

10P/211/1

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 OMR 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 also Roll No. and OMR Sheet No. on the Question Booklet.
7. Any change 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 ball-point 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 mark).*
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 *both the Question Booklet and the 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.

No. of Questions/प्रश्नों की संख्या : 150**Time/समय : 2½ Hours/घण्टे****Full Marks/पूर्णांक : 450**

Note/नोट : (1) Attempt as many questions as you can. Each question carries **3** marks. **One** mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question.

अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न **3** अंक का है। प्रत्येक गलत उत्तर के लिए एक अंक काटा जाएगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।

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

यदि एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

1. The data generated by variable religion is

- (1) continuous (2) ratio scale (3) nominal scale (4) ordinal scale

2. The data generated by variable height is

- (1) discrete (2) ratio scale (3) ordinal scale (4) nominal scale

3. Identify the true inequality

(1) $\int_{(X=0 \text{ to } 10)} x dx = \sum X_i (i=0 \text{ to } 10)$ (2) $\int_{(X=0 \text{ to } 10)} x dx > \sum X_i (i=0 \text{ to } 10)$

(3) $\int_{(X=0 \text{ to } 10)} x dx > \text{or} < \sum X_i (i=0 \text{ to } 10)$ (4) $\int_{(X=0 \text{ to } 10)} x dx < \sum X_i (i=0 \text{ to } 10)$

4. Continuous data are collected by
- (1) measurements
 - (2) observations
 - (3) measurements or observations
 - (4) interrogation
5. The deviation about mean of a random variable is
- (1) negative or positive
 - (2) always negative
 - (3) always positive
 - (4) zero
6. Birth order of a child is
- (1) nominal scale data
 - (2) continuous scale data
 - (3) ordinal scale data
 - (4) ratio scale data
7. The height of randomly selected adult male is
- (1) ratio scale
 - (2) nominal scale
 - (3) ordinal scale
 - (4) interval scale
8. Identify the scale of the data where true value 'zero' can be reached
- (1) Nominal
 - (2) Ordinal
 - (3) Ratio
 - (4) Interval
9. The indoor admission in different specialities is best represented graphically by
- (1) histogram
 - (2) ogive
 - (3) scatter diagram
 - (4) bar diagram
10. Height distribution of randomly selected adult females is best represented by
- (1) scatter diagram
 - (2) histogram
 - (3) bar diagram
 - (4) pie diagram

11. If X is a random variable representing haemoglobin levels of pregnant women, then $Z = \frac{(X - \mu)}{\text{SD}}$ has
- (1) $Z \sim N(0, 1)$ (2) mean zero and variance 1
 (3) mean μ and variance 1 (4) mean zero and variance σ^2
12. Weight of randomly selected newborn babies $X \sim N(\mu, \sigma^2)$, then $Y = X - \mu$ has
- (1) mean 0 and variance σ^2 (2) mean μ and variance σ^2
 (3) $Y \sim N(0, \sigma^2)$ (4) $Y \sim N(\mu, \sigma^2)$
13. The data about religion of the head of the family can be best represented graphically by
- (1) histogram (2) frequency polygon
 (3) ogive (4) pie diagram
14. The heights of 1000 randomly selected Indian adult males were distributed normally with mean 165 cm and standard deviation 5 cm. In their sample of 1000 adult males expected number of adult males with height more than 175 cm were
- (1) 25 (2) 320 (3) 50 (4) 160
15. A random variable Y with mean 29 is predicted by variable X as $Y = 3X + 2$, then the mean of X variable is
- (1) 11 (2) 9 (3) 80 (4) 7
16. The average gestation of 5 full-term deliveries is 40 weeks. If the gestations of four of them full-term deliveries are 37, 41, 39, 42 weeks, then the 5th delivery was of gestation
- (1) 41 weeks (2) 40 weeks (3) 38 weeks (4) 39 weeks

17. The median (MD) of variate X computed from n observations is

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

(2) $\frac{X_1 + X_2 + \dots + X_n}{2}$

(3) $\left[\frac{(N+1)}{2}\right]$ th observation

(4) $(X_1 + X_2 + \dots + X_n)$ th observation

18. In positively skewed distribution

(1) mode is largest

(2) median is largest

(3) mean is largest

(4) each depends on value of observations

19. In negatively skewed distribution

(1) small no. of observations are of large size

(2) large no. of observations are of larger size

(3) larger no. of observations are of average size

(4) larger no. of observations are of small size

20. Correlation coefficient is

(1) affected by change of origin

(2) not affected by change of origin but affected by change of scale

(3) affected by change of origin and scale

(4) not affected by change of origin and scale

21. Coefficient of variation has

(1) same unit as mean

(2) same unit as standard deviation

(3) no unit

(4) same unit as of variance

22. Coefficient of variation

- (1) can take any value (2) can take any positive value
(3) varies from -1 to +1 (4) varies from 0 to 1

23. Correlation coefficient lies between

- (1) -1 to +1 (2) 0 to 1 (3) 0 to 100 (4) -100 to 100

24. The data needed for correlation coefficient is

- (1) qualitative (2) semi-quantitative
(3) quantitative (4) any of them

25. Frequency polygon is

- (1) diagram made for discrete data (2) at least interval scale data
(3) nominal scale data (4) any type of data

Data for Question No. **26** to **28** : The haemoglobin levels in gm/dl for 10 pregnant women are 7, 6, 11, 8, 9, 10, 12, 9, 10, 9

26. The median of haemoglobin levels of pregnant women is

- (1) 6 (2) 5 (3) 9 (4) 5.6

27. The mode of haemoglobin levels of pregnant women is

- (1) 10 (2) 9 (3) 5.6 (4) 9.1

28. First quartile of haemoglobin levels of the pregnant women is

- (1) 6.5 (2) 7.5 (3) 9 (4) 8

29. Histogram is

- (1) an area diagram
- (2) a type of bar diagram
- (3) height of rectangles which is equivalent to frequency in corresponding group
- (4) diagram for quantitative data

30. The standard error is

- (1) error in measurement
- (2) observer error
- (3) measure of variation in sampling means
- (4) measure of variation in quantitative observations

31. Weight at birth of randomly selected 100 newborn babies follows normal distribution with mean 2800 gm and standard deviation 300 gm. How many newborn babies are expected to have weight more than 2500 gm?

- (1) 84
- (2) 68
- (3) 32
- (4) 95

32. If the standard deviations of two randomly selected samples of the same size are equal, then their means

- (1) are also equal
- (2) may not be equal
- (3) will not be equal
- (4) will be zero

33. Coefficient of variations is

- (1) affected by change of origin
- (2) affected by change of scale
- (3) affected by change of origin and scale
- (4) not affected by change of origin and scale

34. The heights of two independent samples of size 100 each are distributed normally with different means and standard deviations. The differences of means can be tested with

- (1) $H_0 : \mu_1$ not equal to μ_2 (2) $H_0 : \mu_1 > \mu_2$
(3) $H_0 : \mu_1 = \mu_2$ (4) $H_1 : \mu_1 = \mu_2$

35. Coefficient of variation is

- (1) $\left(\frac{SD}{\mu}\right) \times 100$ (2) $\left(\frac{\mu}{SD}\right) \times 100$
(3) $\left(\frac{SE}{\mu}\right) \times 100$ (4) $\left(\frac{\mu}{SE}\right) \times 100$

36. Increase in confidence interval signifies

- (1) increase in no. of subjects
(2) decrease in no. of subjects
(3) decrease in no. of subjects and increase in standard deviation
(4) decrease in standard error

37. Levels of significance is

- (1) type two error (2) type one error
(3) (1-type II error) (4) (1-type I error)

38. When birth weight follows normal distribution with mean 2750 gm with standard deviation 250 gm, then 50% of the babies were with weight

- (1) less than 2750 gm (2) interval 2500 gm to 3000 gm
(3) more than 3000 gm (4) less than 2500 gm

- 39.** In the area of high fertility and mortality, the mortality curve will be like
(1) 'J' (2) 'U' (3) bi-model (4) exponential
- 40.** In two groups one control and another intervention the weight of children has been expressed by straight lines
 $Wt_1 = mHt_1 + C_1$ and $Wt_2 = mHt_2 + C_2$, these lines reveals (if $C_1 \neq C_2$)
(1) Lines are parallel (2) Lines are the same with some slope
(3) Intervention had significant effect (4) Intervention had no effect
- 41.** In analysis of variance, the significance is tested by
(1) difference in variances (2) equivalence of variances
(3) equivalence of means (4) differences in means
- 42.** The differences in weight of newborn babies are to be tested in three groups of gestation, the best test is
(1) Z-test (2) t-test
(3) paired t-test (4) analysis of variance
- 43.** Survey to estimate prevalence of pulmonary tuberculosis, the increasing of significance level is achieved for same sample size by
(1) decreasing cluster size (2) increasing cluster size
(3) increasing α (4) decreasing β
- 44.** Power of the test is
(1) α (2) β (3) $1-\beta$ (4) $1-\alpha$

45. Type II error is
- (1) probability of rejecting H_0 when H_0 is true
 - (2) probability of rejecting H_1 when H_1 is true
 - (3) probability of accepting H_0 when H_0 is true
 - (4) probability of accepting H_0 when H_0 is not true
46. Weights of 198 randomly selected newborn babies have been measured in four groups of anaemia. To test the significance which one of the following is used?
- (1) $F_{3,194}$
 - (2) $F_{3,197}$
 - (3) t with d.f. = 100
 - (4) chi-square test with d.f. = 3
47. In binomial distribution
- (1) variance < mean
 - (2) variance > mean
 - (3) variance = mean
 - (4) variance cannot be computed
48. If the chance of getting son in one delivery is 0.5, then the probability of getting at least 2 sons in 3 consecutive deliveries is
- (1) 0.375
 - (2) 0.50
 - (3) 0.125
 - (4) 0.625
49. In the world on an average one air accident is observed per year, what is the chance that in one year two air accidents are observed?
- (1) 0.32
 - (2) 0.08
 - (3) 0.48
 - (4) 0.16
50. After recording birth weight of 100 randomly selected newborn babies 30% were observed under weight, for birth weight of newborn 95% confidence interval is
- (1) 20.8 to 39.2
 - (2) 25.4 to 34.6
 - (3) 24 to 36
 - (4) 22 to 28

51. The correlation coefficient of height and weight of 100 male children under the age of 15 years was 0.9. If one desires to estimate weight using height with regression line $wt = mHt + C$, then the coefficient of determination is

- (1) 0.9 (2) 0.09 (3) 0.081 (4) 0.81

52. In equation $Y = mX + C$, the m is

- (1) correlation coefficient of Y and X (2) coefficient of determination
(3) change in Y per unit of X (4) change in X per unit of Y

53. Scatter diagram is prepared for

- (1) to measure clustering of observations
(2) to depict trends by time
(3) to depict frequencies
(4) to depict relationship of two variables

54. Total fertility rate is

- (1) sum of general fertility rates
(2) sum of general marital fertility rates
(3) sum of age specific fertility rates
(4) sum of age and marital specific fertility rates

55. Population of a country becomes stable when

- (1) fertility and mortality are high
(2) fertility and mortality are low
(3) it is independent of fertility and mortality
(4) fertility and mortality are same for long time

56. Geometric mean (GM) of variate X computed from n observations is

- (1) $[(X_1 X_2 \dots X_n)]^{1/n}$ (2) $\frac{\sqrt{[(X_1)(X_2)\dots(X_n)]}}{N}$
- (3) $\frac{\sqrt{N[(X_1)(X_2)(X_3)\dots(X_n)]}}{\Sigma X}$ (4) $\sqrt{N[(X_1)(X_2)\dots(X_n)]}$

57. The following are true about confidence interval

- (1) Confidence intervals are larger with smaller sample size
- (2) They indicate the presence or otherwise of a statistical difference between two groups
- (3) In an odd ratio, if the 95% confidence interval contains '1', then significant difference may be there
- (4) The intervals give a range of values within which the true value may lie

58. In Statistics

- (1) null hypothesis describes the probability that a relationship exists between two samples
- (2) descriptive statistics produce mean, median and mode from data
- (3) the mode is the measurement, which lies exactly between each end of a range of value ranked in order
- (4) skewed data invalidates further statistical analysis

59. Variates may be qualitative or quantitative, and the latter may be either discrete or continuous. New entrants to a large organization are given a routine medical examination, in which three of the recorded variates are—age in years; weight in grams; colour of eyes. These variates are respectively

- (1) qualitative, discrete, discrete (2) quantitative discrete, discrete
- (3) quantitative, continuous, discrete (4) qualitative, discrete, qualitative

60. The full numerical information on every item in a set of data is preserved in
- (1) a stem-and-leaf diagram
 - (2) a histogram
 - (3) a frequency polygon
 - (4) a cumulative frequency diagram

61. True statement about non-parametric tests is
- (1) they can be used on small samples
 - (2) they are used to analyze samples that are normally distributed
 - (3) Student's paired t -test
 - (4) they cannot be used if the nature of the distribution of the data is unknown

62. An cyclist covers each day over the same route. Sometimes he is delayed. The times in minutes for 30 days are shown in the following stem-and-leaf diagram :

```
2|89
3|001222334444
3|5566667778899
4|011
```

The 1st quartile, median and 3rd quartile are

- (1) 33, 35, 37
 - (2) 32.5, 35, 37.5
 - (3) 33, 36, 38
 - (4) 32, 35, 37
63. A set of data is distributed with mean 4.3 and standard deviation 2.5. Each observation is multiplied by 10 and the result decreased by 2. The mean and standard deviation of the transformed data are
- (1) 41.0, 23.0
 - (2) 4.3, 2.5
 - (3) 41.0, 25.0
 - (4) 43.0, 25.0

64. The times in minutes that he takes to go to office collected for 14 trips, are

11, 12, 13, 13, 14, 15, 16, 18, 20, 23, 24, 26, 29, 35

From the following pairs of statistics pick out the pair which are equal when calculated

- (1) Third quartile, range
- (2) First quartile, mid-spread
- (3) Geometric mean, mean
- (4) Mode, median

65. The sum (Σi) of $\{i(i-1)\}$ when i runs from 0 to 5 is
(1) 42 (2) 41 (3) 40 (4) 55
66. A probability density functions $f(x)$
(1) integrates to 1 over the range of X
(2) increases steadily from 0 to 1
(3) must be greater than or equal to 0 over the range of X
(4) can be defined over a range of X including both positive and negative values
67. A sample survey of 120 households in a large town showed 8 households without a refrigerator, 12 who had two refrigerators in the household, and 100 who had one. The estimated mean and variance of the number of refrigerators per household are
(1) 1.107, 0.1669 (2) 1.033, 0.1655
(3) 1.033, 0.409 (4) 1.033, 0.1669
68. The sum of independent geometric variables follows
(1) a binomial distribution (2) a geometric distribution
(3) a Poisson distribution (4) no simple distribution
69. In a random sample of n items from a population, r of them showed a particular characteristic. The estimate of the variance of p , the population proportion having this characteristic is
(1) $\frac{r(n-r)}{n^2}$ (2) $\frac{r(n-r)}{n^3}$ (3) $\frac{(r-1)(n-r)}{(n-1)}$ (4) $\frac{r(n-r)}{n}$
70. The random variable x has a normal distribution with mean 5.75 and variance 2.56. The probability that x lies between 4.15 and 7.35 is
(1) 0.438 (2) 0.242 (3) 0.320 (4) 0.680

- 71.** When a 95% confidence interval is constructed for a parameter θ
- (1) the interval contains θ with probability 0.95
 - (2) the interval covers 95% of the possible values for θ
 - (3) θ lies in the interval with probability 0.95
 - (4) the calculation uses the middle 95% of the data
- 72.** When a 95% confidence interval is calculated for the mean μ of a normal distribution, using the usual formula and a sample of n observations
- (1) the interval is symmetrical about the mean of the given data
 - (2) the interval is of width $\frac{20^2}{n}$
 - (3) the calculation uses the middle 95% of the data
 - (4) the calculation uses t distribution with n degrees of freedom
- 73.** A 95% confidence interval for a proportion p based on 250 observations is (0.35, 0.54), then
- (1) p cannot be less than 0.35
 - (2) p cannot be more than 0.54 then
 - (3) with 95% probability, the true value p lies between 0.35 and 0.54
 - (4) p is significantly greater than 0.4
- 74.** Using cumulative frequency curve one can compute easily
- (1) mean
 - (2) mode
 - (3) median
 - (4) geometric mean
- 75.** In a set of throw of three coins, the probability of getting 0, 1, 2 or 3 heads is
- (1) independent
 - (2) equally likely
 - (3) $\frac{1}{3}$
 - (4) one

76. In a throw of two dice, the probability of getting both not 6 is
(1) $\frac{1}{6}$ (2) $\frac{35}{36}$ (3) $\frac{1}{18}$ (4) $\frac{5}{6}$
77. The mean of ten two-digit numbers is 20, if a number of value 25 is replaced by 35, then the mean is
(1) 21 (2) 25 (3) 19 (4) 20
78. If the categories of a qualitative variable are not mutually exclusive, then the data can be best represented by
(1) pie diagram (2) bar diagram
(3) histogram (4) cumulative frequency curve
79. The data about birth order can be best represented by
(1) bar diagram (2) ogive
(3) histogram (4) population pyramid
80. To know the proportion of adults suffering with diabetes or the overweight mothers the graph is
(1) frequency curve (2) normal curve
(3) ogive (4) line curve
81. In equation $Y = MX + C$, the M is affected by
(1) C (2) X (3) Y (4) X and Y
82. The probability of getting a son is 0.5, then probability of getting all daughters in 3 deliveries is
(1) 0.50 (2) 0.125 (3) 0.250 (4) 0.750

- 83.** In a hospital on an average 1 patient dies within a day after operation, then the probability of at least 1 death a day is
- (1) 0.3679 (2) 0.6818 (3) 0.3182 (4) None of these
- 84.** The standard deviation of ten observations of variable Y was 6, then the standard deviation of 10 observations of variable $5+2Y$ is
- (1) 7 (2) 6 (3) 12 (4) 17
- 85.** Two regression lines of the form of $Y = MX + C$ are parallel, then their
- (1) slope and intersection are same
(2) slope different intersection same
(3) slope different intersection different
(4) slope same intersection different
- 86.** On an average 4 post-mortems are carried out in a Government Hospital, the standard deviation of the post-mortems per day is
- (1) 4 (2) 0.25 (3) 2 (4) None of these
- 87.** The average weight at birth of 100 babies selected randomly from a maternity home was 2500 gm with standard deviation 250 gm. The babies born with weight < 2250 gm were
- (1) 10 (2) 32 (3) 5 (4) 16
- 88.** The measuring unit of variance is
- (1) same as of observation (2) unit square of mean
(3) no unit (4) same as of mean

89. The age specific mortality of 1000 newborn babies in first three days of life were as under, then the babies remaining alive after three days of birth are

<i>Day</i>	1	2	3
<i>Mortality</i>	0.005	0.002	0.001

- (1) 999 (2) 997 (3) 992 (4) None of these
90. Average height of randomly selected adult females was 155 cm with standard deviation of 5 cm, the females of height more than 160 cm were
- (1) 30% (2) 16% (3) 15% (4) 48%
91. The mean and standard deviation of weight of randomly selected players are 60 kg and 5 kg respectively, then the 95% confidence limit is
- (1) 55-65 kg (2) 50-70 kg (3) 45-45 kg (4) 55-70 kg
92. The ore contains 2% of gold. To get 2.5 kg of gold the ore required is
- (1) 250 kg (2) 150 kg (3) 125 kg (4) None of these
93. 4% is the same as one out of every
- (1) 12 (2) 40 (3) 25 (4) 20
94. The midpoint of group interval 30 to 35 is
- (1) 33.5 (2) 32.5 (3) 34 (4) 32
95. Decide is a measure of
- (1) central tendency (2) dispersion
(3) closeness (4) location

- 96.** The cluster and stratum are
- (1) the same
 - (2) cluster is homogenous and stratum is heterogeneous
 - (3) cluster is heterogeneous and stratum is homogeneous
 - (4) None of these
- 97.** The standard error depends on
- (1) mean and sample size
 - (2) variance and sample size
 - (3) distribution of values
 - (4) mean and variance
- 98.** Distribution free is
- (1) t-test
 - (2) parametric
 - (3) non-parametric
 - (4) analysis of variance
- 99.** The measure of difference between the sample survey estimates and the parameter's true value is termed as
- (1) total error
 - (2) general error
 - (3) sampling error
 - (4) coverage error
- 100.** Reproduction can be measured by
- (1) total fertility rate
 - (2) general fertility rate
 - (3) birth and death rate
 - (4) age specific fertility rates
- 101.** The Z score has
- (1) binomial distribution
 - (2) standard normal distribution
 - (3) normal distribution
 - (4) Poisson distribution

102. The sum of squares of the deviations of the observation on height is minimum when taken about

- (1) median (2) geometric mean
(3) arithmetic mean (4) mode

103. The finite population correction is

- (1) $\sqrt{\left(\frac{n}{N}\right)}$ (2) $\sqrt{\left(\frac{(N-n)}{n}\right)}$ (3) $\sqrt{\left(\frac{(N-n)}{N}\right)}$ (4) $\sqrt{\left(\frac{N}{(N-n)}\right)}$

104. In a Latin square design, the number of replicates and the number of treatments

- (1) should not be equal (2) no restriction
(3) must be equal (4) former is greater than the latter

105. The degree of freedom associated with the sum of squares between categories with a design, where three types of treatments are compared to study the effect on duration of the treatment of 150 subjects is

- (1) 149 (2) 2 (3) 145 (4) None of these

106. The test associated with the comparison of more than two means is

- (1) *t*-test (2) *Z*-test
(3) chi-square test (4) *F*-test

107. Poisson distribution can be used to estimate the probability of an event if

- (1) event is common and denominator is known
(2) both nominator and denominator can be observed
(3) event is rare and the denominator cannot be known
(4) both nominator and denominator can be observed and are large

- 108.** If there are ten observations 25, 35, 40, 55, 52, 49, 95, 40, 65 and 50, then the sum of deviations from the mean is
(1) 10 (2) 0 (3) 12 (4) 6
- 109.** The geometric mean of 64 and 81 is
(1) 72.5 (2) 72 (3) 8.5 (4) 60
- 110.** The mean of a variable X is known to be 15. Then the mean of $6+0.7X$ is
(1) 21 (2) 16.5 (3) 10.5 (4) 15
- 111.** To get idea of losses or gains in a business one cannot use the measure
(1) mode (2) median
(3) arithmetic mean (4) geometric mean
- 112.** Height and weight of children have the correlation
(1) zero (2) one (3) positive (4) negative
- 113.** What are the limits of two regression coefficients?
(1) No limits
(2) Must be positive
(3) Product of the two coefficients must be numerically less than unity
(4) One positive and the other negative
- 114.** A binomial distribution has mean $\frac{1}{2}$ and variance $\frac{1}{4}$, then the distribution is
(1) positively skewed (2) symmetrical
(3) negatively skewed (4) None of these

115. The efficiency of cluster sampling estimator

- (1) decreases with number of cluster (2) decreases with cluster size
(3) increases with number of cluster (4) increases of cluster size

116. To test the goodness of fit the following test may be used

- (1) *t*-test (2) *Z*-test (3) *F*-test (4) chi-square test

117. In Spearman's rank correlation coefficient

- (1) *X* and *Y* both are ranked as one series and then usual correlation coefficient is computed
(2) *X* and *Y* both are ranked separately and then usual correlation coefficient is computed
(3) *X* and *Y* both are treated as separate series and correlation coefficient is computed
(4) Both *X* and *Y* are mixed and then autocorrelation coefficient is computed

118. To get an idea about the fertility the following is used

- (1) Above one year of age (2) < 1 year of age
(3) Population of 15-49 years age (4) Mothers of fertile age

119. Census of India is organized by

- (1) National Sample Survey Organization
(2) Planning Commission
(3) Central Statistical Organization
(4) Registrar-General of India

120. The probability of type II error is

- (1) beta
- (2) alpha
- (3) *P*-value
- (4) level of significance

121. The denominator in perinatal mortality rate is

- (1) mid-year population
- (2) live births
- (3) number of pregnancies
- (4) number of live birth + stillbirths

122. Relative risk is

- (1) ratio of two proportions
- (2) difference in risk of exposed and unexposed
- (3) rate in exposed/rate in unexposed
- (4) None of these

123. The H_1 is

- (1) proved hypothesis
- (2) the alternative hypothesis
- (3) hypothesis of no difference
- (4) hypothesis made for acceptance

124. The differences are said to be significant

- (1) H_0 is accepted
- (2) H_1 is accepted
- (3) H_1 is rejected
- (4) H_0 is rejected

125. The coefficient of variation explains

- (1) variation with respect to mean
- (2) variation in observations
- (3) sampling variation
- (4) variation with respect of SD

126. The measures which describe the position of a observation is

- (1) correlation
- (2) central tendency
- (3) variation
- (4) location

127. For qualitative data one should not use

- (1) measures of central tendency
- (2) measures of location
- (3) measures of association
- (4) measures of central tendency and dispersion

128. The path coefficient is

- (1) standardized partial correlation coefficient
- (2) Un-standardized partial regression coefficient
- (3) standardized partial regression coefficient
- (4) None of these

129. The Newton-Gregory backward interpolation formula is generally used to interpolate the values

- (1) anywhere in the set of table values
- (2) near the beginning of a set of table values
- (3) in the middle of a set of table values
- (4) at beginning and end of a set of table values

130. From the following data

X	1	2	4	6	8
$F(x)$	7	19	37	61	91

the value of X follows

- (1) first degree polynomial
- (2) second degree polynomial
- (3) third degree polynomial
- (4) None of these

131. In given data

X	-2	0	3	5	1
$F(x)$	4	0	9	25	1

$f(x)$ is polynomial of degree

- (1) four
- (2) three
- (3) two
- (4) one

132. In different groups from a 2×2 contingency table the chi-square value is 7.2. Chi-square values by degree of freedom (d.f.) and significance (P) are

d.f.	P				
	0.1	0.05	0.02	0.01	0.001
1	2.71	3.84	5.41	6.63	10.83
2	4.61	5.99	7.82	9.21	13.82
3	6.25	7.82	9.84	11.34	16.27

The decision of the test is

- (1) significant at $P < 0.001$
- (2) significant at $P < 0.01$
- (3) significant at $P > 0.01$
- (4) significant at $P < 0.02$

133. The Spearman's correlation coefficient is

- (1) parametric
- (2) used for nominal scale data
- (3) non-parametric and can be used for interval/ordinal scale data
- (4) non-parametric and can be used for qualitative data

- 134.** Kruskal Wallis test is
- (1) non-parametric test to test differences in means for more than two groups
 - (2) parametric test to test differences in proportions
 - (3) parametric test to test differences in means
 - (4) to test differences in variances
- 135.** If two variates X and Y are jointly distributed with $P(X, Y) = 0$, then X and Y are
- (1) negatively correlated
 - (2) independent
 - (3) positively correlated
 - (4) dependent
- 136.** Spearman's rank correlation coefficient lies between
- (1) -1 and 0
 - (2) 0 and 1
 - (3) -1 and +1
 - (4) 0 and 0.9
- 137.** The t -distribution is discovered by
- (1) Fisher
 - (2) Cochran
 - (3) Pearson
 - (4) Gossett
- 138.** With increase in sample size the non-sampling errors
- (1) are unaffected
 - (2) decrease
 - (3) increase
 - (4) fluctuate
- 139.** In stratified random sampling, the variance is minimum with
- (1) optimum allocation
 - (2) allocation in middle of stratum
 - (3) equal allocation
 - (4) proportional allocation
- 140.** Which one of the following procedures is not based on the principle of probability?
- (1) Systematic sampling
 - (2) Quota sampling
 - (3) Stratified sampling
 - (4) Simple random sampling

141. A normal couple has given birth continuously to two female babies, the third baby will be
- (1) equally likely either male or female
 - (2) female
 - (3) male
 - (4) more likely female
142. The probability of not accepting H_0 , when H_0 is false is
- (1) α
 - (2) $1-\beta$
 - (3) one
 - (4) zero
143. The probability of not rejecting H_0 , when H_0 is true is
- (1) type I error
 - (2) type II error
 - (3) level of confidence interval
 - (4) power of the test
144. Two different companies manufacture hearing aids A and B respectively. Each company claims that its hearing aids are superior to that of the other. To test the superiority of the hearing aids A or B , the null hypothesis is
- (1) there is a difference between the equality of hearing aids
 - (2) there is no difference between two hearing aids
 - (3) there is no difference between the life of two hearing aids
 - (4) there is difference between the life of two hearing aids
145. The mean and standard deviation of marks obtained by 81 students were 50 and 7.2 respectively. The standard error of the estimator of the population mean for a random sample of size 36 with replacement is
- (1) 1.2
 - (2) 0.2
 - (3) 0.8
 - (4) 0.09

- 146.** There are five groups and we want to know whether the group effects are equal, for this purpose the analysis would be
- (1) one-way classification with fixed effects model
 - (2) two-way classification with fixed effects model
 - (3) one-way classification with mixed effects model
 - (4) one-way classification with random effects model
- 147.** If the joint effect of factors X and Y is different from the sum of the effects due to X and Y , then
- (1) there is total dependence of X and Y
 - (2) there is an interaction
 - (3) there is no dependence
 - (4) None of these
- 148.** In simple random sampling, for estimating sampling variance, the finite population correction $\left(\frac{N-n}{N-1}\right)$ may be neglected if
- (1) N is equal to n
 - (2) N is too large as compared to n
 - (3) n is less than N but n is sufficiently large
 - (4) None of these

149. In normal distribution

- (1) mean is in between mode and median
- (2) median is in between mean and mode
- (3) mode is in between mean and median
- (4) mean, median and mode are same

150. What is the probability of not getting two tails from two throws of a coin?

- (1) 0.25
- (2) 0.75
- (3) 0
- (4) 1

अभ्यर्थियों के लिए निर्देश

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

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख लें 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 पेन 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 सं० और ओ० एम० आर० पत्र सं० 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. रफ़ कार्य के लिये प्रश्न-पुस्तिका के मुखपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त प्रश्न-पुस्तिका एवं उत्तर-पत्र परीक्षा भवन में जमा कर दें।
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।

1. 23 (Three) marks to be awarded for each correct answer.

2. 01 (one) mark to be deducted for each incorrect answer.

3. 00 (zero) mark to be awarded for each unattempted question.

KEY OF UET/PET-2010

M.Sc. Health Statist.
(275)

Q. A.	Q. A.	Q. A.	Q. A.	Q. A.	Q. A.	Q. A.	Q. A.	Q. A.	Q. A.
1 3	21 3	41 3	61 1	81 4	101 2	121 4	141 1	161	181
2 2	22 2	42 4	62 4	82 2	102 3	122 3	142 2	162	182
3 4	23 1	43 1	63 3	83 2	103 3	123 2	143 3	163	183
4 1	24 3	44 3	64 3	84 3	104 3	124 4	144 3	164	184
5 4	25 2	45 4	65 3	85 4	105 2	125 1	145 1	165	185
6 3	26 3	46 1	66 1	86 3	106 4	126 4	146 4	166	186
7 1	27 2	47 1	67 3	87 4	107 3	127 2	147 3	167	187
8 3	28 2	48 2	68 2	88 2	108 2	128 3	148 3	168	188
9 4	29 1	49 4	69 4	89 3	109 2	129 4	149 4	169	189
10 2	30 3	50 1	70 4	90 2	110 2	130 2	150 2	170	190
11 2	31 1	51 4	71 3	91 2	111 1	131 3	151	171	191
12 3	32 2	52 3	72 1	92 3	112 3	132 2	152	172	192
13 4	33 4	53 4	73 3	93 3	113 1	133 3	153	173	193
14 1	34 3	54 3	74 3	94 2	114 2	134 1	154	174	194
15 2	35 1	55 4	75 4	95 4	115 3	135 2	155	175	195
16 1	36 3	56 1	76 2	96 3	116 4	136 3	156	176	196
17 3	37 2	57 1	77 1	97 2	117 2	137 4	157	177	197
18 3	38 1	58 2	78 2	98 3	118 2	138 3	158	178	198
19 2	39 2	59 3	79 2	99 3	119 4	139 4	159	179	199
20 4	40 1	60 1	80 3	100 1	120 1	140 2	160	180	200