Test Booklet No. _____

This booklet consists of 150 questions and 22 printed pages.

RGUPET/2024/__/_

RGUPET 2024
Common Entrance Test, 2024
DOCTOR OF PHILOSOPHY IN STATISTICS

Full Marks: 150 **Time: 3 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 150 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark.
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 two hour.
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	The National Chemical Laboratory is located in:				Answer option
	a) Mumbai	b) Bengaluru	c) Hyderabad	d) Pune	(d)
2	Which of the following countries has introduced "Direct Democracy"?				Answer option
	a) Russia	b) India	c) France	d) Switzerland	(d)
3	Inflation occurs when aggregate supply is a) More than aggregate demand b) Less than aggregate demand c) Equal to aggregate demand d) None of the above				Answer option
	a) Only (a) true	b) Only (b) true	c) Only (a) and (c) true	d) Only (d) true	(b)
4	Which state has the lowest per Capita income in India?				Answer option
	a) Bihar	b) Orissa	c) Rajasthan	d) Gujarat	(b)
5	"Black Pagoda" is in (a). Egypt (b). Sri Lanka (c). Madurai (d). Konark				Answer option
	a) Egypt	b) Sri Lanka	c) Madurai	d) Konark	(d)
6	Consider the given statement and decide which of the given justification(s) is/are implicit in the assertion **Assertion:** If you read the book 'Spoken English', your English-speaking abilities improve. **Justification:** 1. 'Spoken English' book can improve English speaking abilities. 2. A regular practice of speaking English during conversation can improve English speaking abilities.				Answer option (a)
	a)only justification 1 is implicit.	b)only justification 2 is implicit.	c)both justification1 and 2 are implicit.	d)neither justification 1 nor 2 is implicit	only justification 1 is implicit.
7	choose the word which best expresses the meaning of the given word "AUGUST"				Answer option (c)
	a) Common	b) Ridiculous	c) Dignified	d) Petty	Dignified
8	Write synonyms for 'DEBACLE'				Answer option (a)
	a) Collapse	b) Decline	c) Defeat	d) Disgrace	Collapse
9	Match the following pairs of opposite words. A. Foremost | I. Desert				Answer option

	B. Protect C. Terrible D. Mighty		II. Soothing III. Weak IV. Unimportant		(c)
	a)A-I B-II C-IV D-III	b) A-I B-III C-IV D-II	c)A-IV B-I C-II D-III	d)A-III B-I C-IV D-II	A-IV B-I C-II D-III
10	1. left 2. the 3. house 4. he 5. suddenly Write the order to form a proper sentence.				Answer option (c)
	a) 1, 2, 4, 3, 5	b) 2, 1, 3, 5, 4	c) 4, 5, 1, 2, 3	d) 5, 2, 3, 4, 1	4, 5, 1, 2, 3
11	A boat travels 20 kms upstream in 6 hrs and 18 kms downstream in 4 hrs.Findthe speed of the boat in still water and the speed of the water current.				Answer option (b)
	a)1/2 kmph	b)7/12 kmph	c)5 kmph	d) none of these	b) 7/12 kmph
12	A shop keeper sold a T.V. set for Rs.17,940 with a discount of 8% and earned aprofit of 19.6%.What would have been the percentage of profit earned if nodiscount was offered				Answer option (d)
	a)24.8%	b)26.4%	c)25%	d)none of these	d)none of these
13	There are two statements labelled as Assertion (A) and Reason (R). Mark your answer as per the codes provided below: Assertion (A): Ventilators are provided near the roof. Reason (R): Conduction takes place better near the roof.				Answer option (c)
	a)Both A and R are true and R is the correct explanation of A.	b)Both A and R are true but R is not correct explanation of A.	c)A is true but R is false.	d)A is false but R is true.	A is true but R is false.
14	If x=y=2z and xyz=256 then what is the value of x?				Answer option (a)
	a)8	b)3	c)5	d)6	b)8
15	If the value of x lies between 0 & 1 which of the following is the largest?				Answer option (d)
	a)x	b)x^2	c)-x	d)1/x	d)1/x
16	Training Launch of a Medium-Range Ballistic Missile, Agni-1, was successfully carried out in which state?				a)
	a) Odisha	b) Maharashtra	c) Punjab	d) Goa	Odisha
17	Match the Union Ministry at List I with relevant information from List II and indicate your responses using the codes given below: List I: A. Ministry of Jal Shakti; B. Ministry of Ports, Shipping and Waterway; C. Ministry of Agriculture and Family Welfare List II: i. Sagar Samriddhi; ii. Atal Bhujal Yojana (Atal Jal); iii. 5G & Beyond Hackathon 2023				b)

	D. Ministry of Communication	iv. PM-Kisan Mobile App			
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-i, C-iv, D-iii	c) A-iii, B-iv, C-i, D-ii	d) A-ii, B-i, C-iv, D-iii	b) A-ii, B-i, C-iv, D-iii
18	Among the given points, which are 'TRUE" for the Indian sportsman Sunil Chhetri? A. He was the captain of the Indian Football Team. B. He is associated with Cricket. C. He was awarded the Arjun Award in 2011. D. He was awarded Padma Shri in 2019.				b)
	a) A-False, 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
19	Consider the Assertion (A) and Justification (B) given below: **A: Assertion:** Serbia's Novak Djokovic has won the Roland Garros 2023 trophy. **B: Justification:** Novak Djokovic defeated Casper Ruud in the final, 7–6, 6–3, 7–5 to win the men's singles tennis title at the 2023 French Open. 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).
20	Recently, what does the World Health Organization (WHO) term pathogens that transmit through air?				d)
	a) Waterborne pathogens	b) Swine flu	c) Parkinson's syndrome	d) Infectious respiratory particles	Infectious respiratory particles
21	A grouped frequency distributions with uncertain first and last classes is known as:				Answer option
	a) Exclusive class distribution	b) Inclusive class distribution	c) Open end distribution	d) Discrete frequency distribution	(c)
22	The shape of a trilinear chats is that of a:				Answer option
	a) Cone	b) Cube	c) Equilateral Triangle	d) Pyramid	(c)
23	Ogives for more than type and less than type distribution interest at:				Answer option

	a) Mean	b) Median	c) Mode	d) Origin	(b)
24	In case of frequency distribution with classes of unequal widths, the heights of class of a histogram are propositional to:				Answer option
	a) Class frequency	b) Class intervals	c) Frequencies in percentage	d) Frequency densities	(d)
25	The average of 50 students in a class is 20 years. When the age of conductors is included, the average age is increased by one year. The age of the conductor is:				Answer option
	a) 51	b) 55	c) 71	d) 50	(c)
26	If each value of series is multiplied by 10, the coefficient of variation will be				Answer option
	a) 5 per cent	b) 10 per cent	c) 15 per cent	d) 0 per cent	(d)
27	For a positive skewed distribution, which of the following inequality holds				Answer option
	a) Median > mode	b) Mode > mean	c) Mean> median	d)Mean >Mode	(d)
28	First and third quantiles of a frequency distribution are 30 and 75. Also its coefficient of skewness is 0.6. The Median of frequency distribution is				Answer option
	a) 40	b) 39	c) 38	d) 41	(b)
29	Which measure of dispersion is least affected by extreme values?				Answer option
	a) Range	b) Mean deviation	c) Standard deviation	d) Quartile deviation	(d)
30	An even concerting of those elements which are not in A is called:				Answer option
	a) Primary event	b) Derived event	c) Simple event	d) Complementary event	(d)
31	Which is *not* an example of non-probability sampling?				Answer option (b)
	a)convenience sampling	b) Stratified sampling	c)Snowball sampling	d)Purposive sampling	b)Stratified sampling

32	Which is *not* a feature of a research proposal?				Answer option (b)
	a) A short literature review	b) A discussion of the findings	c)A section on how the data is to be analysed	d)A section discussing proposed data collection method	b)A discussion of the findings
33	Choose the best answer. A literature review is				Answer option (c)
	a) Conducted after you have decided upon your research question	b) Is the last thing to be written in your research report	c) Helps in the formulation of your research aim and research question	d)Is not part of a research proposal	c)Helps in the formulation of your research aim and research question
34	Why are ethical issues important in research?				Answer option (d)
	a) They indicate that all people are very sensitive	b) They help the researcher write up their research	c)They will help me pass the assignment	d)They indicate what the researcher ought to do and how they should treat people	d)They indicate what the researcher ought to do and how they should treat people
35	At which stages of the research process should you think about ethics?				Answer option (d)
	a) When designing the questions and planning the research	b) When collecting data	c)When writing up	d)All of the above	d)All of the above
36	What should a conclusion chapter contain?				Answer option (d)
	a) A sense of the research story	b) A summary of the key findings	c) Reflecti on on what these findings mean	d) All of the above	(d) All of the above

37	Which is not a level of quantitative analysis?				Answer option (c)
	a) Descriptive statistics	b) Multivariate analysis	c) Thematic analysis	d) Inferential statistics	(c) Thematic analysis
38	Which is *not* a level of measurement?				Answer option (a)
	a) Ordinary	b) Nominal	c) Ordinal	d) Interval	(a) Ordinary
39	What is the most appropriate way to display nominal data graphically?				Answer option (a)
	a) Bar chart	b) Table	c) Histogram	d) Line graph	(a) Bar Chart
40	Arrange the following scales of measurements from the simplest to the most evolved. A. Ordinal B. Nominal C. Ratio D. Interval				Answer option (d)
	a) A, B, C, D	b) B, C, A, D	c) C, D, B, A	d) B, A, D, C	B, A, D, C
41	What methods might be employed in a case study?				Answer option (d)
	a) Interviews	b) Narrative observations	c) Questionnaires	d) Any of these and potentially others	(b) Any of these and potentially others
42	The standard of a research journal is decided on:				b)
	a) Publisher	b) Impact factor	c) Citation Index	d) Printing of the journal	Impact factor
43	According to UGC regulations 2018 plagiarism, level 3 plagiarism refers to similarities:				a)
	a) above 60%	b) below 10%	c) above 10% to 30%	d) above 40% to 60%	above 60%
44	For research journals, which of the following with a high value is usually considered more important than those with a lower one?				c)
	a) Eigen factor	b) h-index	c) impact factor	d) i10 score	impact factor
45	Plagiarism means, presenting someone else's work or ideas as your own:				d)

	a) with their consent.	b) without their consent.	c) with full acknowledgment	d) with or without their consent.	with or without their consent.
46	The research, which helps to build a new theory, is called				d)
	a) Action research	b) Applied research	c) Fundamental research	d) Theoretical research	Theoretical research
47	How do you know that the article is freely available on Google Scholar?				a)
	a) It will be displayed on the right side of the screen.	b) There is a list of buttons on the page.	c) There will be an "available" button.	d) No article in Google Scholar is freely available.	It will be displayed on the right side of the screen.
48	Which of the following is not a type of research report?				c)
	a) Thesis/Dissertation	b) Research paper	c) Textbook of a subject	d) conference/seminar research paper	Textbook of a subject
49	JSTOR is				d)
	a) General periodic database	b) Database of newspapers.	c) Database of conference proceeding	d) digital library of academic journals, books, and primary sources	digital library of academic journals, books, and primary sources
50	The following are abbreviated names of four institutes of our Country: CSIR, IARI, ICMR, and ICAR. In the expansion of which does the word "Industrial" occur?				a)
	a) CSIR	b) IARI	c) ICMR	d) ICAR	CSIR
51	The individual probabilities of occurrence of two events A and B are known, the probability of occurrence of both the events together will be:				Answer option
	a) Increased	b) Decreased	c) One	d) Zero	(b)
52	If an event B has occurred and it is known that P(B)=1, the conditional probability P(B|A) is equal to:				Answer option
	a) P(A)	b) P(B)	c) One	d) Zero	(a)
53	If a bag contains 4 white and 3 block balls. Two draws of 2 balls are successively made, the probability of getting 2 white balls at first draw and 2 block balls at second draw when the balls drawn at first draw were replaced is:				Answer option
	a)3/7	b)1/7	c)19/49	d) 2/49	(d)

54	In tossing three coins at a time, the probability of getting at most one head is:				Answer option
	a) 3/8	b) 7/8	c) 1/2	d) 1/8	a
55	The probability that a leap year will have 53 Sundays is:				Answer option
	a) 1/7	b) 2/7	c) 2/53	d) 52/53	(b)
56	For Bernoulli distribution with probability p of a success and q of a failure, the relation between mean and variance that holds is:				Answer option
	a) Mean < Variance	b) Mean > Variance	c) Mean=Variance	d) Mean ≤ Variance	(b)
57	The family of parametric distribution which has mean always less than variance is:				Answer option
	a) Beta distribution	b) Lognormal distribution	c) Weibull distribution	d)). Negative binomial distribution	(d)
58	The distribution in which the probability at each successive draw varies is:				Answer option
	a) Hyper-Geometric distribution	b) Geometric distribution	c) Binomial distribution	d) Discrete Uniform distribution	(a)
59	The area under the standard normal curve beyond the lines $z = \pm 1.96$ is:				Answer option
	a) 95 per cent	b) 90 per cent	c) 5 per cent	d) 10 per cent	(c)
60	Let X be a continuous random variable with probability density function, $f(x) = kx; \quad 0 \le x \le 1$ $= k; \quad 1 \le x \le 2$ $= 0; Otherwise$ The value of k is equal to:				Answer option
	a) 1/2	b) 2/3	c) 4/5	d)1/3	(b)
61	Under proportional allocation, the size of the sample from each stratum depends on:				Answer option
	a) Total sample size	b) Size of the stratum	c) Population size	d) All the above	(d)
62	Systematic sampling means: (a). Relation of n contiguous units (b). Relation of n units situated at equal distance (c). Relation of n largest units (d). Relation of n middle units in a sequence				Answer option

	a) Only (a) is true	b) Only (b) is true	c) Both (a) and (b) are true	d) None of the above	(b)
63	If an investigator selects districts from a state, Panchayat sanities from districts and formers from Panchayat sanities, then such a sampling procedure is known as:				Answer option
	a) Two stage sampling	b) Three stage sampling	c) Cluster sampling	d) Stratified sampling	(b)
64	Rao-Blackwell theorem enables us to obtain minimum variance unbiased estimator through:				Answer option
	a) Unbiased estimator	b) Complete statistics	c) efficient statistics	d) Sufficient statistics	(d)
65	Let $X_1, X_2, \ldots, X_n$ be a random sample from $f(x) = \frac{\sqrt{\sigma}}{\sqrt{2\pi x^3}} exp\left\{-\frac{\sigma}{2y}\right\}$ for $y > 0$ and $\sigma > 0$. The maximum likelihood estimator of σ is				Answer option
	a) $\frac{n}{\sum_{i=1}^{n} \frac{1}{xi}}$	b) $\frac{n}{\sum_{i=1}^{n} xi}$	c) $\frac{1}{\sum_{i=1}^{n} \frac{1}{xi}}$	d) $\frac{1}{n\sum_{i=1}^{n} \frac{1}{xi}}$	(a)
66	Let X and Y denote real-valued random variables such that $E(X^4) < \infty$ and $E(Y^4) < \infty$. Suppose $Y = X + Z$ where Z is a real-valued random variable with $E(Z) = 0$ and $E(Z^2) = 1$. If X and Z are independent then $E(Y^2\|X)$ is				Answer option
	a) X	b) X^2	c) $1 + X^2$	d) 1+X	(c)
67	Suppose X follows a Binomial distribution with parameters $n = 6$ and p. If $P(X = 4) = P(X = 2)$ then 4p is equal to				Answer option
	a) 1	b) 4	c) 5	d)2	(a)
68	The maximum number of times a fair coin needs to be tossed, so that the probability of getting at least two head is at least 0.96 is				Answer option
	a) 6	b) 8	c) 5	d) 9	(b)
69	A pair of fair dice is rolled together tile a sum of either 5 or 7 is obtained. If p denotes the probability that 7 comes before 5, then $5p$ is				Answer option
	a) 5	b) 8	c) 3	d) 7	(c)
70	If n positive integers are taken at random and multiplier together, and p_n is the probability that the last digit of the product is 2, 4, 6 or 8 then $125p_3 - 50$ is equal to				Answer option
	a) 6	b)5	c)4	d) 8	(d)
71	A graph consists $2m$ students' inability you and your friend. If the graph is split into two different sectors A and B, each containing m students, then the probability that you and your friend are in the different sectors is				Answer option
	a) $\frac{m}{2m-1}$	b) $\frac{m-1}{2m-1}$	c) $\frac{m+1}{2m-1}$	d) $\frac{2}{2m-1}$	(a)
72	If an estimator Tn of population parameter α converges in probabillity to α as n tends to				Answer option

	a) Sufficient	b) Efficient	c) Consistent	d) Unbiased	(c)
73	Bias of an estimator can be_____				Answer option
	a) positive	b) negative	c) either positive or negative	d) always zero	(c)
74	Cramer-Rao inequality with regard to the variance of an estimator provides: a) upper bound on the variance b) lower bound on the variance c) asymptotic variance of an estimator d) None of the above.				Answer option
	a) Only (a) is true	b) Only (b) is true	c) Both (a) and (c) are true	d) Only (c) is true	b
75	Which of the following is an instance of non-sampling error? a) Faulty selection of sample b) Bias due to interviewer c) Defective frame d) Both a) and b).				Answer option
	a) Only (a) is true	b) Only (b) is true	c) Only (c) is true	d) None of the above	(b)
76	A population consist of four units, 2, 4,8,10. All possible sample of size 2 are drawn from this population by simple random sampling without replacement. Estimate of population mean and variance of the estimate of population mean is given by				Answer option
	a) (6,3.3)	b) (6,5)	c) 6,10)	d) (10,3,33)	(a)
77	A card is drawn from a well-shuffled pack of 52 cards then the probability of getting a heart or a king or a red card is				Answer option
	a) 3/52	b) 8/13	c) 7/13	d) 1/26	(c)
78	If one flips a coin and then independently cast a die, then the probability of observing head on the coin and even number on the die is				Answer option
	a) 2/4	b) 1/4	c) 1/6	d) 1/2	(b)
79	Chi-square test cannot be applied to test the for testing _____				Answer option
	a) Goodness of fit	b) Goodness of fit	c) Significance of regression coefficient	d)Independence of attribute	(c)
80	Pitman estimator for location usually possess:				Answer option
	a) Smallest mean square error	b) Asymptotic property	c) A property of complete statistics	d) All the above	(a)

81	A confidence interval of confidence coefficient (1-α) is best which has:				Answer option
	a) Smallest width	b) Vastest width	c) Upper and lower limits equi-distant from the parameter	d)One-sided confidence interval	(a)
82	Power of a test is related to a) Type I error b) Type II error c) Type I and II error both d) None of the above				Answer option
	a) Only (a) is true	b) Only (b) is true	c) Only (c) is true	d) Both (a) and (c) are true	(b)
83	Neyman-Pearson lemma provides: _____				Answer option
	a) An unbiased test	b) A most powerful test	c) An admissible test	d) Minima x test	(b)
84	A box contains 20 cards of these 10 have better J printed on them and the remaining 10 have E printed on them. 3 cards are drawn the box, the probability that we can write JEE with these cards is				Answer option
	a) $\frac{9}{80}$	b) $\frac{1}{8}$	c) $\frac{4}{27}$	d) $\frac{17}{38}$	(d)
85	Two persons A and B think of two numbers at random from the numbers $1, 2, \ldots, m$. Probability A think of a number smaller than thought by B is				Answer option
	a) $\frac{m-1}{2m}$	b) $\frac{2m-1}{2m}$	c) $\frac{m-1}{2m}$	d) $\frac{m}{2m-1}$	(a)
86	Toproceed with the Modified Distribution method algorithm for solving an transportation problem, the number of dummy allocations need to be added are				Answer option (b)
	a) n	b) n-1	c) 2n-1	d) n-2	n-1
87	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	c) 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.
88	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)
89	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.
90	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
91	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
92	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
93	If C is the correction factor for ties in Kruskal-Wallis test statistic H, the corrected test statistic is				Answer option (b)
	a) H-C	b) H/C	c) H+C	d) H*C	H/C
94	The faults due to assignable causes:				Answer option (a)
	a) can be removed	b) cannot be removed	c) can sometimes be removed	d) all of the above	a. can be removed
95	Main tools of statistical quality control are				Answer option (c)
	a) Shewhart chart	b) acceptance sampling plans	c) both (a) and (b)	d) none of the above	c. both (a) and (b)
96	The relation between expected value of R and S.D. σ with usual constant factor is:				Answer option (b)
	a) $E(R)=d_1\sigma$	b) $E(R)=d_2\sigma$	c) $E(R)=D_1\sigma$	d) $E(R)=D_2\sigma$	b. $E(R)=d_2\sigma$

97	R-charts are preferable over σ charts because:				Answer option (d)
	a) R and SD fluctuate together in case of small samples	b) R is easily calculatable	c) R-charts are economical	d. all of the above	d. all of the above
98	Match the following suitable pairs A. x-bar chart — I. Percentage defective B. p chart — II. variability test C. u-chart — III. Variable control chart D. R chart — IV. Number of defects per sample				Answer option (a)
	a) A-III B-I C-IV D-II	b) A-III B-II C-I D-IV	c) A-I B-II C-IV D-III	d) A-II B-I C-IV D-III	A-III B-I C-IV D-II
99	The control limits delimited by the consumer are called:				Answer option (c)
	a) Modified control limits	b) Natural control limit	c) Specified control limits	d) None of the above	(c) Specified control limits
100	The graph of the proportion defectives in the lot against average sample number is:				Answer option (b)
	a) OC Curve	b) ASN curve	c) Power curve	d) All of the above	(b) ASN curve
101	A curve showing the probability of accepting the a lot of quality p is known as				Answer option (a)
	a) OC Curve	b) ASN curve	c) Power curve	d) All of the above	(a) OC Curve
102	If we have the last census population, migration, birth and deaths data for a region in a given period, the population at the time t can be estimated by the formulae as				Answer option (a)
	a) $\hat{P}_t = P_0 + (B - D) + (I - E)$	b) $\hat{P}_t = (B - D) + (I - E)$	c) $\hat{P}_t = P_0(B - D) + (I - E)$	d) None of the above	(a) $\hat{P}_t = P_0 + (B - D) + (I - E)$
103	The death rate obtained for a segment of population is known as				Answer option (a)
	a) Specific death rate	b) Crude death rate	c) Standardized rate	d) Vital index	(a) Specific death rate
104	The first census in India was taken in the year....				Answer option (a)

	a) 1872	b) 1877	c) 1881	d) 1886	(a) 1872
105	The most populous state in India is:				Answer option (b)
	a) Madhya Pradesh	b) Uttar Pradesh	c) Andhra Pradesh	d) Maharashtra	(b) Uttar Pradesh
106	Apart from births and deaths, the other component of population growth is:				Answer option (d)
	a) Life expectancy	b) Longevity	c) Gross enrolment ratio	d) Migration	(d) Migration
107	Computation of standardized death rate is based upon the following assumptions. (i). The age wise distribution of two population is same. (ii). One population is taken as standard population.				Answer option (a)
	a) True.	b) False.	c) Ist is true but the second is false.	d) Ist is false but the second is true.	(a) True.
108	The causes of infant deaths can be generally being separated in two broad groups' i.e. Endogenous deaths and				Answer option (b)
	a) Neonatal deaths	b) Exogenous deaths.	c) Premature deaths.	d) Mature deaths.	(b) Exogenous deaths.
109	A random variable is a survival time random variable if an observed outcome lies in the interval				Answer option (c)
	a) $(0, \infty)$	b) $(1, \infty]$	c) $[0, \infty)$	d) $[1, \infty]$	c) $[0, \infty)$
110	If $h(t) = t^2;\ t \geq 0$ and $h(t) = 0$ otherwise, then the cumulative hazard function of T				Answer option (b)
	a) $t^4/3$	b) $t^3/3$	c) $t^2/2$	d) $2t$	$t^3/3$
111	Kaplan- Meier estimator is used to estimate survival function in case of ---------- lifetime data				Answer option (c)
	a) Truncated.	b) outlier free.	c) Censored.	d) Any type of	Censored.
112	Greenwood's formula is used for estimating approximate value of ------ of the Kaplan Meier estimator.				Answer option (b)
	a) Mean.	b) Variance.	c) confidence interval.	d) Bias.	Variance
113	Nelson and Aalen have derived an estimator for ---- .				Answer option (d)
	a) Survival function.	b) Hazard function.	c) distribution function	d) cumulative hazard function	cumulative hazard function
114	Buffer stock' is the level of stock				Answer option (c)

	a) Half of the actual stock.	b) At which the ordering process should start.	c) Minimum stock level below which actual stock should not fall.	d) Maximum stock in inventory	Minimum stock level below which actual stock should not fall.
115	Which of the following is not an inventory?				Answer option (a)
	a) Machines.	b) Raw material	c) Finished products.	d) Consumable tools	Machines
116	The time period between placing an order its receipt in stock is known as				Answer option (a)
	a) Lead time.	b) Carrying time.	c) Shortage time.	d) Over time	Lead time
117	The order cost per order of an inventory is Rs. 400 with an annual carrying cost of Rs. 10 per unit. The Economic Order Quantity (EOQ) for an annual demand of 2000 units is				Answer option (a)
	a) 400	b) 440	c) 480	d) 500	400
118	If any value in X_B column of final simplex table is negative, then the solution is				Answer option (b)
	a) Bounded	b) Infeasible	c) No solution	d) None of the above	Infeasible
119	The value of R^2 lies in between				c)
	a) -1 and 1	b) -1 and 0	c) 0 and 1	d)$-\infty \; and \; \infty$	0 and 1
120	$E(\hat{\beta}) = \beta$ implies the estimator $\hat{\beta}$ is				d)
	a) Minimum variance	b) Linear	c) consistent	d) unbiasedness	unbiasedness
121	In a regression line of Y on X, the variable Y is known as:				b)
	a) independent variable	b) dependent variable	c) explanatory variable	d) regressor	dependent variable
122	Match the List I and List II List I: A. Normal; B. Exponential; C. Poisson; D. Binomial List II: i. Negative inverse; ii. Identity; iii. Logit; iv. Log where the distributions are represented by List 1 and the link functions by List 2.				d)
	a) A-iii, B-i, C-iv, D-ii	b) A-ii, B-i, C-iii, D-iv	c) A-i, B-ii, C-iv, D-iii	d) A-ii, B-i, C-iv, D-iii	A-ii, B-i, C-iv, D-iii
123	Match the List I and List II List I: A. Carl Friedrich Gauss List II: i. correlation of coefficient				c)

	B. Karl Pearson C. Sir Francis Galton D. A scatter diagram of the variable (X, Y) gives the idea about		ii. OLS iii. functional relationship iv. the term regression was introduced.		
	a) A-iv, B-i, C-ii, D-iii	b) A-ii, B-i, C-iv, D-iii	c) A-ii, B-i, C-iv, D-iii	d) A-i, B-ii, C-iv, D-iii	A-ii, B-i, C-iv, D-iii
124	Which of the following statements are true: A. If the regression coefficient $\beta_{yx} > 1$, then $\beta_{xy} > 1$. B. The regression coefficients β_{yx} is the intercept of the regression line. C. The paired values plotted on a graph marked by points lead to a scatter diagram. D. If $\rho = 1$, the relation between β_{yx} and β_{xy} is $\beta_{yx} = \beta_{xy}$				a)
	a) A-False, B-False, C-True, D=False	b) A-True, B-True, C-True, D=False	c) A-True, B-False, C-True, D=False	d) A-True, B-True, C-False, D=False	A-False, B-False, C-True, D=False
125	Which of the following statements are true: A. A simple linear regression model is an equation that describes the straight-line relationship between a dependent variable and an independent variable. B. If r = -1, then we can conclude that there is a perfect relationship between X and Y. C. The notation $\hat{Y}$ refers to the average value of the dependent variable Y. D. The estimated simple linear regression equation minimizes the sum of the squared deviations between each value of Y and the line				b)
	a) A-True, B-True, C-True, D-True	b) A-True, B-True, C-False, D-True	c) A-False, B-True, C-False, D-True	d) A-True, B-False, C-False, D-True	A-True, B-True, C-False, D-True
126	Which of the following statements are true: A. The independent variables in a multiple regression are known as regressors. B. The dependent variable in multiple regression is known as response. C. Another name of the regression equation is prediction. D. A regression model may be linear or non-linear.				c)
	a) A-True, B-True, C-False, D-True	b) A-False, B-True, C-True, D-True	c) A-True, B-True, C-True, D-True	d) A-True, B-False, C-True, D-True	A-True, B-True, C-True, D-True
127	Consider the Assertion (A) and Justification (B) given below:				a)

	A: Assertion: The addition of independent variable (s) causes the prediction error to become smaller. B: Justification: With the addition of an independent variable, R^2 becomes larger to cause smaller prediction error. Choose the correct answer from the code given below:				
	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).
128	Consider the Assertion (A) and Justification (B) given below: A: Assertion: Regression analysis is suitable for two variables having a linear causal relationship between them. B: Justification: The causal relationship between two variables is never curvilinear. Choose the correct answer from the code given below:				c)
	a) Both A and B are correct and B is the correct explanation of B.	b) Both A and B are correct but B is not the correct explanation of B.	c) A is correct but B is not correct.	d) A is not correct but B is correct.	A is correct but B is not correct.
129	For a regression model, $\sum(y_i - \bar{y})^2$=200, $\sum e_i^2 = 30$, $n = 30$ and $k = 3$, then R^2 is				d)
	a) 0.70	b) 0.75	c) 0.80	d) 0.85	0.85
130	For a bivariate data set on (x, y), if the means, standard deviations, and correlation are $\bar{x} = 1.0, \bar{y} = 2.0, s_x = 3.0, s_y = 9.0$ and $r = 0.8$. Then the regression line of y on x is:				a)
	a)$\hat{y} = -0.4 + 2.4x$	b)$\hat{y} = 0.4 + 2.4x$	c)$\hat{y} = -0.4 - 2.4x$	d)$\hat{y} = +0.4 + 2.4x$	$\hat{y} = -0.4 + 2.4x$
131	Which of the following is not a contrast among the three treatments?				a)
	a)$T_1 + 2T_2 - T_3$	b)$T_1 - T_3$	c)$T_1 - 2T_2 + T_3$	d)$-T_1 + 2T_2 - T_3$	$T_1 + 2T_2 - T_3$
132	Match the List I and List II List I: A. Design of experiments; B. Experimental unit; C. Treatment List II: i. A subject receiving treatment in an experiment. ii. a branch of Statistics iii. The allocation of treatments to experimental units with equal probability.				d)

	D. Randomization		iv. A substance or a factor attached to an experimental unit.		
	a)A-ii, B-i, C-iv, D-iii	b) A-ii, B-iii, C-i, D-iv	c) A-iii, B-ii, C-iv, D-iii	d) A-ii, B-i, C-iv, D-iii	A-ii, B-i, C-iv, D-iii
133	Match the List I and List II List I: A. ANOVA is used to compare the; B. The purpose of using an independent samples t-test is used to compare; C. In regression, ANOVA calculates; D. A type of post-how test List II: i. means of two groups.; ii. means of more than two groups.; iii. Bonferroni.; iv. F-ratio.				a)
	a) A-ii, B-i, C-iv, D-iii	b) A-ii, B-i, C-iii, D-iv	c) A-i, B-ii, C-iv, D-iii	d) A-i, B-ii, C-iii, D-iv	A-ii, B-i, C-iv, D-iii
134	What method should be used if the researcher wants to know how different levels of independent variables affect the dependent variable at different levels of another independent variable? A. Analysis of covariance method. B. Two-way analysis of variance C. Multiple correlation method. D. Factor analysis of variance method. Choose the correct option from the list.				c)
	a) A-False, B-False, C-True, D-True	b) A-True, B-True, C-False, D-False	c) A-False, B-False, C-False, D-True	d) A-True, B-False, C-True, D-True	A-False, B-False, C-False, D-True
135	Which of the following belongs to the category of true experimental design? A. A completely randomized design is used when all experimental units are heterogeneous. B. Given three factors A, B, and C the highest–order interaction would be ABC. C. IfA is a fixed effect having α levels, then $\sum_{i=1}^{p} \alpha_i = 0$. D. Completely randomized design yields minimum degrees of freedom for error.				a)
	a) A-False, B-True, C-True, D-False	b) A-True, B-True, C-True, D-False	c) A-False, B-True, C-True, D-True	d) A-True, B-True, C-True, D-True	A-False, B-True, C-True, D-False
136	Below are two statements-one Assertion (A) and the other Justification (J). Find the correct answer using code. A: Assertion: In experimental research, we can not eliminate extraneous factors that influence the outcome. B: Justification: In survey research, a vast amount of rich and diverse data can be collected.				b)

	a) Both A and B are true and R is the correct explanation of A.	b) Both A and B are true but R is not the correct explanation of A.	c) A is true, but B is false.	d) A is false, but B is true.	Both A and B are true but R is not the correct explanation of A.
137	Below are two statements-one Assertion (A) and the other Justification (J). Find the correct answer using code. A: Assertion: R.B.D. reduces the error mean square than C.R.D. B: Justification: The total square resulting from the error in C.R.D. is equal to the total square resulting from block and error in R.B.D.				a)
	a) Both A and B are true and R is the correct explanation of A.	b) Both A and B are true but R is not the correct explanation of A.	c) A is true, but B is false.	d) A is false, but B is true.	Both A and B are true and R is the correct explanation of A.
138	In 3 races, 2 genders, and 5 in each treatment group for two-way ANOVA, the degree of freedom for source of variation due to interaction, error, and total respectively are:				c)
	a) (6, 24, 29)	b) (6, 30, 30)	c) (2, 24, 29)	d) (2, 24, 30)	(2, 24, 29)
139	For the ANOVA table Source of variations / Sum of squares / Degree of freedoms Between treatments / 45 / 3 Error / 32 / 16 Total / 99 / 19 The F-statistic is:				d)
	a) 7.2	b) 7.3	c) 7.4	d) 7.5	7.5
140	If $E(\varepsilon_i \varepsilon_j) \neq 0, i \neq j$ for a regression model refer to:				c)
	a) Heteroscedasticity	b) Multicollinearity	c) Autocorrelation	d) Stochastic	Autocorrelation
141	In Almon distributed lag model, a second degree of polynomial in i is $\beta_i =$				a)
	a)$a_o + a_1 i + a_2 i^2$	b)$a_o + a_1 i + a_2 i^2 + a_3 i^3$	c)$a_o + a_1 i + a_2 i$	d)$a_o + a_1 i^2 + a_2 i^2$	$a_o + a_1 i + a_2 i^2$
142	What is the meaning of the term "heteroscedasticity"? A. The variance of the errors is not constant. B. The variance of the dependent variable is not constant. C. The errors are not linearly independent of one another. D. The errors have non-zero mean				c)

	Choose the correct answer from the code given below:				
	a) A-True, B-True, C-False, D-False	b) A-False, B-True, C-False, D-True	c) A-True, B-False, C-False, D-False	d) A-False, B-False, C-False, D-True	A-True, B-False, C-False, D-False
143	Assume that X has an exponential distribution and represents the lifetime of light bulbs (in hours). Find the survival function at X=1000 if F(1000)=0.20.				d)
	a) 0.20	b) 0.40	c) 0.60	d) 0.80	0.80
144	Which one of the following topics is not included in Multivariate Statistical Analysis?				a)
	a) Sensitivity Analysis	b) Discriminant Analysis	c) Principal Components	d) Cluster Analysis	Sensitivity Analysis
145	Let the m-component vector Y follow $N(0,T)$, where T is non-singular. Then$Y'T^{-1}Y$ follows one of the following: A. Normal$N(0,1)$ B. Chi-square with m degrees of freedom. C. Chi-square with $m-1$ degrees of freedom. D. Exponential distribution having pdf $e^{-x},\ x>0$. Find the correct answer.				b)
	a) A	d) B	c) C	d) D	Chi-square with m degrees of freedom.
146	Choose the correct match from the codes: A. Characteristic function of multivariate normal distribution — i. $N(\bar{x}-\mu)'S^{-1}(\bar{x}-\mu)$ B. Hotelling's T^2-statistic — ii. $(\bar{x}_1-\bar{x}_2)'S^{-1}(\bar{x}_1-\bar{x}_2)$ C. Mahalanobis' D^2-statistic — iii. $\frac{\lvert A\rvert}{\lvert A+B\rvert}$ D. Walk's λ-critetion — iv. $e^{it'\mu-\frac{1}{2}t\prime\Sigma t}$				c)
	a) A-iii, B-ii, C-i, D-iv	b) A-iv, B-i, C-ii, D-iii	c) A-iii, B-ii, C-i, D-iv	d) A-iv, B-i, C-ii, D-iii	d) A-iii, B-ii, C-i, D-iv
147	Suppose $\bar{x}$ is the mean vector of a sample of size N and S is the samplevariance-covariance matrix. Then the generalized T^2statistic is defined by A. $N(\bar{x}-\mu_o)'S^{-1}(\bar{x}-\mu_o)$ B. $(N-1)N(\bar{x}-\mu_o)'S^{-1}(\bar{x}-\mu_o)$ C. $N(\bar{x}-\mu_o)'A^{-1}(\bar{x}-\mu_o)$ D. $(N-1)N(\bar{x}-\mu_o)'A^{-1}(\bar{x}-\mu_o)$				a)

	a) A-True, B-False, C-False, D-False	b) A-True, B-True, C-False, D-False	c) A-False, B-True, C-True, D-False	d) A-False, B-False, C-True, D-True	A-True, B-False, C-False, D-False
148	Of the following, some are "True" and the rest are "False" parametric relations of balanced Incomplete Block Design (BIBD). A. $\lambda(k-1) = v(r-1)$ B. $bv = kr$ C. $vr = bk$ D. $r(k-1) = \lambda(v-1)$ Find the correct answer from the codes.				a)
	a) A-False, B-False, C-True, D-True	b) A-True, B-True, C-False, D-False	c) A-True, B-False, C-True, D-False	d) A-False, B-True, C-False, D-True	A-False, B-False, C-True, D-True
149	Consider the following statements: A: Assertion: Nearest neighbour analysis is an approach to the study of point, line, and area partners. B: Justification: Measurement of distance by comparing the observed mean distances with the expected mean distances between sampled points and their nearest neighbours. Choose the correct answer.				a)
	a) Both A and B are true and R is the correct explanation of A.	b) Both A and B are true but R is not the correct explanation of A.	c) A is true, but B is false.	d) A is false, but B is true.	Both A and B are true and R is the correct explanation of A.
150	Consider the following statements: A: Assertion: Reject the null hypothesis and run the post hoc analysis in a CRD. B: Justification: At the α-level of significance, the F-value from the ANOVA table is larger than the table value. Choose the correct answer.				a)
	a) Both A and B are true and R is the correct explanation of A.	b) Both A and B are true but R is not the correct explanation of A.	c) A is true, but B is false.	d) A is false, but B is true.	Both A and B are true and R is the correct explanation of A.