STATE BANK OF PAKISTAN

STATISTICAL OFFICERS TRAINING SCHEME (SOTS)

SAMPLE PAPER

ENGLISH

Read the passage carefully and answer questions 1-2

Some interesting information has been produced from a year-long analysis carried out on mobile phone network. It might be useful for epidemiologists and social scientists. It might shed light on how rumors are spread via social networks.

Researchers developed a link between a pair of phone users, on the basis of total time spent talking to each other. Strong links exist between members of same social group, whereas weak links join members from different social groups.

A dramatically differential effect was observed when researchers started removing links in the network whether starting with the strongest or with the weakest. It was surprising to them that removing strong links had little effect on overall structure of the network. On the other hand, removing weak links broke the network into a series of remote islands, with individual users connected to a small number of other phone users.

Researchers thus hypothesized that weak links are more significant in maintaining wider social network. If you lose a contact with casual acquaintances, there are more chances that your social circle may split but if you stop talking to your sister, there will be less visible impact on the structure of your social network.

Q1. The passage offers support for which of the following statements?

A. Strong links are less significant than weak links.
B. Face-to-face communication is similar to communication via phone.
C. Phone network patterns are considered useful for social scientists by some people.
D. Geographically close individuals have strong links.

Q2. In the last paragraph the author is trying to:

A. Emphasize the effectiveness of current research.
B. Get more specific to enrich the reader's understanding.
C. Strengthen the researchers' inferences.
D. Support his argument to make it more plausible.

Q3. Though the waste of time and the expenditure on fashion is very large, yet fashions have come to stay. They will not go, come what may. However strong efforts are required to displace the excessive craze of fashion from the mind of youngsters.

The passage best supports the statement that:

A. Fashion is the need of the day.
B. Excessive craze for fashion is detrimental to one's personality.
C. The craze for fashion to be done away so as not to let down the constructive mental development.
D. Work and other activities should be valued more than outward appearance.

Q4. One _____ the new scheme is that it might actually_____ just those applicants that it was intended to encourage:

A. attraction of – scare
B. problem with – induce
C. drawback of – daunt
D. highlight of – stimulate

Q5. Select the correct ANTONYM (opposite) for the given word:

CLUE

A. Key
B. Indication
C. Question
D. Trace

Q6. Select the correct SYNONYM (same or nearly the same meaning) for the given word:

SPLENDID

A. Common
B. Normal
C. Ordinary
D. Excellent

Q7. Select the correct explanation for the IDIOM (figurative meaning) from the given options:

BAG OF BONES

A. An extremely aggressive person
B. An extremely sensitive person
C. An extremely thin person
D. An extremely depressed person

ANALYTICAL SKILLS/GENERAL KNOWLEDGE

Q8. Analyze the relation between the words and select the correct option that matches with the relation:

TAILOR: SUIT

A. Scheme: agent
B. Editor: manuscript
C. Mention: opinion
D. Implode: building

Q9. The average height of five boys in a class is 22.994 inches. If the heights of four boys are 6.45, 11.70, 12.35, 75.28 inches, find the height of fifth boy:

A. 15.79 inches
B. 20.25 inches
C. 9.19 inches
D. 12.50 inches

Q10. Pakistan has its longest border with:

A. China
B. India
C. Iran
D. Afghanistan

STATISTICS

Topic: Survey and Sampling Techniques (Level of measurement)

Q11: The properties of ratio-level data are following except

A. Data classifications are ordered according to the amount of the characteristics they possess.
B. Equal differences in the characteristic are represented by equal differences in the numbers assigned to the classifications.
C. The zero point indicates the presence of the characteristic.
D. The ratio between two numbers is meaningful.

Topic: Statistical Methods (Measure of central tendency)

Q12: Andy has grades of 84, 65, and 76 on three math tests. What grade must he obtain on the next test to have an average of exactly 80 for the four tests?

A. 56.25
B. 95
C. 75
D. 81

Topic: Research Methodology

Questions 13 to 14 refer to the following situation:

Mr. Smith is a high school teacher and studied the benefits of using a new algebra technique. He selected randomly 50 algebra high school students from the district. He then selected 25 of these 50 students to participate in the new study program and gave a training session on traditional study techniques to the remaining 25 students.

Q13: The most likely target population in this study is

A. all high school students in the district
B. all students in the district
C. all algebra students
D. the 25 students who learned the new study techniques

Q14: The method of sampling used in the study is

A. simple random sampling
B. stratified random sampling
C. cluster sampling
D. convenience sampling

Topic: Multivariate Analysis (ANOVA)

Q15: In a one-way ANOVA, there are four treatments and six observations in each treatment. What are the degrees of freedom for the *F* distribution?

A. 3 and 20
B. 3 and 5
C. 4 and 24
D. 3 and 24

Topic: Experimental Design

Q16: Which of the following is the factor that researchers manipulate so that it is the only factor allowed to vary systematically in an experiment?

A. internal validity
B. independent variable
C. dependent variable
D. external validity

Topic: Statistical Methods (Properties of Mean)

Q17: During the last 5 years profit (in millions) earned by Havoc automobile is $8.0, $8.5, $8.0, $7.85 and $30. The company is interested in average profit of the last 5 years. The most appropriate measure of central tendency is:

A. mean
B. median
C. mode
D. all of these

Topic: Probability and Probability distribution (Mean of probability distribution)

Q18: Eliff decided to study the number of exemptions claimed on personal tax returns he prepared in 2016. The data are summarized in the following table.

Exemptions	Percent
1	20
2	50
3	20
4	10

A. 0.001
B. 25
C. 5
D. 2.2

Topic: Probability and Probability distribution (Simple probability)

Q19: The advertising firm asked a sample of 1,960 consumers to try a newly developed product by Boston Market. Of the 1,960 sampled, 1,176 said they would purchase the dinner if it is marketed. On the basis of the sample how many consumers will purchase the product?

A. 60 percent
B. 40 percent
C. 10 percent
D. 50 percent

Topic: Statistical Analysis (Empirical Rule)

Q20: A sample of the rental rates at University Park Apartments approximates a symmetrical, bell-shaped distribution. The sample mean is $500; the standard deviation is $20. About 68 percent of the monthly rentals are between

A. $460 and $540
B. $440 and $560
C. $480 and $520
D. $420 and $580

Topic: Survey and Sampling Techniques (Describing Data & level of measurement)

Q21: The jersey numbers of Major League Baseball players is an example of what level of measurement?

A. Nominal
B. Ordinal
C. Interval
D. Ratio

Topic: Statistical Analysis for applied statistics (Regression Analysis)

Q22: Given the following regression equation, $\hat{Y} = 7 - 0.5\,X$ and that the coefficient of determination is 0.81. An increase of 1 unit in the independent variable will result in what amount of an increase or decrease in the dependent variable?

A. increase of 0.5
B. decrease of 0.5
C. increase or decrease of 0.5
D. none of the above

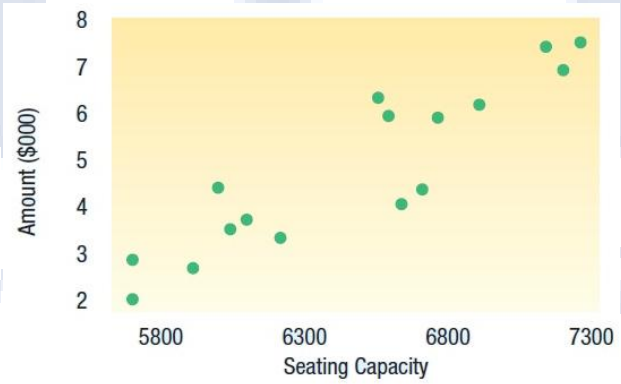
Topic: Survey and Sampling Techniques

Q23: Randomly 10 university students were asked about their height. On the basis of the given information, the average height of all students in the university is reported 67 inches. It is an example of:

A. descriptive Statistics
B. population
C. inferential Statistics
D. none of these

Topic: Statistical methods (Scattered Diagram)

Q24: The rock band group is touring the United States. The following chart shows the relationship between concert seating capacity and revenue in $000 for a sample of concerts. How many concerts were studied and the revenue for the concert with the largest seating capacity?



A. 7300, 7500
B. 16, 7500
C. 32, 8000
D. 75, 6500

Topic: Statistical Analysis for applied statistics (hypothesis testing)

Q25: The manufacturer of the X-15 radial truck tire claims that the mean mileage the tire can be driven before the tread wears out is 60,000 miles. Assume the standard deviation of the distribution is 5,000 miles. Crosset Truck Company bought 48 tires and found that the mean mileage for its trucks is 59,500 miles. If Crosset's Truck concludes that its experience is different from that claimed by the manufacturer, the company is either

A. is incorrect, or made a Type I error
B. is correct, or made a Type II error
C. is incorrect, or made a Type II error
D. is correct, or made a Type I error

X --- **END OF PAPER** --- X

Disclaimer: *The questions provided in the sample are for demonstration purpose only in order to acquaint the candidate with the paper pattern. The number of questions, complexity and depth of coverage may vary in the actual examination*

ANSWER KEY

Qs	KEY
1	C
2	B
3	C
4	C
5	C
6	D
7	C
8	B
9	C
10	B
11	C
12	B
13	C
14	A
15	A
16	B
17	B
18	D
19	A
20	C
21	A
22	B
23	C
24	B
25	D