speaking terms and will not attend together is: A) 35 B) 70 C) 55 D) 80

STATISTICS ENSET 2013 SECOND CYCLE

THE UNIVERSITY OF BAMENDA
HIGHER TECHNICAL TEACHER'S TRAINING COLLEGE
ENTRANCE EXAMINATION: ACADEMIC YEAR 2013. Time Allowed: 3hrs
DEPARTMENT OF ECONOMICS: Second cycle Minor: STATISTICS

Instructions: Write only the letter that corresponds to the right answers.

1. Which of the following statements are true?
   I. Categorical variables are the same as qualitative variables.
   II. Categorical variables are the same as quantitative variables.
   III. Quantitative variables can be continuous variables.
   (A) I only (B) II only; (C) III only; (D) I and II; (E) I and III
2. A coin is tossed three times. What is the probability that it lands on heads exactly one time?
   (A) 0.125; (B) 0.250; (C) 0.333; (D) 0.500; (E) 0.375
3. An author analyst is conducting a satisfaction survey, sampling from a list of 10,000 new car buyers. The list includes 2,500 Ford buyers, GM buyers, 2,500 Honda buyers and 2,500 Toyota buyers. The analyst selects a sample of 400 car buyers, by randomly sampling 100 buyers of each brand. Is this an example of a simple random sample?
   (A) Yes, because each member in the sample was randomly sampled.
   (B) Yes, because each member in the sample had an equal chance of buying sampled.
   (C) Yes, because car buyers of every brand were equally represented in the sample.
   (D) No, because every possible 400-buyers sample did not have an equal chance of being chosen.
   (E) No, because the population consist of purchasers of four different brands of car.
4. A sample consists of four observations: (1, 3, 5, 7). What is the standard deviation?
   (A) 6; (B) 6.67 (C) 2; (D) 2.58; (E) None of the above
5. A card is drawn randomly from a deck of ordinary playing cards. You win 10Fcfa if the card is a spade or an ace. What is the probability that you will win the game?
   (A) 1/13; (B) 13/52; (C) 4/13; (D) 17/52 ; (E) None of the above
6. Nine hundred (900) high school freshmen were randomly selected for a national survey. Among survey participants, the mean grade-point average (GPA) was 207, and the standard deviation was 0.4. What is the margin of error, assuming a 95% confidence level?
   (A) 0.013; (B) 0.500; (C) 0.025; (D) 1.960; (E) None of the above.

7. A national achievement test is administered annually to class six pupils. The test has a mean score of 100 and a standard deviation of 15. If Jane's z-score is 1.20, what was her score on the test?
(A) 82; (B) 118; (C) 100; (D) 112; (E) None of the above
8. Which of the following is discrete random variable?
I. The average height of a randomly selected group of boys.
II. The annual number of lottery winners from the city of Bamenda.
III. The number of presidential elections in the 20th century.
(A) I only; (B) II only; (C) III only; (D) I and II; (E) I and III
9. Supposed we want to estimate the average weight of an adult male in a given region. We draw a random sample of 1,000 men from a population of 1,000,000 men and weigh them. We draw the average man in our sample weighs 180kg and the standard deviation of the sample is 30kg. What is the 95% confidence interval?
(A) 180 + 1.86; (B) 180 ± 3.0; (C) 180 ± 5.88; (D) 180 ± 30; (E) None of the above.
10. The number of adults living in homes on a randomly selected city block is described by the following probability distribution.

Number of adults, x	1	2	3	4
Probability, P(x)	0.25	0.50	0.15	0.10

What is the standard deviation of the probability distribution?
(A) 0.89; (B) 0.62; (C) 0.79; (D) 1.99; (E) 2.10
11. Which of the following statements are true?
I. Random sampling is a good way to reduce response bias.
II. To guard against bias from under coverage, use a convenience sample.
III. Increasing the sample size tends to reduce survey bias.
IV. To guard against non response bias, use a mail-in survey.
(A) 1 only; (B) II only; (C) III only; (D) IV only; (E) None of the above.
12. Supposed X and Y are independent random variables. The variance of X is equal to 16; and the variance of Y is equal to 9. Let Z=X-Y. What is the standard deviation of Z?
(A) 2.65; (B) 3.00; (C) 4.12; (D) 4.75; (E) 5.00
13. A toy company sells baseball cards in packages of 100. These types of players are represented in each package-rookies, veterans, and All-stars. The company claims that 30% of the cards are rookies, 60% are veterans, and 10% are All-Stars. Cards from each group are randomly assigned to packages. Supposed you bought a package of cards and counted the players from each group. What method would you use to test the company's claim?
(A) One-sample t-test (B) Chi-square test for homogeneity;
(B) Chi-square test for independence; (D) Chi-square goodness of fit test (E) Matched pairs t-test
14. Supposed a researcher conducts an experiment to test a hypothesis. If she doubles her sample size, which of the following will increase?
I. The power of the hypothesis test.
II. The effect size of the hypothesis test.
III. The probability of making a type II error.
(A) I and II only; (B) III only; (C) II only; (D) I only; (E) None of the above
15. Supposed a die is tossed 5 times. What is the probability of getting exactly 2 four?
(A) 0.028; (B) 0.112; (C) 0.16P; (D) 0.333; (E) Not possible.
16. With respect to experimental design, which of the following statements are true,
I. Blinding controls for the effects of confounding.
II. Randomization controls for effects of lur
III. Each experimental factor has one treatment level.
(A) I and II only; (B) I only; (C) II only; (D) III only; (E) none of the above
17. In hypothesis testing, which of the following statements is always true?
I. The P-value is greater than the significance level.
II. The P-value is computed from the significance level.
III. The P-value is a test statistic.
IV. The P-value is a probability.
(A) I and IV only; (B) IV only; (C) II only; (D) III only; (E) None if the above.
18. Bob is a high school basketball player. He is a 70% free throw shooter. That means his probability of making a free throw is 0.70. What is the probability that Bob makes his first free throw on his fifth shot?
(A) 0.0024; (B) 0.0057; (C) 0.0081; (D) 0.0720; (E) 0.1681
19. A national consumer magazine reported the following correlations.
- The correlation between car weight and car reliability is -0.30
- The correlation between car weight and annual maintenance cost is 0.20.

Which of the following statements are true?

I. Heavier cars tend to be less reliable.
II. Heavier cars tend to cost more to maintain.
III. Car weight is related more strongly to reliability than to maintenance cost.

(A) I, II and III; (B) I only; (C) II only; (D) III only; (E) None of the above.

20. In the context of regression analysis, which of the following statements are true?
I. When the sum of the residuals is greater than zero, the model is nonlinear.
II. A random pattern in the residual plot indicates that linear regression is appropriate .
III. Influential points always reduce the correlation coefficient.

(A) II only (B) I only; (C) III only; (D) I and II only; (E)I, II and III.

21. In the context of regression analysis, which of the following statements are true?
I. A linear transformation increases the linear relationship between variables.
II. A logarithmic model is the most effective transformation method.
III. A residual plot reveals departures from linearity.

(A)I only; (B) II only; (C) I, II and III only; (D) I and II only; (E) III only;

22. Which of the following would be a reason to use a one-sample t-test instead of a one-sample z-test?
I. The standard deviation of the population is unknown.
II. The null hypothesis involves a continuous variable.
III. The sample size is large (greater than 40).

(A) I and II only; (B) II only; (C) III only ; (D) I only; (E) I and III.

23. A public opinion poll surveyed a simple random sample of voters. Respondents were classified by gender (male or female) and by voting preference (CPDM, SDF or UNDP). Result s are shown below.

Gender	Voting preferences			
	CPDM	SDF	UNDP	Row total
Male	200	150	50	400
Female	250	300	50	600
Column Total	450	450	100	1000

If you conduct a Chi-square test of independence, what is the expected frequency count of male independents?

(A) 14; (B) 35; (C) 40; (D) 50; (E) 72

24. Which one of the following statements is most correct about a skewed dataset?
(A) The mean and median will usually be the same.
(B) The mean and median will usually be different.
(C) The mean will always be higher than the median.
(D) Whether the mean end the median are the same depends on whether the data set is skewed to the right or to the left.
(E) None of the above.

25. Pick the choice that best completes the following sentence. If a relationship between two variables is called statistically significant, it means the investigators think the variables are ;
(A) Related in the population represented by the sample.
(B) Not related in the population represented by the sample.
(C) Related in the sample due to chance alone.
(D) Very important
(E) All of the above.

STATISTICS/BUZ MATHS ENSET 2013 SECOND CYCLE

THE UNIVERSITY OF BAMENDA
HIGHER TECHNICAL TEACHER'S TRAINING COLLEGE
ENTRANCE EXAMINATION: ACADEMIC YEAR 2013
SECOND CYCLE: BUSINESS MATHEMATICS / STATISTICS

NOTE: Candidates are authorized to use the following: -Non programmable calculators, -Financial Tables

1) Given that P(A or B) $= \frac{1}{5}$, P(A) $= \frac{1}{6}$ and P(A and B) $= \frac{1}{8}$, find P(B)
   A) $\frac{50}{120}$ B) $\frac{19}{240}$ C) $\frac{29}{140}$ D) $\frac{19}{120}$
2) A study of 1000 randomly selected flights of major airline showed that 755 of the flights arrived on time. What is the probability of the flight arriving on time?
   A) $\frac{49}{200}$ B) $\frac{151}{200}$ C) $\frac{200}{49}$ D) $\frac{200}{151}$
3) Find the probability of answering the two multiple choice questions correctly if random guesses are made. Assume the questions each have 5 choices for the answer. Only one of the choices is correct.
   A) 0.004 B) 0.4 C) 0.02 D) 0.04
4) A card is drawn from a standard deck of 52 playing cards. Find the probability the card is an ace or a heart.

A) $\frac{7}{52}$ B) $\frac{4}{13}$ C) $\frac{3}{13}$ D) $\frac{2}{13}$

5) Eight guests are invited for a dinner. How many ways can they be seated at a dinner table if the table is straight with seats only on one side?
A) 362880 B) 4.5 C) 40320 D) 5040

6) Which of the following cannot be a probability?
A) -64 B) 0 C) 0.001 D) $\frac{\sqrt{6}}{3}$

7) The distribution of master's degrees conferred by the University of Bamenda is listed below. i.e a student mayors in only one subject

Major	Maths	English	Engineering	Business	Education
Frequency	216	207	82	172	217

What is the probability that a randomly selected student with a master's degree majored in Business, Education or engineering?
A) 0.334 B) 0.527 C) 0.473 D) 0.234

8) A delivery route must include stops at 6 cities. How many different routes are possible?
A) 6 B) 46.656 C) 64 D) 720

9) The access code to a house's security system consists of nine digits. How many different codes are available, if each digit can be repeated?
A) 512 B) 1e + 09 C) 387820.489 D) 9

10) Decide if the event A and B are mutually exclusive, not mutually exclusive. A student is selected at random. a) The student is taking a maths course. b) The student is a business major. A) Not mutually exclusive B) Mutually exclusive

11) The point at which no profit is made and no losses are incurred is said to be
A) Fixed cost point B) Contribution margin C) Breakeven point D) Contribution rate

12) Cost analysis provides the following information. Fixed cost = 20.000 FRS, variable cost = 30 FRS per unit, selling price per unit = 50 FRS. Contribution margin is
A) 20frs B) 80frs C) 16frs D) 26frs

13) (M -1). If you want to multiply a number by 7 to matrix B = $\begin{pmatrix} 2 & 3 \\ 4 & 1 \end{pmatrix}$ the result is
A) $\begin{pmatrix} 14 & 3 \\ 28 & 1 \end{pmatrix}$ B) $\begin{pmatrix} 2 & 21 \\ 4 & 7 \end{pmatrix}$ C) $\begin{pmatrix} 14 & 21 \\ 28 & 7 \end{pmatrix}$ D) $\begin{pmatrix} 14 & 28 \\ 21 & 7 \end{pmatrix}$

14) Given list price = 5500frs, Discount = 850frs. Net cost price will be:
A) 6350frs B) 5508frs C) 5585frs D) 4650frs

15) Convert 50% markup on sale to % mark up on cost.
A) 50% B) 100% C) 150% D) 200%

16) The unknown value on the proportion: 2 : X = 3 : 9 is
A) 5 B) 6 C) 7 D) 8

17) John earned 8% on investment of 1000frs and in the next deal he has a loss of 8% on the earned amount. The original amount now is A) 1000 B) 993.6 C) 1004 D) none of these

18) Identity matrix is also a……matrix
A) Square B) Triangular C) Diagonal D) A and C

19) Nkeh calculated a correlation coefficient of 0.75. Which of the following reflects the best interpretation of this?
A) Weak negative B) Positive C) Strong negative D) Strong positive

20) If variable cost is 120frs and contribution margin is 30frs. Then sale will be
A) 120frs B) 130frs C) 140frs D) 150frs

21) What shall be compound interest earned on 750frs invested at 12% per annum for 8 years?
A) 1857frs B) 750frs C) 1107frs D) none of these

22) The weights of a group of articles are: 95, 103, 105, 110, 104, 112, and 90. The mean deviation is. A) 102.71 B) 5.8 C) 110 D) 104

23) The average due dates of a series of 30 constant annuities of 10.000frs ach at annual compound rate of 10.25% is.
A) 11yrs B) 12.7yrs C) 9yrs D) 12.07yrs

24) Two capital 300.000frs and 200.000frs were invested at 6% and 5% p.a respectively at compound interest. If these sums were invested on the same day, how long will it take for the future value of the first to triple that of the second?
A) 73.24 years B) 45 years C) 52.4 years D) 43.24 years

25) The prices of petroleum products witness the following % increase for the past 5 years.

Years	2004	2005	2006	2007	2008
% increase	6.5%	8%	10.5%	15%	9%

The geometric mean of price increase is : A) 9.8% B) 9% C) 8% D) 9.76%

26) What is the median of 2, 1, 5, 1, 1, 3, 4, 3, 1, 1, 5, 18
A) 2 B) 3 C) 3.5 D) 2.5

27) The standard deviation in Question 26 above is
A) 4.75 B) 4.55 C) 3.03 D) 3.75

28) If P(A/B) = 0.4 and P(B) = 0.3. Find P(AnB).
A) 0.171 B) 0.525 C) 0.571 D) 0.120

29) What is the expected value of X if the probability distribution is

X	100	150	200	250	350
P(X)	0.1	0.2	0.3	0.3	0.1

A) 175 B) 150 C) 205 D) 200

Question 30—33 are based on the information below. An investor just increased his capital and the official values of his shares and subscription rights are as follows for 10 consecutive days in thousands franc.

Value of shares (Xi)	98	94	97	98	100	102	102	104	104	101
Value of subscription right (Yi)	6.5	5.4	6.1	6.4	6.9	8.1	7.5	7.4	7.4	7.3

30) The mean of Xi is: A) 6.9 B) 100 C) 0.02 D) 94

31) The coefficient of correlation "a" is
A) 6.9 B) 0.228 C) 0.02 D) 5.64

32) The linear correlation coefficient between variable Xi and Yi is:
A) 0.228 B) 3.79 C) 0.929 D) 0.864

33) What is "b"? A) -15.866 B) +15.866 C) -3.794 D) +3.794

34) A sample of the following data: 1, 13, 14, 19, 23. Using the "three standard deviation" criterion, the last observation (X = 23) would be considered an outlier.
A) True B) False

35) The geometric mean of 2, 1, 5, 1, 1, 3, 4, 3, 1, 1, 5, 18 is
A) 3.75 B) 2.158 C) 1.545 D) 2.376

36) 3 bills of exchange are in geometric progression. Their product 8×10^{15}. What is the value of the 1st bill? A) 200.000 B) 400.000 C) 500.000 D) 100.000

37) What will be the duration of an investment if the man invested 200.000frs at 5% compounded annually and realized an interest of 81,420frs?
A) 7 years B) 8 years C) 5 years D) 6 years

38) A book seller decides to decrease price by 25% on his books. If the new price is 6600frs, what is the original price?
A) 8000frs B) 7200frs C) 8800frs D) 8500frs

39) A capital C should be redeemed in 12 constant annuities: given that $A_1 + A_2 = 13515.25$frs and $A_2 + A_3 = 14528.86$frs. What is the rate of investment?
A) 5.5% B) 10% C) 7.5% D) 8%

40) If you contracted a loan of 400.000frs from a bank at 5% p.a prepaid interest for 5 years. The first amortization is:
A) 88409.6 B) 72390 C) 72010.6 D) 92390