number on the space provided.
3. This Test Booklet contains 100 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark. There shall be negative marking of 0.25 against each wrong attempt.
4. Please check the Test Booklet to verify that the total pages and total number of questions contained in the test booklet are the same as those printed on the top of the first page. Also check whether the questions are in sequential order or not.
5. Candidates are not permitted to enter into the examination hall after the commencement of the entrance test or leave the examination hall within one hour thirty minutes.
6. Making any identification mark in the OMR Answer Sheet or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.
7. Candidates shall maintain silence inside and outside the examination hall. If candidates are found violating the instructions mentioned herein or announced in the examination hall, they will be summarily disqualified from the entrance test.
8. In case of any dispute, the decision of the Entrance Test Committee shall be final and binding.
9. The OMR Answer Sheet consists of two copies, the Original copy and the Student's copy.

1	Which of the following crops helps in nitrogen fixation?				Answer option
	a) Rice	b) Wheat	c) Beans	d) Maize	(c)
2	The term “Fourth Estate” refers to				Answer option
	a) Backward States	b) Judiciary	c) Press	d) Tea Estates	(c)
3	SAIL’s plant in Karnataka is situated at				Answer option (a,b,c or d)
	a)Bangalore	b) Bhadravati	c) Belgaum	d) Hubli	(b)
4	The name of India’s first carrier is				Answer option
	a) INS Vikrant	b) INS Nilgiri	c) INS Kukri	d) INS Himgiri	(a)
5	Thalassemia is a hereditary disease affecting-				Answer option
	a) Blood	b) Lungs	c) Heart	d) Kidney	(a)
6	Our country is a spiritual country, theirs _____ religious.				Answer option (a)
	a. Is	b. Are	c. Also	d. Have	is
7	Match the following pairs of synonyms A. Reconcile — I. Anticipated B. Perceived — II. Accommodate C. Advocate — III. Echelons D. Hierarchy — IV. Speaker				Answer option (a)
	a. A-II, B-I, C-IV, D-III	b. A-I B-II C-III D-IV	c. A-IV B-II C-III D-I	d. A-I B-IV C-II D-III	A-II B-I C-IV D-III
8	Which of the following sentences is correctly punctuated?				Answer option (a)
	a. Everyone has special skills; some people use them very well.	b. Everyone has special skills; and, some people use them very well.	c. Everyone has special skills some people use them very well.	d. Everyone has special skills and, some people use them very well.	Everyone has special skills; some people use them very well.
9	'One who possesses many talents' One word substitute for the given word is?				Answer option (c)
	a. Exceptional	b. Wisdom	c. Versatile	d. Nubile	Versatile

10	Select the most appropriate antonym of the underlined word. The ***<u>incidental</u>*** meeting with the investors at Mr. Sinha's party helped him expend his business.				Answer option (c)
	a. Fortunate	b. Important	c. Planned	d. Arbitrary	Planned
11	Arrange the words given below in a meaningful sequence. 1. Presentation 2. Recommendation 3. Arrival 4. Discussion 5. Introduction				Answer option (c)
	a. 5, 3, 4, 1, 2	b. 3, 5, 4, 2, 1	c. 3, 5, 1, 4, 2	d. 5, 3, 1, 2, 4	3, 5, 1, 4, 2
12	In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, the number of valid votes that the other candidate got, was :				Answer option (b)
	a. 2500	b. 2700	c. 2900	d. 3100	2700
13	A and B invest in a business in the ratio 3: 2. If 5% of the total profit goes to charity and A's share is Rs. 855, the total profit is:				Answer option (c)
	a. 500	b. 1000	c. 1500	d. 2000	1500
14	Select the related number from the given alternatives 18:5::12:?				Answer option
	a) 4	b) 10	c) 3	d) 6	(c)
15	P is the brother of Q. U is the father of T who is the brother of S. R is the mother of Q whose sister is S. How is U related to R?				Answer option
	a) Husband	b) Brother	c) Father	d) Son	(a)
16	Which Indian footballer recently announced his retirement from international football?				d)
	a) Bhaichung Bhutia	b) Gurpreet Singh Sandhu	c) Sandesh Jhingan	d) Sunil Chhetri	Sunil Chhetri
17	Match List I and List II correctly and select your answer using the codes given below: List I / List II A. Baichung Bhutia — i. Brazil B. Christina Ronaldo — ii. Argentina C. Lionel Messi — iii. Portugal D. Ronaldinho — iv. India				a)
	a) A-iv, B-iii, C-ii, D-i	b) A-ii, B-i, C-iv, D-iii	c) A-iv, B-i, C-ii, D-iii	d) A-iv, B-iii, C-i, D-ii	A-iv, B-iii, C-ii, D-i
18	Which of the following statements are true for Electromagnetic Field radiation (EMF) radiation?				a)

	A. It refers to the RF/Electromagnetic energy. B. This energy is released from the antennas of mobile towers and mobile handsets. C. It is classified as non-ionizing and possesses extremely minimal energy levels. D. When RF energy is very strong, such as from radar transmitters, it can be dangerous.				
	a) A-True, B-True, C-True, D-True	b) A-False, B-True, C-True, D-True	c) A-True, B-False, C-True, D-True	d) A-True, B-True, C-False, D-True	A-True, B-True, C-True, D-True
19	Consider the Assertion (A) and Justification (B) given below: A: Assertion: PM Modi laid the foundation stone for three semiconductor plants. B: Justification: Establishing a semiconductor fabrication plant in India can lead to the country's economic growth and technological advancement. Choose the correct answer from the code given below:				a)
	a) Both statements are correct and (B) is the correct explanation of (A).	b) Both statements are true and (B) is not the correct explanation of (A).	c) Statement (A) is correct and Statement (B) is incorrect.	d) Statement (B) is correct and Statement (A) is incorrect.	Both statements are correct and (B) is the correct explanation of (A).
20	The Udupi Power Corporation Limited thermal plant was ordered to pay compensation for the cause of damage to the environment and the health of people around. The thermal plant is owned by whom of the following?				c)
	a) Reliance Energy	b) NTPC	c) Adani Group	d) Tata Power	Adani Group
21	Four non-zero vector will always be				Answer option
	a) Linearly depedent	b) Linearly independent	c) Either (a) or (b)	d) None of the above	(a)
22	In a three dimensional xyz space, the equation $x^2 - 5x + 6 = 0$ represents				Answer option
	a) Points	b) planes	c) curves	d) pair of straight line	(b)
23	The number of planes that are equidistant from four non-coplanar points is _____				Answer option
	a) 3	b) 4	c) 7	d)9	(c)

24	If P is a point on the parabola $y = 4 + x^2$ which is closest to the straight $y = 4x - 1$ then the coordinates of P are _____				Answer option
	a) (-2,8)	b) (1.5)	c) (3,13)	d) (2,8)	(d)
25	$\frac{d(\log_e X)(\log_a X)}{dx}$ =?				Answer option
	a) (1/X) $\log_a X$	b) (1/X) $\log_X X$	c) (2/X) $\log_a X$	d) (2/X)logX	(c)
26	Let $f(x)$ be a function satisfying $f(x) + f(\pi - x) = \pi^2$ for all x in R. Then $\int_0^{\pi} f(x) sinx\, dx$ is equal to				Answer option
	a) a) $\frac{\pi^2}{2}$	b) π^2	c) $\pi^2/4$	d) $2\pi^2$	(b)
27	If the progressions 3,10,17,… and 63,65,67,… are such that their n^{th} terms are equal, the n equal to				Answer option
	a) 13	b) 1	c) 19	d) 18	(a)
28	Ten different letters of an alphabet are given. Words with five letters are formed from these given letters. Then the number of words which have at least one letter repeated is				Answer option
	a) 69760	b) 30240	c) 99784	d) None of these	(a)
29	The value of k for which the equation (k-2) x^2 + 8 x+ k+4=0 has both roots real distinct and negative is				Answer option
	a) 0	b) 2	c) 3	d) 4	(b)
30	The differential equation $\frac{dy}{dx} = \frac{\sqrt{1-y^2}}{y}$ determine a family of circles with (a). Variable radii and a fixed Centre at (0,1) (b). Variable radii and a fixed Centre at (0,-1) (c) . Fixed radius 1 and variable Centres along the X-axis (d). Fixed radius X-axis 1 and variable centres along the Y-axis				Answer option
	a) Only (a) and (b) true	b) (a) and (d) true	c) Only (c) is true	d) All of the above are true	(c)
31	If $y = y(x)$ and $\frac{2+sinx}{y+1}\left(\frac{dy}{dx}\right) = -cosx, \quad y(0) = 1$ then $y(\frac{\pi}{2})$ equals				Answer option
	a)1/3	b) 2/3	c) -1/3	d) 1	(a)
32	The general solution of the differential equation $(y^2 - x^3)dx - xy\, dy = 0 \ (x \neq 0)$ is (where, C is a constant of integration)				Answer option (a,b,c or d)
	a) $y^2 - 2x^2 + Cx^3 = 0$	b) $y^2 + 2x^3 + Cx^2 = 0$	c) $y^2 + 2x^2 + Cx^3 = 0$	d) $y^2 - 2x^3 + Cx^2 = 0$	(b)
33	Let $y = y(x)$ be the solution of the differential equation $x\frac{dy}{dx} + y = xlog_e x, \ (x > 1)$. If $2y(2) = log_e 4 - 1$, then $y(e)$ is equal to				Answer option (a,b,c or d)

	a) $\frac{-e}{2}$	b) $\frac{-e^2}{2}$	c) $\frac{e}{4}$	d) $\frac{e^2}{4}$	(c)
34	If $B = \begin{bmatrix} 5 & 2\alpha & 1 \\ 0 & 2 & 1 \\ \alpha & 3 & -1 \end{bmatrix}$ is the inverse of a 3×3 matrix A, then the sum of all values of α for which $\|A\| + 1 = 0$ is				Answer option
	a) 0	b) -1	c) 1	d) 2	(a)
35	If $\int \frac{x+1}{\sqrt{2x-1}} dx = f(x)\sqrt{2x-1} + c$ where c is a constant of integration, then $f(x)$ is equal to				Answer option
	a) $\frac{2}{3}(x+2)$	b) $\frac{1}{3}(x+4)$	c) $\frac{2}{3}(x-4)$	d) $\frac{1}{3}(x+1)$	(b)
36	A value of $\theta \in (0, \frac{\pi}{3})$ for which				Answer option
	a) $\frac{\pi}{9}$	b) $\frac{\pi}{18}$	c) $\frac{7\pi}{24}$	d) $\frac{7\pi}{36}$	(a)
37	If $A = \begin{bmatrix} \alpha & 2 \\ 2 & \alpha \end{bmatrix}$ and $\|A^3\| = 125$, then the value of α is				Answer option
	a) ± 1	b) ± 2	c) ± 3	d) ± 5	(c)
38	The product of three consecutive terms of a GP is 512. If 4 is added to each of the first and the second of these terms, the three terms now form an AP. Then, the sum of the original three terms of the given GP is				Answer option
	a) 36	b) 28	c)32	d)24	(b)
39	The sum $\sum_{k=1}^{20} k \frac{1}{2^k}$ is equal to				Answer option
	a) $2 - \frac{11}{2^{19}}$	b) $1 - \frac{11}{2^{20}}$	c) $2 - \frac{3}{2^{17}}$	d) $2 - \frac{21}{2^{20}}$	(a)
40	If the sum of the first 15 terms of the series $\left(\frac{3}{4}\right)^3 + \left(1\frac{1}{2}\right)^3 + \left(2\frac{1}{4}\right)^3 + 3^3 + \left(3\frac{3}{4}\right)^3 + \cdots$ Is equal to $225k$, then k is equal to				Answer option
	a) 180	b) 27	c)54	d)9	(b)
41	If the system of equation $x + y + az = b$ $2x + 5y + 2z = 6$ $x + 2y + 3z = 3$ has infinitely many solution then 2a+3b is equal to				
	a) 25	b) 28	c) 25	d) 20	(c)
42	Suppose a,b,c are in AP and a^2, b^2, c^2 are in GP. If a<b<c and a+b+c = 3/2 then the value is ?				Answer option

	a) $\frac{1}{2}$ - $\frac{1}{\sqrt{2}}$	b) $\frac{1}{2}$ +$\frac{1}{\sqrt{2}}$	c) 1/2	d) None of these	(a)
43	Sum of n terms of series will be 12+ 16+24+40+… will be?				Answer option
	a) $2(2^n\text{-}1)$ + 8n	b) $2(2^n\text{-}1)$ + 6n	c) $3(2^n\text{-}1)$ + 8n	d) $4(2^2\text{-}1)$ + 8n	(d)
44	If $a1, a2, a3, \ldots$ are is Arithmetic Progression (AP) such that $a1 + a7 + a16 = 40$. Then the sum of the first 15 terms of this AP is				Answer option
	a) 200	b)280	c)120	d)150	(a)
45	If $a_1, a_2, a_3, \ldots$ are in a harmonic progression with a_1=5 and a_2=25. Then the least positive integer n for which $n < 0$ is				Answer option
	a) 22	b)23	c)24	d) 25	(d)
46	The value of $\int \frac{dx}{x^2(x^4+1)^{3/4}}$ is				Answer option
	a) $(\frac{x^4+1}{x^4})^{1/4} + c$	b) $(x^4+1)^{1/4} + c$	c) $-(x^4+1)^{\frac{1}{4}} + c$	d) $-(\frac{x^4+1}{x^4})^{1/4} + c$	(d)
47	If $\int x^5 e^{-x^2} dx = g(x)e^{-x^2} + c$, where c is a constant of integration, then $g(-1)$ is equal to				Answer option
	a) -1	b) 1	c) $-\frac{1}{2}$	d) $-\frac{5}{2}$	(d)
48	The value of $\int \frac{cos^3x+cos^5x}{sin^2x+sin^4x} dx$ is				Answer option
	a) $sinx - 6tan^{-1}(sinx) + c$	b) $sinx - 2(sinx)^{-1} + c$	c) $sinx - 6tan^{-1}(sinx) - 2(sinx)^{-1} + c$	d) $sinx + 5(sinx) - 2(sinx)^{-1} + c$	(c)
49	What is a conjugate prior in Bayesian probability?				Answer option (c)
	(a) A prior distribution that is updated to a posterior distribution using Bayes' theorem.	(b) A distribution used to represent uncertain knowledge	(a) A distribution that remains in the same family as the posterior distribution after updating.	(d) A prior distribution that is independent of the likelihood function.	A distribution that remains in the same family as the posterior

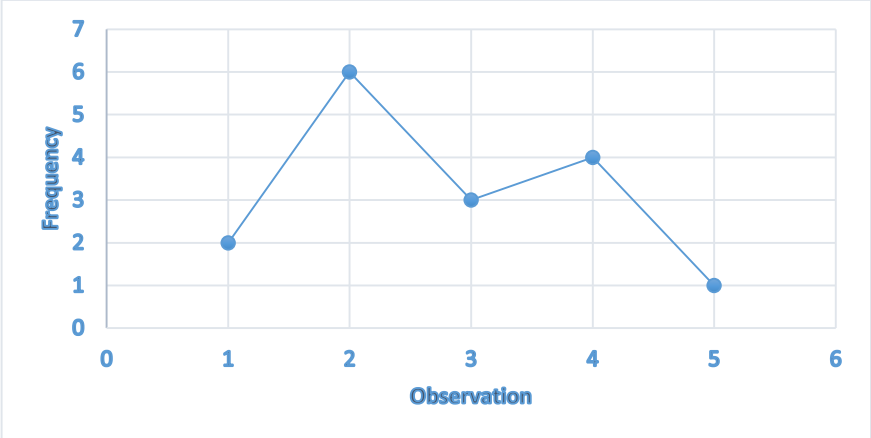
					distribution after updating.
50	What is the formula to calculate Bayesian probability?				Answer option (b)
	(a) P(B|A) = (P(A|B) * P(B)) / P(A)	(b) P(A|B) = (P(B|A) * P(A)) / P(B)	(c) P(A|B) = (P(B) * P(A)) / P(B|A)	(d) P(B|A) = (P(A) * P(B)) / P(A|B)	P(A|B) = (P(B|A) * P(A)) / P(B)
51	A more robust parametric alternative to the independent samples t test is the:				Answer option (d)
	(a) matched pairs t test.	(b) one-way ANOVA	(c) Welch's t test.	(d) Wilcoxon rank-sum test.	Wilcoxon rank-sum test.
52	The production of lignite in India from 1975 to 1985 in Mn. Tones was, 3.03, 4.02, 3.58, 3.3, 2.9, 5.11, 6.31, 6.93, 7.3, 7.8, 8.03 It is expected that the median production of lignite in India is 5Mn. Tones/yr. to test $H_0:M=5$, the value of T^- in Wilcoxon signed rank test is				Answer option (d)
	(a) 28	(b) 27	(c) 25	(d) 26	26
53	If there are 10 symbols of two types, equal in number, the maximum possible number of runs is:				Answer option (c)
	(a) 2	(b) 8	(c) 10	(d) 9	10
54	The statistic H under the Kruskal-Wallis test is approximately distributed as				Answer option (c)
	(a) Student's t	(b) Snedecor's F	(c) Chi-square	(d) Normal deviate Z	Chi-square
55	If X and Y are two independent binomial variates having integer parameters m and n and the same probability parameter p, then which of the following statements is/are true? i. m+n-X-Y has binomial distribution. ii. The conditional distribution of X given the sum X+Y is hypergeometric. iii. The conditional distribution of X given X+Y is again a binomial distribution.				Answer option (c)
	a. (i) is only true	b. (ii) is only true	c. (i) and (ii) are true	d. (i) and (iii) are true	(i) and (ii) are true
56	Let X and Y be two independent binomial variates with parameters (n_1, p_1) and (n_2, p_2) respectively then $X+Y$ is a binomial variate with parameters				Answer option (c)
	a. (n_1+n2, $p1+p2$)	b. (n_1+n2, $(p1+p2)/2$)	c. (n_1+n2, p) if $p1=p2=p$	d. None of the above	(n_1+n2, p) if $p1=p2=p$
57	Let X and Y be two independent Poisson variates. Then the conditional distribution of X given X+Y is				Answer option (a)
	a. Binomial	b. Poisson	c. Negative binomial	d. Geometric	Binomial

58	Match the types of a random variable X with the specific nature of its cumulative distribution functions. **Type of R.V.** / **Nature of cdf** A. Discrete — I. Absolutely continuous B. Continuous — II. Increases by jump only C. Partially discrete, partially continuous — III. Increases by jump and continuously also				Answer option (d)
	a. (A-I), (B-II), (C-III)	b. (A-III), (B-I), (C-II)	c. (A-II), (B-III), (C-I)	d. (A-II), (B-I), (C-III)	(A-II), (B-I), (C-III)
59	A continuous random variable X has the distribution function $F(x) = \begin{cases} 0, & x < 0 \\ kx, & 0 < x < 1 \\ 1, & x > 1 \end{cases}$ The value of *k* is				Answer option (d)
	a. ½	b. ¼	c. 2	d. 1	1
60	Suppose X_1 and X_2 are independent exponential variates each having mean θ. Then the conditional distribution of X_2 given $X_1+X_2=t$ is				Answer option (c)
	(a) Exponential with mean *t/2*	(b) Exponential with mean *t θ/2*	(c) Uniform on (*0, t*)	(d) Uniform on (*0, t θ*)	Uniform on (*0, t*)
61	The average marks of 100 students at a certain examination is 66 and the variance is 64. Assuming that the marks are normally distributed, the number of students getting marks between 50 and 82, is approximately				Answer option (c)
	a. 68	b. 90	c. 95	d. 99	95
62	Let X be a random variable with $P(X = x) = k(x + 1);\ x = 0, 1, 2$ & 3. The value of *k* is				Answer option (c)
	a. 10	b. ¼	c. 1/10	d. 1/6	1/10
63	The distribution function (DF) of an absolutely continuous DF of a random variable always				Answer option (b)
	a. Normal	b. Uniform	c. Beta of first kind	d. Not defined	Uniform
64	The joint pmf of two random variables, X and Y is *f(x,y)=kxy; x,y=0, 1, 2, 3*. The value of *k* is				Answer option (d)
	a. 1/9	b. 1/16	c. 1/12	d. 1/36	1/36
65	The Rao-Cramer lower bound for an unbiased estimator of σ^2 in a $N(\mu, \sigma^2)$ population when μ is known, is				Answer option (c)
	a. $\frac{\sigma^4}{n}$	b. $\frac{\sigma^4}{2n}$	c. $\frac{2\sigma^4}{n}$	d. None of the above	$\frac{2\sigma^4}{n}$
66	If T_1 is an unbiased estimator of a parameter and T_2 is a sufficient statistic for the same parameter, then the best statistic in the sense of variance is				Answer option (c)
	a. T_1	b. T_2	c. $E(T_1\|T_2)$	d. $E(T_2\|T_1)$	$E(T_1\|T_2)$
67	Choose the correct statements. A. The type I error is caused by rejection of H_0 when it is true				Answer option

	B. The type II error is caused by acceptance of H_0 when H_1 is true C. The principle of Neyman-Pearson gives equal weights to both these errors				(b)
	a. All the three	b. A and B are true	c. B and C are true	d. A and C are true	A and B are true
68	If λ is the likelihood ratio criterion, the asymptotic distribution of $-2log_e\lambda$ is				Answer option (d)
	a. Beta of 1st kind	b. Normal	c. Beta of 2nd kind	d. Chi-square	Chi-square
69	Which of the following is/are not true? (i) All estimators are statistics (ii) All statistics are estimators (iii) The terms estimators and estimates are synonyms (iv) An estimate is the true value of an estimator				Answer option (b)
	a. (i), (iii) & (iv) only	b. (ii) & (iii) only	c. (i), (ii)& (iii) only	d. (ii) only	(ii) & (iii) only
70	Let (X1, X2) be two independent observations from a Bernoulli distribution with parameter θ. Which one of the following statistic is not unbiased for θ?				Answer option (c)
	a. $T_1 = X_1$	b. $T_2 = \frac{X_1+X_2}{2}$	c. $T_3 = X_1X_2$	d. $T_4 = 2X_1 - X_2$	$T_3 = X_1X_2$
71	Consider the following statements. A. T_n is a consistent estimator of θ. B. $E(T_n) \to \theta$ and $V(T_n) \to 0$ as $n \to \infty$ The correct statement is				Answer option (b)
	a. A implies B but B does not imply A	b. B implies A but A does not imply B	c. A and B implies each other	d. None of A and B implies the other	B implies A but A does not imply B
72	Let X and Y have joint pdf $f(x, y)=2, \quad 0<x<y<1$. Let $a=E(Y\|X=1/2)$ and $b=V(Y\|X=1/2)$. Then (a, b) is				Answer option (a)
	a. (3/4, 1/48)	b. (1/4, 1/48)	c. (1/4, 7/12)	d. (3/4, 7/12)	(3/4, 1/48)
73	The purpose served by diagrams and charts is:				d)
	a) simple presentation of data	b) to avoid tabulation	c) to avoid textual form	d) all	all
74	Which of the following statements are true for arithmetic mean? A. It is not affected by extreme values. B. It is easy to calculate. C. It is based on all observations. D. It is rigidly defined.				b)
	a) A-Ture, B-True, C-True, D-True	b) A-False, B-True, C-True, D-True	c) A-False, B-True, C-True, D-False	d) A-True, B-True, C-True, D-False	A-False, B-True, C-True, D-True
75	Consider the Assertion (A) and Justification (B) given below: A: Assertion: A good measure of dispersion needs to be least affected by the change in the sampling.				b)

<table>
<tr><td></td><td colspan="4">B: Justification: Standard deviation is the best measure of dispersion

Choose the correct answer from the code given below:</td><td></td></tr>
<tr><td></td><td>a) Both statements are true, and (B) is the correct explanation of (A).</td><td>b) Both statements are true, but (B) is not the correct explanation of (A).</td><td>c) Statement (A) is true, but Statement (B) is false.</td><td>d) Statement (B) is true, but, Statement (A) is false.</td><td>Both statements are true, but (B) is not the correct explanation of (A).</td></tr>
<tr><td>76</td><td colspan="4">Modes of the classification are given in List I, chose the correct match from List II.

<table><tr><td>List I</td><td>List II</td></tr><tr><td>A. Geographical classification</td><td>i. According to the magnitude of the numerical values, e.g., age income, height, etc</td></tr><tr><td>B. Chronological classification</td><td>ii. According to place, area, or region.</td></tr><tr><td>C. Qualitative classification.</td><td>iii. According to the lapse of time, e.g., monthly, yearly, etc.</td></tr><tr><td>D. Quantitative classification</td><td>iv. According to the attributes of the subjects or items, e.g., sex, qualification, colour, etc.</td></tr></table></td><td>a)</td></tr>
<tr><td></td><td>a) A-ii, B-iii, C-iv, D-i</td><td>b) A-ii, B-iv, C-i, D-iii</td><td>c) A-ii, B-i, C-iv, D-iii</td><td>d) A-iii, B-ii, C-iv, D-i</td><td>A-ii, B-iii, C-iv, D-i</td></tr>
<tr><td>77</td><td colspan="4">The frequency curve of the data is given below:
 

Then the mean and mode of the data are respectively be</td><td>a)</td></tr>
<tr><td></td><td>a) 2.75, 2</td><td>b) 3, 2</td><td>a) 3, 2.57</td><td>b) 2.57, 3</td><td>a) 2.75, 2</td></tr>
<tr><td>78</td><td colspan="4">If two events A and B are such that $A \subset B$, the relation between the conditional probabilities P(A/C) and P(B/C) is</td><td>a)</td></tr>
<tr><td></td><td>a) P(A/C) < P (B/C)</td><td>b) P(A/C) > P (B/C)</td><td>c) P(A/C) = P (B/C)</td><td>d) P(A/C) ≥ P (B/C)</td><td>P(A/C) < P (B/C)</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>79</td><td colspan="4">Which of the following statements are true for probability?
A. The probability of an event will be greater than 0 and less than 1.
B. The probability of an event can be greater than one also.
C. The probability of occurrence of a sure event is 1.
D. The probability of picking an even prime from numbers 1 to 25 is 0.04.</td><td>d)</td></tr>
<tr><td></td><td>a) A-True, B-True, C-True, D-False</td><td>b) A-True, B-True, C-False, D-False</td><td>c) A-False, B-False, C-True, D-False</td><td>d) A-False, B-False, C-True, D-True</td><td>A-False, B-False, C-True, D-True</td></tr>
<tr><td>80</td><td colspan="4">Consider the Assertion (A) and Justification (B) given below:

A: Assertion: The probability of an event that cannot happen or which is impossible, is equal to zero.

B: Justification: The probability lies between 0 and 1. Hence, it cannot be negative.

Choose the correct answer from the code given below:</td><td>b)</td></tr>
<tr><td></td><td>a) Both statements are true, and (B) is the correct explanation of (A).</td><td>b) Both statements are true, but (B) is not the correct explanation of (A).</td><td>c) Statement (A) is true, but Statement (B) is false.</td><td>d) Statement (B) is true, but, Statement (A) is false.</td><td>Both statements are true, but (B) is not the correct explanation of (A).</td></tr>
<tr><td>81</td><td colspan="4">Given the joint p.m.f. $p(x,y)$, the conditional p.m.f. of Y given X=x is given by the relation:</td><td>a)</td></tr>
<tr><td></td><td>a) $p_{Y/X}(y/x) = \frac{p_{X,Y}(x,y)}{p_X(x)}$</td><td>b) $p_{Y/X}(y/x) = \frac{p_X(x)}{p_Y(y)}$</td><td>c) $p_{Y/X}(y/x) = \frac{p_X(x)}{p_Y(y)}$</td><td>d) $p_{Y/X}(y/x) = \frac{p_{X,Y}(x,y)}{p_X(x)p_Y(y)}$</td><td>$p_{Y/X}(y/x) = \frac{p_{X,Y}(x,y)}{p_X(x)}$</td></tr>
<tr><td>82</td><td colspan="4">Match List I and List II and choose the correct answer.

<table><tr><th>List I</th><th>List II</th></tr><tr><td>A. The simple linear regression model of Y on X is</td><td>i. $\hat{Y} = \hat{\beta}_o + \hat{\beta}_1 X$</td></tr><tr><td>B. The estimated equation of the simple linear regression model of Y on X is</td><td>ii. $Y = \beta_0 + \beta_1 X + \varepsilon$</td></tr><tr><td>C. The term regression was introduced by</td><td>iii. Carl Friedish Gauss</td></tr><tr><td>D. The term Least square (LS) method was introduced by</td><td>iv. Sir Francis Galton</td></tr></table></td><td>b)</td></tr>
<tr><td></td><td>a) A-ii, B-iii, C-iv, D-i</td><td>b) A-ii, B-i, C-iv, D-iii</td><td>c) A-ii, B-i, C-iii, D-iv</td><td>d) A-ii, B-i, C-iii, D-iv</td><td>A-ii, B-i, C-iv, D-iii</td></tr>
<tr><td>83</td><td colspan="4">Consider the Assertion (A) and Justification (B) given below:</td><td>d)</td></tr>
</table>

	Assertion A: If X and Y are uncorrelated then they are independent. Justification B: If X and Y are independent then they are uncorrelated. Choose the correct answer from the code given below:				
	a) Both statements are true, and (B) is the correct explanation of (A).	b) Both statements are true, but (B) is not the correct explanation of (A).	c) Statement (A) is true, but Statement (B) is false.	d) Statement (B) is true, but, Statement (A) is false.	Statement (B) is true, but, Statement (A) is false.
84	A sample consists of:				d)
	a) all units of the population	b) 50 per cent units of the population	c) 5 per cent units of the population	d) any fraction of the population	any fraction of the populatio n
85	The correlation coefficient of the following 6 observations (X, Y): (1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1) is:				c)
	a) 0	b) 1	c) -1	d) 0.5	-1
86	In a regression line of Y on X, the variable X is known as				d)
	a) independent variable	b) regressor	c) explanatory variable	d) all	all
87	Which of the following statements is true? A. The distribution function is also often called the **cumulative distribution function.** B. If X is a random variable, its distribution function is $F(x) = P(X \geq x)$. C. $F(x)$ is increasing i.e., $F(x_1) < F(x_2)$ if $x_1 < x_2$. D. $\lim_{x \to \infty} F(x) = 1$.				b)
	a) A-True, B-True, C-True, D-True	b) A-True, B-False, C-True, D-True	c) A-True, B-True, C-False, D-True	d) A-True, B-True, C-True, D-False	A-True, B-False, C-True, D-True
88	A paired data set has n=5, $\sum x = 15, \sum y = 27, \sum xy = 100$ and $\sum x^2$=55. The value of the regression coefficient of y on x is				b)
	a) 19	b) 1.9	c) -1	d) 0.5	1.9
89	Consider the Assertion (A) and Justification (B) given below: Assertion A: Under quota sampling, it is very difficult to determine the errors. Justification B: The quota sampling is not based on random sampling at any stage. Choose the correct answer from the code given below:				a)

	a) Both statements are true, and (B) is the correct explanation of (A).	b) Both statements are true, but (B) is not the correct explanation of (A).	c) Statement (A) is true, but Statement (B) is false.	d) Statement (B) is true, but, Statement (A) is false.	Both statements are true, and (B) is the correct explanation of (A).
90	Which of the following statements are true? A. There are many sources of data. B. Telephone survey is the most suitable method of collecting data when the population is literate and spread over a large area. C. Data collected by the investigator is called the secondary data. D. There is a certain bias involved in the non-random selection of samples.				d)
	a) A-False, B-False, C-False, D-False	b) A-False, B-True, C-False, D-False	c) A-False, B-False, C-True, D-False	d) A-False, B-False, C-False, D-True	A-False, B-False, C-False, D-True
91	The Theorem which states the least percentage of values that fall within Z-standard deviation is classified as:				c)
	a) Sampling Theorem	b) Population Theorem	c) Chebyshev's Theorem	d) Pearson Theorem	Chebyshev's Theorem
92	Which of the following statements are true? A. A discrete random variable can assume countable values. B. A random variable X is continuous if its probabilities are given by a probability mass function. C. Continuous variables can assume all values between two given values of the variable. D. A random variable X is continuous if its probabilities are given by a probability density function.				b)
	a) A-True, B-True, C-True, D-True	b) A-True, B-False, C-True, D-True	c) A-True, B-False, C-True, D-False	d) A-True, B-False, C-False, D-True	A-True, B-False, C-True, D-True
93	Consider the Assertion (A) and Justification (B) given below: Assertion A: The moment generating function (mgf) of $Z = X_1 + X_2 + \cdots + X_n$ is the product of the mgfs of $X_1, X_2, \ldots, X_n$ i.e., $$M_z(t) = \prod_{i=1}^{n} M_{X_i}(t)$$. Justification B: $X_1, X_2, \ldots, X_n$ are n mutually independent random variables. Choose the correct answer from the code given below:				a)
	a) Both statements are true, and (B) is	b) Both statements are	c) Statement (A) is true, but	d) Statement (B) is true, but,	Both statements

	the correct explanation of (A).	true, but (B) is not the correct explanation of (A).	Statement (B) is false.	Statement (A) is false.	are true, and (B) is the correct explanation of (A).
94	Match List I and List II, and choose the correct answer. List I: A. If X_1 and X_2 are 2 random variables, then B. If X_1 and X_2 are 2 independent random variables, then C. If X is a random variable and c is a constant, then D. If X is a random variable, then List II: i. $E(X_1X_2) = E(X_1)E(X_2)$ ii. $E(X_1 + X_2) = E(X_1) + E(X_2)$ iii. $Var(X) = E(X^2) - \{E(X)\}^2$ iv. $E(cX) = cE(X)$				c)
	a) A-ii, B-i, C-iii, D-iv	b) A-i, B-ii, C-iv, D-iii	c) A-ii, B-i, C-iv, D-iii	d) A-i, B-ii, C-iii, D-iv	A-ii, B-i, C-iv, D-iii
95	A hotel manager is considering a new location for his hotel. The projected daily cash flow for the new location is (in Rs.) Cash flow: 1,000 | 3,000 | 7,000 | 9,000 | 10,000 Probability: 0.60 | 0.10 | 0.20 | 0.05 | ? The expected cash flow for the new location is				a)
	a) 3250	b) 4250	c) 3750	d) 4000	3250
96	The cumulative distribution function of a random variable 'x' is the probability that X takes the value				d)
	a) zero	b) greater than x	c) equal to x	d) less than or equal to x	less than or equal to x
97	Consider the Assertion (A) and Justification (B) given below: Assertion A: The moment generation function of a random variable is $M_X(t) = e^{t\mu+\frac{1}{2}t^2\sigma^2}$ Justification B: The random variable X follows a normal distribution with mean μ and variance σ^2. Choose the correct answer from the code given below:				a)
	a) Both statements are true, and (B) is	b) Both statements are true, but (B) is	c) Statement (A) is true, but	d) Statement (B) is true, but,	Both statements are true,

	the correct explanation of (A).	not the correct explanation of (A).	Statement (B) is false.	Statement (A) is false.	and (B) is the correct explanation of (A).
98	If X is a continuous random variable, then find the true statements from the list below: A. $f(x) \geq 0$ for all $x \in R$ B. $\int_{-\infty}^{\infty} f(x)dx = 1$ C. $\sum_{all\ x} p(x) = 1$ D. $\int_{a}^{b} f(x)dx = P(a < X \leq b)$				c)
	a) A-True, B-True, C-True, D-True	b) A-False, B-True, C-True, D-True	c) A-True, B-True, C-False, D-True	d) A-True, B-False, C-True, D-True	A-True, B-True, C-False, D-True
99	Let $X \sim Uniform\ (-a, a)$, determine 'a' such that $P(\|X\| < 2) = 1/4$				Answer option (d)
	(a) 2	(b) 4	(c) 6	(d) 8	8
100	$\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} \frac{dx}{1+cosx}$ is equal to				Answer option
	a) -2	b) 2	c) 4	d) -1	(d)