Question Bank

CC-5 (Psychological Statistics)

B. Multiple Choice Questions (Choose the correct alternative from the bracket to fill up the blank and answer the question).

1. Statistics is that branch of mathematics which deals with.....data. (numerical, theoretical, hypothetical).
2. .....is the most reliable measure of the measures of central tendency. (Mean, Median, Mode).
3. Central tendency with greatest stability is called..... (Mean, Median, Mode).
4. ..... is used when further statistical calculations are required. (Mean, Median, mode).
5. The measurement that has absolute zero is called.....scale. (nominal, ordinal, ratio).
6. Inferring population values from sample values is ..... statistics. (descriptive, inferential, parametric).
7. A population is a ..... set of scores from which conclusions can be drawn. (complete, small, large).
8. The most frequently occurring score in a series is called..... (Mean, Median, Mode).
9. The score that divides a series exactly into two halves is known as ..... (mean, median, mode).
10. The most reliable measure of central tendency is ..... (mean, median, mode).
11. In the case of open ended frequency distribution.....can be only used to obtain central value. (mean, median, mode).

12. The median of a distribution is the value that falls in the.....of the distribution. (first, centre, last).
13. The distribution with two highest frequencies is a ..... distribution. (unimodal, bimodal, multimodal).
14. Mean and median can be calculated only when the data is on ..... scale. (ordinal, ratio, nominal).
15. In the ungrouped data.....is the score value with the highest frequency. (mean, median, mode)
16. Which of the following constitute continuous variables?
    (a) Number of times a score of 180 is achieved in a darts match
    (b) Gender
    (c) Temperature
    (d) All of the above
17. Experimental designs are characterised by:
    (a) Fewer than two conditions
    (b) No control condition
    (c) Random allocation of participants to conditions
    (d) None of the above
18. In a study with gender as the manipulated variable, the IV is:
    (a) Within participants
    (b) Correlational
    (c) Between participants
    (d) None of the above
19. Which of the following are true of correlational designs?
    (a) They have no IV or DV
    (b) They look at relationships between variables
    (c) You cannot infer causation from correlations

(d) All of the above

20.5. Which of the following could be considered as categorical variables?

(a) Gender

(b) Brand of baked beans

(c) Hair colour

(d) All of the above

21. Between-participants designs can be:

(a) Either quasi-experimental or experimental

(b) Only experimental

(c) Only quasi-experimental

(d) Only correlational

22. Which of the following statements are true of experiments?

(a) The IV is manipulated by the experimenter

(b) The DV is assumed to be dependent upon the IV

(c) They are difficult to conduct

(d) Both (a) and (b) above

23. Quasi-experimental designs have:

(a) An IV and a DV

(b) Non-random allocation of participants to conditions

(c) No IV or DV

(d) Both (a) and (b) above

24. A continuous variable can be described as:

(a) Able to take only certain discrete values within a range of scores

(b) Able to take any value within a range of scores

(c) Being made up of categories

(d) None of the above

25. Which of the following are problems associated with within-participants designs?

(a) There is an increased likelihood of practice or fatigue effects

(b) Participants are more likely to guess the nature of the experiment

(c) They cannot be used with quasi-experimental designs

(d) All of the above

26. According to Streiner (2002), how efficient are studies that dichotimise continuous variables when compared with studies that do not?

(a) 100%

(b) 95%

(c) 67%

(d) 50%

27. Which of these is NOT an example of a nominal scale?

a) Numbers on a football jersey

b) Numbers on pool balls

c) Gender

d) Exam grades

28. The order that runners cross the finish line is an example of:

a) A nominal Scale

b) An Ordinal Scale

c) An Interval Scale

d) A ratio Scale

28. A researcher has just conducted a correlational study investigating the relationship between the amount of alcohol drunk by fans of the home team before a football match and the number of goals scored by the home team.

They found that there was a relationship between the two variables. Which of the following statements are valid?

(a) The amount of alcohol drunk was related to the home team's ability to score goals, but we cannot say it caused the team to score the goals

(b) The home team's ability to score goals is related not to the amount of alcohol but to the amount of cheering by the drunken fans

(c) The increase in the amount of alcohol drunk caused an increase in the number of goals scored

(d) All of the above

29. In a within-participants design with two conditions, if you do not use counterbalancing of the conditions then your study is likely to suffer from:

(a) Order effects

(b) Effects of time of day

(c) Lack of participants

(d) All of the above

30. You have conducted a study that shows that the earlier people get up, the more work they get done. Which of the following are valid conclusions?

(a) There is not necessarily a causal relationship between getting up early and amount of work done

(b) People who get up early have a need to get more work done

(c) Getting up early is the cause of getting more work done

(d) Both (b) and (c) above

31. Which of the following designs is least likely to enable us to establish causal relationships between variables?

(a) Experimental design

(b) Quasi-experimental design

(c) Correlational design

(d) Within-participants design

32. Demand effects are possible confounding variables where:

(a) Participants behave in the way they think the experimenter wants them to behave

(b) Participants perform poorly because they are tired or bored

(c) Participants perform well because they have practised the experimental task

(d) None of the above

33. Suppose you wanted to conduct a study to see if depressed individuals bite their nails more than non-depressed individuals. Which of the following would be the best way to proceed?

(a) Measure participants' depression with a questionnaire and ask them to give a rating of how much they bite their nails. Then classify participants as 'depressed' or 'non-depressed' on the basis of their questionnaire scores. We could then see if there was a difference in how much they bit their nails

(b) As per (a) above but don't divide the participants into two groups; use actual depression scores in the analyses and see if there is a relationship between depression and biting nails

(c) This sort of study is impossible to carry out and so we couldn't proceed with it

(d) None of the above

34. Which of the following might be suitable IVs in a quasi-experimental study?

(a) Gender

(b) Whether or not someone had Generalised Anxiety Disorder

(c) Students versus non-students

(d) All of the above

35. In within-participant designs, order effects occur when:
    (a) Participants get tired in later conditions
    (b) Participants perform equally well in all conditions
    (c) Participants have trouble obtaining their drinks at the bar
    (d) None of the above
36. Which of the following are problems associated with dichotomising continuous variables?
    (a) Loss of experimental power
    (b) Spurious effects may occur
    (c) There is a serious loss of information
    (d) All of the above

2. Short Answer Type

1. Interval Scale
2. Ordinal Scale
3. Skewness
4. Continuous series
5. Nominal scale
6. Ratio Scale
7. Kurtosis
8. Categorical Series
9. Positive and negative correlation
10. Type I and Type II error
11. Ordinal Scale
12. Ratio Scale
13. Linear correlation
14. Distribution free tests
15. Ranking tests
16. Sign tests
17. What are the assumptions of Non-parametric statistics.
18. Define parametric and non-parametric statistical tests.
19. Bivariate frequency distribution
20. What do you mean by statistics ?
21. What are the uses of statistics in Psychology?
22. How organization of data is carried out ?
23. What do you mean by frequency distribution?
24. What is grouped frequency distribution ?
25. What is range ?
26. What do you mean by class- interval ?

27. What is exclusive method in frequency distribution ?
28. Explain inclusive method in brief.
29. What are the measures of central tendency ?
30. What do you mean by Arithmetic mean ?
31. What is median?
32. How median is calculated for ungrouped even number of scores ?
33. Briefly explain about 'mode'.
34. What are the usage of mean ?
35. Explain the formula to calculate mean.
36. What are the usage of median ?
37. Where can you use mode ?
38. Why do we calculate modal values ?
39. Why do you calculate measures of central value ?
40. A father rates his daughter as a 2 on a 7-point scale (from 1 to 7) of crankiness.
41. In this example, (a) what is the variable, (b) what is the score, and (c) what is the range of values?
42. What is the difference between a numeric and a nominal variable?
43. Give the level of measurement of each of the following variables: (a) a person's nationality (Mexican, Chinese, Ethiopian, Australian, etc.), (b) a person's score on a standard IQ test, (c) a person's place on a waiting list (first in line, second in line, etc.).
44. What is the difference between a discrete and a continuous variable?
45. Give the level of measurement of each of the following variables:
    (a) a person's nationality (Mexican, Chinese, Ethiopian, Australian, etc.),
    (b) a person's score on a standard IQ test,
    (c) a person's place on a waiting list (first in line, second in line, etc.).
46. What is the difference between a discrete and a continuous variable?
47. Identify the scale of measurement in each of the following cases.

48. Geologists have a “hardness scale” for identifying different rocks, called Mohs’scale. The hardest rock (diamond) has a value of 10 and will scratch all others. The second hardest will scratch all but the diamond, and so on. Talc, with a value of 1, can be scratched by every other rock. (A fingernail, a truly handy field-test instrument, has a value between 2 and 3.)

b. The volumes of three different cubes are 40, 64, and 65 cubic inches.

c. Three different highways are identified by their numbers: 40, 64, and 65.

d. Republicans, Democrats, Independents, and Others are identified on the voters’ list with the numbers 1, 2, 3, and 4, respectively.

e. The winner of the Miss America contest was Miss California; the four runners-up were Miss Ohio, Miss Illinois, Miss Pennsylvania, and Miss Michigan.13

f. The prices of the three items are $3.00, $10.00, and $12.00.

g. She earned three degrees: B.A., M.S., and Ph.D.

42. Are the following nominal, ordinal, interval or ratio data? Explain your answers.

(a) Temperatures measured on the Kelvin scale.

(b) Military ranks.

(c) Social security numbers.

43. differentiate between positive and negative correlation.

Answer Type

1. Find out the **Mean** and **Median** of the following distribution-

Class Interval	**Frequency**
95-99	8
90-94	6
85-89	5
80-84	3
75-79	4
70-74	6
65-69	4
60-64	2
55-59	4
50-54	2
45-49	5
40-44	1

2. What is Normal Probability Curve (NPC)? Describe the characteristics of NPC.
3. What is Normal Probability Curve (NPC)? Describe the application of NPC.
4. Find out the **True Mode** of the following distribution-

Class Interval	**Frequency**
95-99	8
90-94	6
85-89	5
80-84	3
75-79	4
70-74	6
65-69	4
60-64	2
55-59	4
50-54	2
45-49	5
40-44	1

5. Find out the Mode of the following distribution-

Class Interval	**Frequency**
80-89	14
70-79	6
60-69	10
50-59	5
40-49	5
30-39	8
20-29	6
10-19	7
0-9	9

6. Find out the Rank order correlation of the following data.

X	Y
50	60
60	60
55	55
65	60
75	75
70	80
75	80
80	80
90	85
80	85

6. Find out the Quartile Deviation of the following distribution-

Class Interval	**Frequency**
80-89	14
70-79	6
60-69	10
50-59	5
40-49	5
30-39	8
20-29	6
10-19	7
0-9	9

7. What is the meaning of measurement in research? What difference does it make whether we measure in terms of a nominal, ordinal, interval or ratio scale? Explain giving examples.
8. Define statistics. Briefly discuss its needs and importance in the field of psychology.
9. Explain the meaning and application of statistics in psychology.
10. Briefly discuss the exclusive and inclusive method of forming frequency distribution table.
11. What do you mean by "organization of data"? briefly discuss the different methods employed for the organization of data.
12. What do you mean by Frequency Distribution ? How a frequency distribution is prepared ?
13. What do you mean by 'data'. Briefly discuss the various methods for the organization of data.
14. What do you understand by the term , 'measures of central tendency' ?
15. Explain the most common measures of central tendency.
16. Define mean, median and mode. Briefly discuss the use of each one of them. (Number of passengers on buses from Delhi to Mumbai. (e) Code numbers given to the religion of persons attempting suicide.
17. How does a Histogram differ from a Frequency Polygon? What are the importance in Educational measurement?
18. What is smoothed frequency polygon? Draw a smoothed frequency polygon in the question no 5.
19. Define mean and discuss its uses and advantages.
20. Define median and discuss its uses and advantages.
21. Define mode and discuss its uses and advantages.
22. Define quartile and quartile deviation.

23. Define skewness and name two skewed curves.
24. Define co-efficient of correlation? In which range can a coefficient of correlation vary?
25. What is parametric and non-parametric tests? Describe the advantages and disadvantages of non-parametric tests.
26. Define the product-moment correlation coefficient and mention its properties.
27. Collect the half yearly and annual examination marks of class X of any school and determine the relationship between the two sets of scores.
28. Compute and interpret the correlation coefficient for the following data related to grades of 6 students selected at random.

Maths grade	70	80	73	65	60	61
English grade	45	51	60	57	62	63

29. Calculate coefficient of rank correlation for the data in Question no 27.
30. In a test of Arithmetic reasoning the data relating to 5 boys and 8 girls of the same age are given below. Test whether there is any difference between the means.

Score of boys	15	17	25	27	21		
Score of girls	29	20	11	25	17	22	15

31. In a test of numerical ability, the data relating two random samples of 13-year-old children are as follows. Test whether the mean difference is significant at .05 and .01 level.

	N	Mean	SD

Group I	10	16.6	3.5
Group II	15	20.8	4