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C/S
22.6.13

Statistics & ~~Statistics~~ Computing
S. Stats. & Computing

13P/297/29

Question Booklet No.

(To be filled up by the candidate by **blue/black ball-point pen**)

Roll No.

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Roll No.

(Write the digits in words)

Serial No. of Answer Sheet

Day and Date

(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only **blue/black ball-point pen** in the space above and on both sides of the Answer Sheet)

1. Within 10 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. A separate Answer Sheet is given. *It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.*
4. Write your **Roll Number and Serial Number of the Answer Sheet by pen** in the space provided above.
5. *On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.*
6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and Roll No. and OMR sheet No. on the Question Booklet.
7. Any changes in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.
8. Each question in this Booklet is followed by four alternative answers. *For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by pen as mentioned in the guidelines given on the first page of the Answer Sheet.*
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed. If you do not wish to attempt a question, leave all the circles in the corresponding row blank (such question will be awarded zero marks).*
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *only the OMR Answer Sheet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

[उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण-पृष्ठ पर दिये गये हैं ।]

Total No. of Printed Pages : 29

STAT



13P/297/29

No. of Questions : 150

Time : $2\frac{1}{2}$ Hours]

[Full Marks : 450

Note : (i) Attempt as many questions as you can. Each question carries 3 (three) marks. *One mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question.*

(ii) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

1. The population of a region in each specified age group is given for five consecutive census years. The most appropriate way of representing the data graphically would be :
 - (1) Pie chart with radius proportional to the square of the total population of that census year and angle of the segment proportional to the percentage of population of specific age group
 - (2) Pie chart with radius proportional to the total population of that census year and angle of the segment proportional to the percentage of population of specific age group
 - (3) Divided bar charts of equal width, heights proportional to the total population of that census year and divisions proportional to the percentage of population of specific age group
 - (4) Divided bar charts of equal heights, width proportional to the total population of that census year and divisions proportional to the percentage of population of specific age group

2. A statistical table will have four essential components, namely title, stub, caption and body. Read the following in this context carefully :

S1 : Caption is the upper row containing the titles of the columns.

S2 : Stub is the left column containing the titles of the rows and its heading.

(1)

P. T. O.

S3 : A source note is given below the table if the figures in the table present primary data.

Choose the correct statement from the following :

- (1) Only S1 and S2 are correct (2) Only S3 is correct
 (3) All are correct (4) All are incorrect
3. There are $(n + 1)$ observations in a series. If \bar{x}_1 is the mean of first n observations and \bar{x}_2 is the mean of last n observations, then.
- (1) $\bar{x}_2 = \bar{x}_1 + x_{n+1} - x_1$ (2) $\bar{x}_2 = \bar{x}_1 - x_{n+1} + x_1$
 (3) $\bar{x}_2 = \bar{x}_1 + (x_{n+1} - x_1)/n$ (4) $\bar{x}_2 = \bar{x}_1 - (x_{n+1} - x_1)/n$
4. The mean weight of 150 students in a class is 60 Kgs. The mean weight of boys is 70 Kgs. And that of girls is 55 Kgs. The number of boys and girls in the class are respectively :
- (1) 50, 100 (2) 75, 75
 (3) 80, 70 (4) 100, 50
5. x_1, x_2, \dots, x_n are the increasing values of the characteristic under study with corresponding frequencies f_1, f_2, \dots, f_n . Assume that $x_0 (< x_1)$ and $x_{n+1} (> x_n)$ are hypothetical values of it each with frequency zero. The consecutive points, with abscissa as the values and ordinate as the corresponding frequencies, are joined by the straight line to give a frequency polygon. The total area within the polygon would be proportional to :
- (1) $\sum_{i=1}^n f_i (x_{i-1} - x_{i-1})$ (2) $\sum_{i=1}^n f_i (x_i - x_i)$
 (3) $\sum_{i=1}^n x_i (f_{i+1} - f_{i-1})$ (4) $\sum_{i=1}^n x_i (f_{i+1} - f_i)$
6. The commonly used modes of data collection are 'Direct observation method', 'Questionnaire method' and 'Interview method'. Which mode of data collection would be most appropriate for the study of a public health programme covering a city's slums ?
- (1) Direct observation method
 (2) Questionnaire method
 (3) Interview method
 (4) Either Interview method or Questionnaire method

7. There are 5 officers provided 20 servants in all. The geometric mean of the salaries of the officers is Rs. 10,00,00,000/- per month and the combined geometric mean of the officers and servants is Rs. 10,000/- per month. In this context read the following carefully :

Statement (S): The exact value of the geometric mean of the salaries of the servants cannot be calculated.

Reason (R) : The information provided is insufficient.

Choose your answer from the following :

- (1) S is true and R is its correct explanation
 - (2) S is true but R is not its correct explanation
 - (3) S is false but R is true
 - (4) Both S and R are false
8. Match the items in list A with those in list B :

List A (Description of the data)

- I : Year wise food production of a country
 II : City wise population of India
 III : Distribution of persons according to their level of education belonging to a given region.
 IV : Distribution of families according to the number of family members

List B (Type of classification)

- A : Chronological
 B : Geographical
 C : Qualitative
 D : Quantitative

Choose the answer from the following codes :

- | | | | | | | | |
|-------|----|-----|----|-------|----|-----|----|
| I | II | III | IV | I | II | III | IV |
| (1) B | C | A | D | (2) A | D | C | B |
| (3) I | II | III | IV | (4) I | II | III | IV |
| D | A | C | B | A | B | C | D |

9. Read the following statements carefully in context of the construction of histogram for grouped frequency distribution with unequal class intervals :

S1: Width of the rectangles are taken proportional to the width of the class intervals.

S2: Height of the rectangles are taken proportional to the frequency of the class.

S3 : Area of the rectangle is proportional to frequency of the class.

Choose your answer from the following codes :

- (1) Only S1 and S2 are true (2) Only S2 and S3 are true
 (3) Only S1 and S3 are true (4) All S1, S2 and S3 are true
- 10.** Geometric mean is more suitable than other measures of central tendency if the data is measured on :
- (1) Categorical scale (2) Ordinal scale
 (3) Ratio and proportional scale (4) Interval scale
- 11.** The mean and variance of 10 observations are 36 and 64 respectively. Each observation is first multiplied by 2 and then 5 are added. The mean and variance of the observations thus obtained would be respectively.
- (1) 41 and 64 (2) 72 and 128
 (3) 77 and 133 (4) 77 and 256
- 12.** For a negatively skewed distribution, the correct inequality between mean, median and mode should be :
- (1) Mean < Median < Mode (2) Mean < Mode < Median
 (3) Mode < Median < Mean (4) Mode < Mean < Median
- 13.** For a given data, a student calculated the mean, median and mode as 166.8, 156.7 and 172.5 respectively. In this context read the following carefully :
- ✓ **Statement (S)** : The student has committed a calculation mistake.
 ✓ **Reason (R)** : Because median can never be less than mean and mode both.
- Choose your answer from the following codes :
- (1) S is true and R is its correct explanation
 (2) S is true but R is not its correct explanation
 (3) S is false but R is true
 (4) Both S and R are false
- 14.** For a given distribution, a student calculated the Pearson's coefficient of skewness (β_1) and kurtosis (β_2) as 1.87 and 2.46 respectively. Choose the most appropriate comment from the following codes :
- (1) The above mentioned values are not possible for any distribution
 (2) The above mentioned values are possible for platykurtic and positively skewed distribution only
 (3) The above mentioned values are possible for leptokurtic and negatively skewed distribution only
 (4) The above mentioned values are possible for platykurtic and skewed distribution but positively or negatively skewed, cannot be inferred

20. Match the items in list A with those in list B :

List A	List B
I : Karl Pearson's coefficient of skewness (formula)	A : ± 3
II : Bowley's coefficient of skewness (formula)	B : ± 1
III : Limit of Karl Pearson's coefficient of skewness	C : $(Q_3 + Q_1 - 2Q_2) / (Q_3 - Q_1)$
IV : Limit of Bowley's coefficient of skewness	D : $\frac{3(\text{mean} - \text{median})}{\text{standard deviation}}$

Q_i denotes i th quartile

Choose the answer from the following codes :

- | | |
|----------------------------|----------------------------|
| (1) I II III IV
C D A B | (2) I II III IV
D C A B |
| (3) I II III IV
D C B A | (4) I II III IV
C D B A |

21. The standard deviation of a leptokurtic distribution is 5. Then the fourth central moment for the distribution would be :

- | | |
|--------------------------------------|------------------------------------|
| (1) never more than 75 | (2) more than 75 but less than 625 |
| (3) more than 625 but less than 1875 | (4) more than 1875 |

22. Consider the equations of lines $3X + 4Y = 45$ and $3X + Y = 27$. Choose your comment from the following codes in context of these lines representing the pair of regression lines :

- (1) These can never represent a pair of regression lines
- (2) The regression coefficient of Y on X is -3
- (3) The correlation coefficient between X and Y is $1/2$
- (4) The regression coefficient of Y on X is $-3/4$

23. From the following choose the comment which is *always true* in context of pair of regression lines :

- (1) If one of the regression coefficients is less than one of the other should be more than one
- (2) If one of the regression coefficients is more than one, the other should be less than one
- (3) Both the regression coefficients can never be less than one
- (4) Both the regression coefficients can be more than one

24. The maximum value of the sum of square of the differences between the ranks awarded by two examiners to a group of 11 students will be :
- (1) 220 (2) 440 (3) 506 (4) 1020
25. Let r_{xy} and η_{xy} denote the correlation coefficient between X and Y and correlation ratio of X on Y respectively. Which of the following is generally *not true* ?
- (1) $r_{xy} = r_{yx}$ (2) $\eta_{xy} = \eta_{yx}$ (3) $r_{xy}^2 \leq 1$ (4) $\eta_{xy}^2 \leq 1$
26. If $r_{12} = r_{13} = r_{23} = \rho$, then
- (1) $R_{1,23} = \rho$ and $r_{12,3} = \rho$
 (2) $R_{1,23} = \rho/(1+\rho)$ and $r_{12,3} = \rho\sqrt{2}/\sqrt{1+\rho}$
 (3) $R_{1,23} = \rho\sqrt{2}/\sqrt{1+\rho}$ and $r_{12,3} = \rho/(1+\rho)$
 (4) None of the above
27. Out of 1482 persons in a locality exposed to small-pox, in all 368 were attacked. There were 343 persons in the locality who were vaccinated against small-pox but 35 among them were attacked. From this data, the conclusion about association between vaccination and attack would be that :
- (1) These are positively associated
 (2) These are not associated
 (3) These are negatively associated
 (4) The data is insufficient to draw any conclusion
28. In context of the dichotomous classification of data according to n attributes, read, the following statements :
- S_1 : The number of positive class frequencies is same as that of ultimate class frequencies.
 S_2 : Data is completely specified if ultimate class frequencies are given
 S_3 : Data is completely specified if any 2^n class frequencies are given.
 Choose the correct answer from the following codes :
- (1) S_1 and S_2 are true but S_3 is false
 (2) S_2 and S_3 are true but S_1 is false
 (3) S_1 and S_3 are true but S_2 is false
 (4) S_1 and S_2 and S_3 all are true

29. The equation of pair of regression lines for a given data is reported as $4X + 5Y + 33 = 0$ and $20X - 9Y - 107 = 0$.

Statement (S) : We cannot calculate the correlation coefficient between X and Y

Reason (R) : The equation of regression line of X on Y and that of Y on X are not specified

Choose your answer from the following codes :

- (1) S is true and R is its correct explanation
 (2) S is true but R is not its correct explanation
 (3) S is false but R is true
 (4) Both S and R are false
30. X_1, X_2, \dots, X_{10} are independently and identically distributed random variables each having mean 10 and variance 64. If $T = X_1 + X_2 + \dots + X_{10}$ and $V = X_1, X_2, \dots, X_{10}$, the correlation coefficient between T and V will be.
 (1) 0.9 (2) $+\sqrt{0.9}$ (3) $\sqrt{0.9}$ (4) None of these
31. Mr. X wants to purchase a car but he is confused to choose the one. The probabilities that he will go for the category B or category C cars are respectively 0.54 and 0.46. If he selects category B cars, he will buy either Palio or Indica with respective probabilities, 0.48 and 0.52. On the other hand if he goes for category C, the probabilities of buying Accent is 0.59 and that of Ikon is 0.41. In the light of the above information, which car do you think Mr. X is most likely to purchase ?
 (1) Palio (2) Indica (3) Accent (4) Ikon
32. In tossing of a coin four times, the events E_1 and E_2 are mutually exclusive if :
 (1) E_1 : Getting at least two heads and E_2 : Getting at most two tails
 (2) E_1 : Getting at least two heads and E_2 : Getting at least two tails
 (3) E_1 : Getting at least three heads and E_2 : Getting at most three tails
 (4) E_1 : Getting at least three heads and E_2 : Getting at least three tails
33. An unbiased coin is tossed until a head is obtained or the total number of tosses is 7. Let the event E be that the coin is tossed at least three times. In this context read the following carefully :
 S_1 : The total number of mutually exclusive and equally likely outcomes is 7.
 S_2 : The number of favourable outcomes to event E is 3.
 S_3 : Probability of E is $3/7$

Choose the correct answer from the following codes :

- (1) S_1 is true but S_2 and S_3 are false
- (2) S_2 is true but S_1 and S_3 are false
- (3) S_1 and S_2 and S_3 all are false
- (4) S_1 and S_2 and S_3 all are true

34. In a university 60% students are male. 50% of the male students and 30% of the female students are smokers. If a student is seen smoking, the probability that it is a female student is :
- (1) Equal to 0.3
 - (2) Less than 0.3
 - (3) Between 0.3 and 0.4
 - (4) More than 0.4
35. There are three bags, each containing 12 white and 8 black balls. One ball is drawn from the first bag and placed in the second bag. Then a ball is drawn from the second bag and placed in the third bag. Finally a ball is drawn from the third bag. The probability that the ball drawn is white is :
- (1) $12/20$
 - (2) $13/20$
 - (3) $12/21$
 - (4) $13/21$
36. In a multiple choice test having m choices in each question, an examinee either knows the answer with probability p or guesses with probability $(1-p)$. The probability of answering the question correctly is 1, if he knows the answer and $1/m$, if he guesses. If an examinee answers a question correctly, the probability that he really knew the answer is :
- (1) $mp/(1 + mp)$
 - (2) $(m - 1)p/(1 + mp)$
 - (3) $mp/(1 + (m - 1)p)$
 - (4) $(m - 1)p/(1 + (m - 1)p)$
37. Two friends Mr. X and Mr. Y decide to meet at the gate of a hotel to have the dinner together between 8.30 p.m. and 9.30 p.m. They further decide to wait no more than 15 minutes from the time of their arrival or the end of the meeting hour. They reach hotel independently during meeting hours. Define A : They meet, B : X arrives before Y and C : X arrives after Y. Consider the following Statements in this context.
- S_1 : The conditional events $B | A$ and $C | A$ are equally likely.
 S_2 : The conditional events $A | B$ and $A | C$ are equally likely.
- Choose the correct answer from the following codes :
- (1) Both S_1 and S_2 are true
 - (2) S_1 is true but S_2 is false
 - (3) S_1 is false but S_2 is true
 - (4) Both S_1 and S_2 are false

38. The chance that a doctor D will diagnose a disease X correctly is 60%. The chance that a patient will die by the treatment of the doctor D even after correct diagnosis of X is 40% and the chance of death after wrong diagnosis is 70%. A patient of the doctor D who had disease X died after his treatment. The probability that his disease was correctly diagnosed by the doctor is :
- (1) $7/13$ (2) $6/13$
 (3) $6/25$ (4) $8/25$
39. In a row of N seats, people are seated randomly. The probability that two specified people are seated next to each other is :
- (1) $(N-1)/N!$ (2) $2/N$
 (3) $1/N$ (4) $(N-1)/2(N-1)!$
40. Under the same unit of measurement, three random variables X, Y and Z follow Binomial, Poisson and Negative Binomial distribution respectively but the parameters are unknown. If the ratio of mean and variances of X, Y and Z are A, B and C respectively, then :
- (1) $A \leq B \leq C$
 (2) $B \leq C \leq A$
 (3) $C \leq B \leq A$
 (4) A, B and C cannot be compared because the parameters are not specified
41. A and B are two events such that whenever A happens B happens but not vice-versa and $P(B) < 1$. If $p = P(A^c \cup B^c)$, $q = P(A^c \cap B^c)$ and $r = P(A^c | B^c)$ then :
- (1) $q \leq r \leq p$
 (2) $q \leq p \leq r$
 (3) $r \leq q \leq p$
 (4) No inequality exists, in general among p, q, r
42. A fair die is rolled repeatedly. The probability that 2 will show up before 5 is :
- (1) $1/2$ (2) $1/3$
 (3) $1/4$ (4) $1/5$
43. The distribution function of any random variable is :
- S_1 : always right continuous.
 S_2 : may be discontinuous at countable number of points.
 S_3 : monotone non-increasing.

Choose the correct answer from the following codes :

- (1) S_1 and S_2 are true but S_3 is false
- (2) S_2 and S_3 are true but S_1 is false
- (3) S_1 and S_3 are true but S_2 is false
- (4) S_1 and S_2 and S_3 all are true

44. Which of the following is *always true* ?

- (1) If a random variable X may have no moments, its moment generating function will never exist
- (2) If a random variable X has all or some of the moments, even then its moment generating function may not exist except only at one point
- (3) If a random variable X has all or some of the moments and moment generating function exists, it will always generate those moments which exists
- (4) If a random variable X has all the moments, its moment generating function always exists for all real t

45. The moment generating function of a random variable X is $3(3 - t)^{-3}$, the standard deviation of the variable is :

- (1) 0
- (2) $1/9$
- (3) $2/9$
- (4) $3/9$

46. Consider the events A and B such that $P(A) = 1/4$, $P(B|A) = 1/2$ and $P(A|B) = 1/4$. The random variables X and Y are defined as :

$$X(w) = 1, \text{ if } w \in A \\ = 0, \text{ otherwise}$$

and

$$Y(w) = 1 \text{ if } w \in B \\ = 0, \text{ otherwise}$$

Which of the following is *true* ?

- (1) $P(X = 0 \cap Y = 0) = 5/8$
- (2) $P(X = 0 \cap Y = 1) = 1/8$
- (3) $P(X = 1 \cap Y = 0) = 3/8$
- (4) $P(X = 1 \cap Y = 1) = 1/8$

47. A function is defined below :

$$F(x) = 0, \quad \text{for } x \leq 0; \\ = x/2, \quad \text{for } 0 \leq x < 1; \\ = 1/2, \quad \text{for } 1 \leq x < 2; \\ = x/4, \quad \text{for } 2 \leq x < 4; \\ = 1, \quad \text{for } 4 \leq x.$$

Then $F(x)$ is :

- (1) not a c.d.f.
- (2) c.d.f of a continuous random variable
- (3) c.d.f of a discrete random variable
- (4) c.d.f of a mixed random variable

48. Two discrete random variables X and Y have $P(X = 1 \cap Y = 1) = 2/9$, $P(X = 1 \cap Y = 2) = P(X = 2 \cap Y = 1) = 1/9$ and $P(X = 2 \cap Y = 2) = 5/9$. Read the following statements carefully :

S_1 : X and Y are independently distributed

S_2 : X and Y are identically distributed

Choose the correct answer from the following codes :

- (1) Both S_1 and S_2 are true
- (2) S_1 is true but S_2 is false
- (3) S_1 is false but S_2 is true
- (4) Both S_1 and S_2 are false

49. The probability mass function of a random variable X is $f(x) = k a^x$; $0 < a < 1$, $x = 1, 2, 3, \dots, \infty$, and k is constant. The value of k and mean of X are respectively.

- (1) $(1-a)^{-1}$ and $(1-a) a^{-1}$
- (2) $(1-a)^{-1}$ and $(1-a)^{-1}$
- (3) $(1-a)a^{-1}$ and $(1-a)^{-1}$
- (4) $(1-a)a^{-1}$ and $(1-a)a^{-1}$

50. The probability generating function of a random variable X is $P(s) = s(2-s)^{-1}$. The probability mass function of the random variable is :

- (1) $f(x) = (1/2)^x$, $x = 1, 2, \dots$
- (2) $f(x) = (1/2)^{x+1}$, $x = 0, 1, 2, \dots$
- (3) $f(x) = (1/2)^x$, $x = 0, 1, 2, \dots$
- (4) $f(x) = (1/2)^{x+1}$, $x = 1, 2, \dots$

51. Read the following statements carefully :

S_1 : Poisson distribution is limiting case of Binomial distribution.

S_2 : Poisson distribution is limiting case of Negative Binomial distribution.

S_3 : Geometric distribution is a special case of Negative Binomial distribution.

Choose the correct answer from the following :

- (1) S_1 and S_2 are true but S_3 is false
- (2) S_2 and S_3 are true but S_1 is false
- (3) S_1 and S_3 are true but S_2 is false
- (4) S_1 and S_2 and S_3 all are true

52. For a random variable X the first two moments about natural origin are 3 and 13 respectively. Then $P(-2 \leq X \leq 8)$ will be always :
- (1) greater than $4/25$ (2) less than $4/25$
 (3) greater than $21/25$ (4) less than $21/25$
53. The joint probability density function of the random variables X and Y is
 $f(x, y) = \exp(-y)$, for $0 < x < y < \infty$
 $= 0$, otherwise.
 Then the $E(Y | x)$ is
 (1) x (2) $x+1$ (3) $x-1$ (4) $\text{Exp}(-x)$
54. If X is a Poisson variable with parameter m , then $P(X \geq 2)$ is equal to :
- (1) $\int_0^m x e^{-x} dx$ (2) $\int_0^m x^2 e^{-x} dx$
 (3) $\int_0^m e^{-x} dx$ (4) None of these
55. Mean is always less than variance for :
- (1) Negative Binomial distribution only
 (2) Geometric distribution only
 (3) Negative Binomial distribution and Geometric distribution both
 (4) Neither Negative Binomial distribution nor Geometric distribution
56. If X_1, X_2 and X_3 are three independent Poisson variables with parameters λ_1, λ_2 and λ_3 respectively, the conditional distribution of X_1, X_2 and X_3 given that $X_1 + X_2 + X_3 = 100$ is :
- (1) Poisson (2) Binomial
 (3) Hyper geometric (4) Trinomial
57. t-distribution with one degree of freedom is a :
- (1) Gamma distribution
 (2) Beta distribution
 (3) Normal Distribution
 (4) Cauchy Distribution

58. If X follows a uniform distribution over $(0,1)$ then $-2 \log X$ will follow :

S_1 : chi-square distribution with one degree of freedom.

S_2 : gamma distribution with parameter $1/2$.

Choose the correct answer from the following codes :

- (1) Both S_1 and S_2 are true (2) S_1 is true but S_2 is false
 (3) S_1 is false but S_2 is true (4) Both S_1 and S_2 are false

59. The mean and variance of a chi-square distribution with n degrees of freedom are respectively :

- (1) n and n (2) n and $2n$
 (3) $2n$ and n (4) $2n$ and $2n$

60. If $P(X > s + t \mid X > s) = P(X > t)$, and X is non-negative integer valued random variable, then X follows :

- (1) Geometric distribution (2) Hyper geometric distribution
 (3) Exponential distribution (4) Poisson distribution

61. If X has a F-distribution with (n_1, n_2) degrees of freedom, the limiting distribution of $Y = C/X$ will follow a chi-square distribution if :

- (1) $C = n_1$ and $n_2 \rightarrow \infty$ (2) $C = n_1$ and $n_1 \rightarrow \infty$
 (3) $C = n_2$ and $n_2 \rightarrow \infty$ (4) $C = n_2$ and $n_1 \rightarrow \infty$

62. Which of the following statements are *always true* ?

S_1 : Sum of independent Binomial variables is Binomial variable

S_2 : Sum of independent Poisson variables is Poisson variable.

S_3 : Sum of Normal variables is Normal variable.

Choose the correct answer from the following :

- (1) S_1 and S_2 are true but S_3 is false
 (2) S_2 and S_3 are true but S_1 is false
 (3) S_1 and S_3 are true but S_2 is false
 (4) S_1 and S_2 and S_3 all are true

63. The Index number satisfies the time reversal test if :

- (1) $I_{01} + I_{10} = 1$ (2) $I_{01} - I_{10} = 0$
 (3) $I_{01} \cdot I_{10} = 1$ (4) $I_{01}/I_{10} = 1$

64. The long term movement of a time series is called :
- (1) Trend (2) Seasonal variation
(3) Cyclic variation (4) Random variation.

65. Match the items in list A with those in list B :

List A (*law of large numbers*)

List B (*Type of convergences*)

I: Weak Law of Large Numbers

A: Convergence in Law

II: Strong Law of Large Numbers

B: Convergence in Probability

III: Central Limit theorem

C: Convergence Almost Sure

Choose the answer from the following codes :

(1) I II III
A B C

(2) I II III
A C B

(3) I II III
B A C

(4) I II III
B C A

66. The limit of $(1-a/x)^{-x}$ (where $a>0$ and $x>0$) as x tends to infinity will be :
- (1) 1
(2) $\text{Exp}(-a)$
(3) $\text{Exp}(a)$
(4) None of the above, because it does not exist

67. In selecting a sample of n units from a population of N units by simple random sampling with replacement, the probability of all the units in the sample being different is :

(1) $n! \binom{N}{n} / N^n$

(2) $1 - 1/(N-n)^n$

(3) $\binom{N}{n} / N^n$

(4) None of the above

68. Stratified sampling is recommended for use if :

S_1 : Population is homogeneous.

S_2 : Population is heterogeneous but each stratum is homogeneous within itself.

S_3 : Population is heterogeneous and strata are heterogeneous between themselves.

Choose your answer from the following codes :

- (1) S_1 and S_2 are true but S_3 is false (2) S_2 and S_3 are true but S_1 is false
 (3) S_1 and S_3 are true but S_2 is false (4) S_1 and S_2 and S_3 all are true

69. In systematic sampling of selecting a sample of n units from a population of $N (=nk)$ units. The probability of selecting a specified sample is :
- (1) $1/N$ (2) $1/n$
 (3) $1/k$ (4) None of the above

70. Read the following carefully :

Statement (S) : Cluster sampling is in general less efficient than simple random sampling.

Reason (R) : The units within the clusters are expected to be more homogeneous.

Choose your answer from the following codes :

- (1) S is true and R is its correct explanation
 (2) S is true but R is not its correct explanation
 (3) S is false but R is true
 (4) Both S and R are false

71. In selecting a sample of n units from a population of N units by simple random sampling without replacement, the probability of selecting i^{th} unit and r^{th} draw is :

- (1) $1/N$ (2) $1/(N-i+1)$
 (3) $1/(N-r+1)$ (4) $i/(N-i)$

72. If the population size is N and sample size is n , the sampling fraction would mean :

- (1) N/n (2) n/N
 (3) $(N-n)/N$ (4) $(N-n)/n$

73. In context of sample surveys :

S_1 : The sampling error increases as sample size increases.

S_2 : The non-sampling error decreases as sample size increases.

Choose the correct answer from the following :

- (1) Both S_1 and S_2 are true (2) S_1 is true but S_2 is false
 (3) S_1 is false but S_2 is true (4) Both S_1 and S_2 are false

74. A sample of size n is drawn from a population of size N using simple random sampling without replacement. The probability that a specified unit will be included in the sample is :
- (1) $1/N$ (2) n/N (3) $1/N^n$ (4) $1/{}^n C_N$
75. A random sample of size n is drawn from a population of size N , having mean μ and standard deviation σ using simple random sampling without replacement. The covariance between any two sample observations will be :
- (1) $-\sigma^2/N$ (2) $-\sigma^2/(N-1)$ (3) $-\sigma^2/n$ (4) $-\sigma^2/(n-1)$
76. X takes values 1, 2, 3 and 4 with probability distribution P_0 under null hypothesis and P_1 under alternative hypothesis as given below :
- | | | | | | |
|-------|---|------|------|------|------|
| X | : | 1 | 2 | 3 | 4 |
| P_0 | : | 2/13 | 3/13 | 3/13 | 5/13 |
| P_1 | : | 2/13 | 3/13 | 1/13 | 7/13 |
- Consider the critical regions $W_1 = \{1, 2\}$, $W_2 = \{1, 3\}$ and $W_3 = \{4\}$. Read the following statements carefully :
- S_1 : All the critical regions have same size $5/13$.
 S_2 : W_1 and W_2 have powers more than that of W_3
- Choose the correct answer from the following :
- (1) Both S_1 and S_2 are true (2) S_1 is true but S_2 is false
 (3) S_1 is false but S_2 is true (4) Both S_1 and S_2 are false
77. In a sequential probability ratio test for testing simple null hypothesis against simple alternative hypothesis, the pre-specified probability of first and second kind of errors are α and β respectively. If the corresponding actual probabilities are α' and β' , then :
- (1) $\alpha \geq \alpha'$ (2) $\beta \geq \beta'$
 (3) $\alpha + \beta \geq \alpha' + \beta'$ (4) All the above are true
78. In a sequential probability ratio test, the pre-specified probability of first and second kind of errors are α and β respectively. The test rejects the null hypothesis $H_0 : \theta = \theta_0$ if the probability ratio is greater than or equal to 'A', accepts if it is less than or equal to 'B' and continues the sampling otherwise. The value of A and B are approximated by :
- (1) $A = (1 - \beta)/\alpha$, $B = \beta/(1 - \alpha)$ (2) $A = \beta/(1 - \alpha)$, $B = (1 - \beta)/\alpha$
 (3) $A = \alpha/(1 - \beta)$, $B = (1 - \alpha)/\beta$ (4) $A = (1 - \alpha)/\beta$, $B = \alpha/(1 - \beta)$

79. For testing the independence of two attributes on the basis of the data provided in a $r \times c$ contingency table, the degrees of freedom associated with the respective chi-square test statistics would be :
- (1) $rc-1$ (2) $r(c-1)$
 (3) $(r-1)c$ (4) $(r-1)(c-1)$
80. X_1, X_2, \dots, X_n is a random sample drawn from a normal population $N(0, \sigma^2)$. Consider the statistics $T = \frac{1}{n} \sum_{i=1}^n X_i^2$ and $S = \frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})^2$ where \bar{X} is sample mean. Choose the most appropriate answer from the following :
- (1) T is the only unbiased estimator of σ^2
 (2) S is the only unbiased estimator of σ^2
 (3) T and S both are unbiased estimators of σ^2 but T has smaller variance
 (4) T and S both are unbiased estimators of σ^2 but S has smaller variance
81. X_1, X_2, \dots, X_n is a random sample drawn from a population having probability density function $f(x|\theta) = e^{-x-\theta}, x > \theta > 0$. If $X_{(r)}$ and \bar{X} denote the r^{th} order statistic and sample mean respectively, the sufficient statistics for θ would be :
- (1) Non-existent (2) \bar{X}
 (3) $X_{(r)}$ (4) $X_{(n)}$
82. Samples of sizes 10 and 15 are drawn from normal populations $N(\mu_1, 16)$ and $N(\mu_2, 16)$. The most appropriate test for testing $H_0: \mu_1 = \mu_2$ would be :
- (1) Normal test (2) t-test
 (3) chi-square test (4) F-test
83. Which of the following statement is correct ?
- (1) Unbiased estimators are consistent
 (2) Consistent estimators are unbiased
 (3) Maximum likelihood estimators are consistent
 (4) Maximum likelihood estimators are unbiased
84. The regularity conditions for Cramer-Rao inequality do not hold when we are sampling from :
- (1) Normal $(10, \theta^2)$ (2) Binomial $(25, \theta)$
 (3) Poisson (θ) (4) Uniform $(0, \theta)$

85. Which of the following is one-dimensional diagram ?
 (1) Bar diagram (2) Pie-chart
 (3) Cylinder (4) A graph
86. Consider that a sample of size 63 is drawn from a normal population having unknown mean and variance μ and σ^2 respectively. We wish to test $H_0 : \mu = \mu_0$ against $H_1 : \mu > \mu_0$. The most appropriate test would be :
 (1) Right-tail t-test (2) Left-tail t-test
 (3) Right -tail normal test (4) Left-tail normal test
87. It is proposed to test the hypothesis $H_0 : \theta = 2$ against $H_1 : \theta = 1$ on the basis of a single observation X drawn from a population having probability density function $f(x|\theta) = \theta e^{-\theta x}$, $x > 0$. The size of the test which rejects H_0 $X > 1$ is :
 (1) e^2 (2) e^{-2}
 (3) $e^2 - 1$ (4) $(e^2 - 1)^{-1}$
88. If probability of type I and Type II errors are denoted by α and β respectively, then for a most powerful test :
 (1) $\alpha \leq \beta$ (2) $\alpha \geq \beta$
 (3) $\alpha + \beta \leq 1$ (4) $\alpha + \beta \geq 1$
89. X_1, X_2, \dots, X_n is a random sample drawn from a normal population $N(\mu, 1)$. The unbiased estimator of $\mu^2 + 1$ is :
 (1) $\left(\frac{1}{n} \sum_{i=1}^n X_i \right)^2 - \frac{1}{n} + 1$ (2) $\left(\frac{1}{n} \sum_{i=1}^n X_i \right)^2 + 1$
 (3) $\left(\frac{1}{n+1} \sum_{i=1}^n X_i^2 \right)$ (4) $\left(\frac{1}{n} \sum_{i=1}^n X_i^2 \right)$
90. If X is a single observation from a Poisson distribution with parameter θ then $(-4)^X$ is :
 (1) unbiased estimator of $e^{-3\theta}$ (2) unbiased estimator of $e^{-4\theta}$
 (3) unbiased estimator of $e^{-5\theta}$ (4) none of the above three

91. A random sample of size n is drawn from a population having probability density function.

$$f(x|\theta) = 1, \text{ if } \theta - 1/2 \leq x \leq \theta + 1/2$$

$$= 0, \text{ otherwise.}$$

If $X_{(r)}$ denotes the r^{th} order statistic, the maximum likelihood estimator for θ is :

- (1) $X_{(1)} + 1/2$ (2) $X_{(n)} - 1/2$
 (3) $[X_{(1)} + X_{(n)}]/2$ (4) All the three

92. Which of the following is most correctly matched ?

- (1) Factorization Theorem - Uniformly Most Powerful Test
 (2) Rao-Blackwell Theorem - Minimum Variance unbiased Estimator
 (3) Cochran's theorem - Interval Estimation
 (4) Markov's theorem - Sufficiency

93. A Latin Square Design is a :

- (1) complete two way (2) incomplete two way
 (3) complete three way (4) incomplete three way

94. In Latin Square Design, the number of replicate (R) and number of treatment (T) should satisfy the following condition :

- (1) $R < T$ (2) $R = T$ (3) $R > T$ (4) $R \neq T$

95. Read the following statements carefully in context of design of experiment :

S_1 : Local control along with replication diminishes the error.

S_2 : Local control along with randomization validates the error.

Choose the correct answer from the following :

- (1) Both S_1 and S_2 are true (2) S_1 is true but S_2 is false
 (3) S_1 is false but S_2 is true (4) Both S_1 and S_2 are false

96. For a 2^2 -factorial experiment in r replicates, the sum of square for the effect A in the ANOVA table is :

- (1) $[A]^2 / 4r$ (2) $[A]^2 / r$
 (3) $2[A]^2 / r$ (4) $4[A]^2 / r$

97. Out of the three basic principles (randomization, replication and local control) of design of experiments RBD uses :
- (1) Randomization and replication only
 - (2) Randomization and local control only
 - (3) Replication and local control only
 - (4) All the three i.e. randomization, replication and local control
98. In a two way classification with one observation per cell there are 4 rows and 3 columns. The degrees of freedom for F-test for testing the equality of row means is :
- (1) (3, 6)
 - (2) (4, 6)
 - (3) (3, 8)
 - (4) (4, 7)
99. If the degree of freedom for the error sum of squares in a Latin Square design is 6 then its order is :
- (1) 3 x 3
 - (2) 4 x 4
 - (3) 5 x 5
 - (4) 6 x 6
100. Read the following carefully :
- Statement (S)** : Square of every t-statistics is F-statistics.
Reason (R) : Square root of every F-statistics is t-statistics.
 Choose your answer from the following codes :
- (1) S is true and R is its correct explanation
 - (2) S is true but R is not its correct explanation
 - (3) S is false but R is true
 - (4) Both S and R are false
101. What is the only function that all C++ programs must contain ?
- (1) Start ()
 - (2) Program ()
 - (3) System ()
 - (4) Main ()
102. Which of the following is *not* a correct variable type in C ?
- (1) Double
 - (2) Float
 - (3) Int
 - (4) Real
103. Shortcut notation for groups of four Binary Digits is called number system.
- (1) Unicode
 - (2) Hexadecimal
 - (3) Decimal
 - (4) Binary
104. Which of the following is *not* an input device ?
- (1) Touch screen
 - (2) Optimal scanners
 - (3) Touch pad
 - (4) Mouse pad

105. Which of the following memory has the shortest access time ?
(1) Register (2) Virtual memory
(3) Cache memory (4) External memory
106. The third generation computer was made with :
(1) Vacuum tube (2) Transistor
(3) IC (4) Biochips
107. If 4/6 entered in a cell without applying any formats, Excel will treat this as :
(1) Fraction (2) Number
(3) Text (4) Date
108. In Excel selecting the rows 5 and 6 then choose Insert->Row. What will happen ?
(1) 1 row will be inserted above row 5
(2) 2 rows will be inserted above row 5
(3) 1 row will be inserted below row 6
(4) 2 rows will be inserted below row 6
109. Which feature helps you to insert the contents of the clipboard as text without any formatting ?
(1) Format painter (2) Paste special
(3) Page setup (4) Styles
110. ASCII means :
(1) American Stable Code for International Interchange
(2) American Standard Case for Institutional Interchange
(3) American Standard Code for Interchange Information
(4) American Standard Code for Information Interchange
111. Mnemonic, a memory trick, is used in which of the following language ?
(1) Low level language (2) Assembly language
(3) High level language (4) Object oriented language
112. A Kilobyte equals :
(1) 100 bytes (2) 1000 bytes
(3) 1024 bytes (4) 1036 bytes

113. Bit stands for :
- (1) binary information term (2) binary digit
(3) binary tree (4) bivariate theory
114. Which one of the following is *not* a network device ?
- (1) Router (2) Switch (3) Hub (4) CPU
115. If $(y)_x$ represents a number y to the base x , then which of the following numbers is the smallest among the following ?
- (1) $(1111)_2$ (2) $(1111)_8$ (3) $(1111)_{10}$ (4) $(1111)_6$
116. Which one of the following represents the binary equivalent of the decimal number 23 ?
- (1) 01011 (2) 10111
(3) 10011 (4) None of the above
117. Where does a computer add and compare its data ?
- (1) CPU (2) Memory
(3) Hard disk (4) Floppy disk
118. High level programming language can be converted to machine language using which of the following ?
- (1) Oracle (2) Compiler
(3) Mat Lab (4) Assembler
119. DNS in internet technology stands for :
- (1) Dynamic Name System
(2) Domain Name System
(3) Distributed Name System
(4) Distributed Domain Name System
120. Which number system is usually followed in a typical 32-bit computer ?
- (1) binary (2) octal
(3) decimal (4) hexadecimal
121. How to insert blank cells in an Excel sheet ?
- (1) Ctrl+Shift (2) Ctrl+Shift+Alt
(3) Ctrl+Shift+Plus Sign (4) Shift+Alt

122. What does FORTRAN stand for ?
 (1) Formula Transcript (2) Formula Transposition
 (3) Formula Translating (4) Formula Transforming
123. The default MS Excel file extension is :
 (1) .XLR (2) .EXE (3) .EXL (4) .XLS
124. An excel worksheet can have a maximum of number of rows.
 (1) 65535 (2) 256 (3) 255 (4) 65536
125. Which is the shortcut to Goto Option in Excel ?
 (1) F5 (2) F7 (3) F8 (4) F2
126. Which shortcut command is used to insert the current time in a cell of Excel spreadsheet ?
 (1) Alt+T (2) Alt+Shift+T
 (3) Shift+T (4) Ctrl+:
127. Which sign we use to enter formula in Excel ?
 (1) = (2) / (3) * (4) &
128. Which of the following is *not* a valid data type in Excel ?
 (1) Number (2) Label (3) Character (4) Data/Time
129. Which of the following is a temporary primary memory ?
 (1) PROM (2) RAM (3) ROM (4) EPROM
130. MICR stands for :
 (1) Magnetic Ink Character Recognition
 (2) Magnetic Ink Computer Record
 (3) Magnetic Industries Corporation Region
 (4) Microphone Recording
131. Primary Memory stores :
 (1) Data (2) Programs
 (3) Results (4) All of the above

- 132. The information stored in CD-ROM is in the form of:
(1) Binary (2) Digital (3) Analog (4) Codes
- 133. The first UNIX operating system was written in the:
(1) Assembly Language (2) C Language
(3) Java (4) Fortran
- 134. What is responsible for starting an Operating System on a Computer ?
(1) ROM BIOS (2) Bootstrap Program
(3) Boot Sector (4) Cache Memory
- 135. A co-processor is used to :
(1) Enhance main memory
(2) Track errors in the CPU
(3) Improve performance of business application
(4) Improve the speed of mathematical calculations
- 136. Which device can understand difference between data and programs ?
(1) Input Device (2) Output Device
(3) Memory (4) Microprocessor
- 137. Which command in DOS can be used to recover accidentally deleted files ?
(1) CANCEL (2) UNDELETE
(3) RECOVER (4) RESTORE
- 138. Algorithm and Flowchart help us to :
(1) know the memory capacity
(2) identify the base of a number system
(3) direct the output to a printer
(4) specify the problem completely and clearly
- 139. Consider the following program code :
define max value 10
int main()
{
 int a =60;
 if(a/max value==6)

```

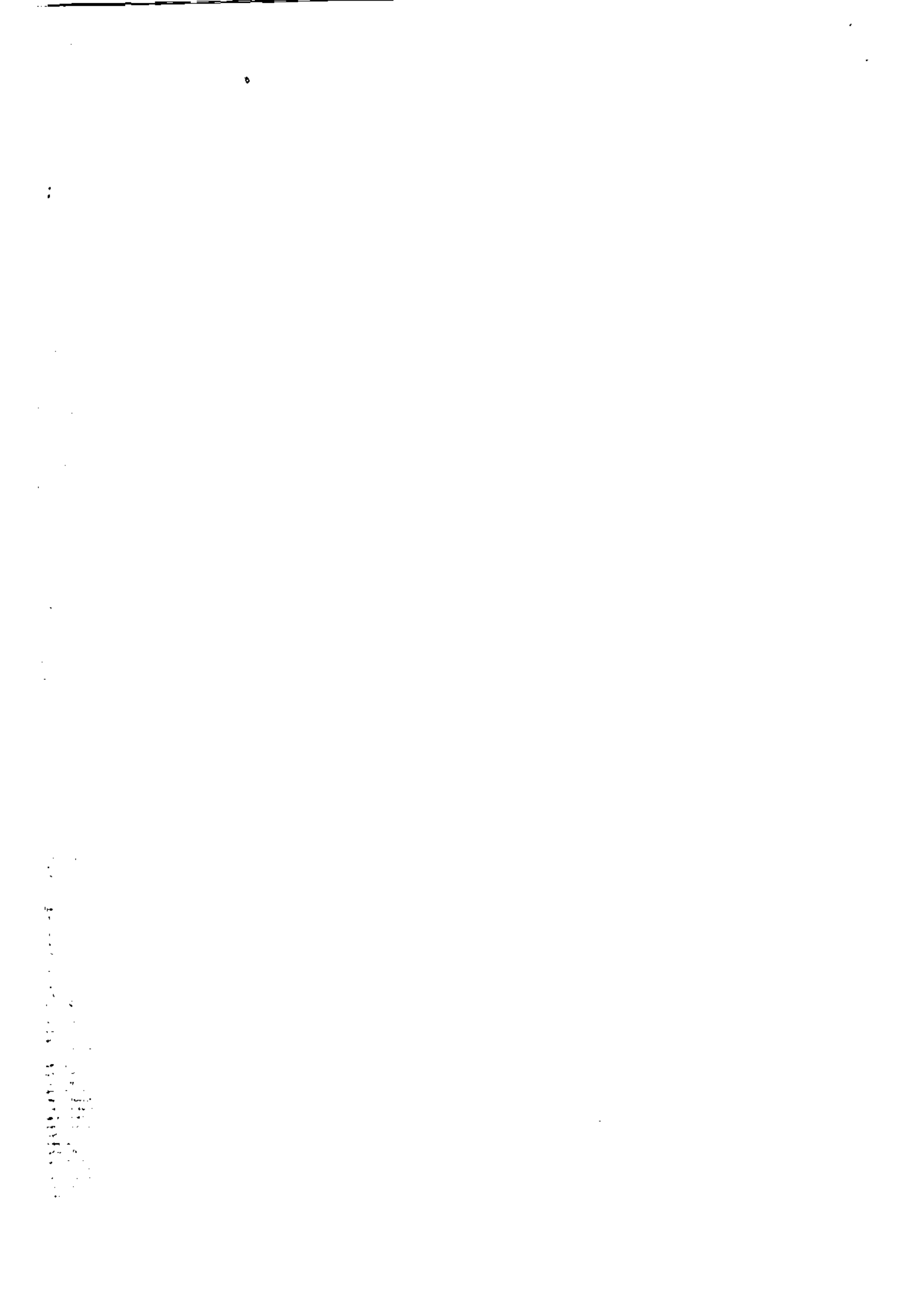
    printf("equal");
else
    printf("not equal");
return 0;
}

```

What will be output if you compile and execute the above code ?

- (1) equal (2) not equal
 (3) Run time error (4) Compiler error
140. Which of the following is *not* a logical operator in C ?
 (1) & (2) && (3) || (4) !
141. In mathematics and computer programming, which is the correct order of mathematical operators ?
 (1) Addition, Subtraction, Multiplication, Division
 (2) Division, Multiplication, Addition, Subtraction
 (3) Multiplication, Addition, Division, Subtraction
 (4) Addition, Division, Modulus, Subtraction
142. Which of the following *cannot* be checked in a switch-case statement in C ?
 (1) Character (2) Integer
 (3) Float (4) Enum
143. In C, if you pass an array as an argument to a function, what actually gets passed ?
 (1) Value of elements in array
 (2) First element of the array
 (3) Base address of the array
 (4) Address of the last element of array
144. Which of the following is the correct usage of conditional operators used in C ?
 (1) $a > b ? c = 30 : c = 40;$ (2) $a > b ? c = 30;$!
 (3) $\max = a > b ? a > c ? a : c : b > c ? b : c$ (4) $\text{return } (a > b) ? (a : b)$!
145. Which of the following are unary operators in C ?
 (1) ! (2) sizeof (3) ~ (4) &&

146. Which of the following looping structure does *not* work in FORTRAN ?
(1) Do (2) Do While
(3) For (4) Do Until
147. Which of the following feature is *not* available in FORTRAN 77 ?
(1) Array (2) Function
(3) String (4) Pointer
148. Select the correct output of the statements NINT (10.6) and INT (10.6) :
(1) 11 and 10 (2) 10 and 11
(3) 11 and 11 (4) 10 and 10
149. The first procedure-oriented language was :
(1) FORTRAN (2) BASIC
(3) COBOL (4) ADA
150. The range of values for the long type data on 16-bit Machine is :
(1) -2^{31} to $2^{31} - 1$ (2) -2^{61} to 2^{64}
(3) -2^{31} to 2^{31} (4) 2^{64} to 2^{64}



अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली/काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख ले कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा। केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेट से निर्धारित स्थान पर लिखें।
5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।
6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक संख्या और ओ० एम० आर० पत्र संख्या की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।
9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ कार्य के लिये इस पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा अंतिम खाली पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ० एम० आर० उत्तर-पत्र ही परीक्षा भवन में जमा करें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की भागी होगा/होगी।