SBS 320 Fall 2018 – Final Examination

Part I – Objective (one point each)

1. Socio-Economic-Status (SES) is an example of what type of variable:
- A. Nominal
- B. Composite (Index)
- C. Composite (Scale)
- D. None of the above

2. Interval level measurement of a variable implies an absolute zero point.
- A. True
- B. False

3. The FBI crime statistics typically use which of the following frequency derived measurements
- A. percentages
- B. ratios
- C. rates
- D. z-values

4. If the mean is greater than the median age of felony suspects arrested, the distribution has + skew.
- A. True
- B. False

5. Which of the following is not a measure of "central tendency":
- A. Mean Deviation
- B. Median
- C. Mean
- D. Both B and C

6. The area under a normal curve comprising 95% is between + and – one standard deviation
- A. True
- B. False

7. Which measure of association is most likely to be used when both variables are ordinal
- A. Lambda
- B. Gamma
- C. Pearson's r
- D. None of the above

8. "Correlation" is to description as "Regression" is to prediction.
- A. True
- B. False

9. Which of the following is not true
- A. correlations are the "average" of two regression slopes.
- B. the correlation squared is the variance explained in one variable by knowledge of another
- C. A slope of a regression is always positive
- D. one minus the correlation squared is the percentage of unexplained variance.

10. Path coefficients can never be greater than their corresponding correlation coefficients.
A. True
B. False

11. The probability of two mutually exclusive event occurring is simply the
A. The product of their probabilities
B. The sum of their probabilities.
C. Both A and B
D. Neither A nor B

12. A Priori probability is based on evidence while A Posterior probability is based on expectations.
A. True
B. False

13. If you have reason to believe income may affect political attitudes in a population, what type of sampling procedure would you most likely use:
A. Simple Random
B. Systematic Random
C. Stratified Random
D. None of the Above

14. All sampling distributions are based on expected values
A. True
B. False

15. Which of the following is considered a Type II error
A. Sending an innocent person to jail
B. Letting a guilty man go free
C. Beta
D. Both B and C

16. A Null hypothesis can never be proven
A. True
B. False

17. Rejecting the null hypothesis means
A. Our sample probability is less alpha
B. The numerator of our test statistic is larger than the denominator
C. The difference between our sample mean and population mean is sampling error
D. Both A and B

18. The variance between in ratio to the variance within by the null hypothesis is assumed = one**.**
A. True
B. False

19. Which of the following is considered a test of differences among more than two means
A. z-ratio
B. t-ratio
C. F-ratio
D. confidence interval

20. The Within degrees of freedom is larger than the Between degrees of freedom.

A. True
B. False

Part II – Matching (one point each)

21. _____ Mean for grouped data

22. _____ Z-Score

23. _____ Median for grouped data

24. _____ F-Ratio

25. _____ confidence interval

26. ____ one sample t-ratio

27. _____ Pearson's r

28. _____ Phi

29. _____ Partial r

30. _____ Beta weight

a. $Xll + (((N/2 - Cumfll) / fi) * i)$

b. $\Sigma f_i m_{i/N}$

c. $(X_i - \mu)/\sigma$

d. $\frac{\bar{X} - \mu}{\frac{\hat{s}}{\sqrt{N}}}$

e. $\frac{n_i \sum(\bar{X}_j - \bar{X}_g)^2/K-1}{\sum_i \sum_j (X_{ij} - \bar{X}_j)^2/N-k}$

f. $\bar{X} \pm t(\frac{\hat{s}}{\sqrt{N}})$

g. $\frac{r_{xy} - r_{xz}r_{yz}}{\sqrt{[1 - r_{xz}^2][1 - r_{yz}^2]}}$

h. $\beta_{yx1}r_{yx1} + \beta_{yx2}r_{yx2}$

i. $\sqrt{\frac{\chi^2}{N}}$

j. $\frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}}$

Part III - Definitions (two points each)

31. Measurement

32. Histogram

33. Crosstabulation

34. Standard Error

35. Logit

36. Permutation

37. Expected Value

38. Null Hypothesis

39. Alpha (α)

40. Degrees of freedom

Part IV – Choose to answer only FIVE of the following six Short Answers (five points each)

41. Describe the two processes that make the paradigm (model) of science unique.

42. State the three mistakes people make in using graphs to illustrate data summaries.

43. List the four possible outcomes in holding a third variable constant in partial correlation.

44. Describe the steps in running a path analysis procedure.

45. State the five steps discussed in class for testing statistical hypotheses.

46. Describe what determines using a z-, t-, or confidence interval in testing a single sample mean.

Part V – Choose to answer only FIVE of the following six problems (Five Points each)

47. Find the mean, median and mode for the following data. Are the data skewed?

i	*f*
2	3
3	6
4	14
5	8
7	5

48. In the spring semester 2018, a survey was taken that resulted in the cross-classification of lower vs. upper division student status by sex, at CSUN. The results are contained in the table below. Calculate and interpret LAMBDA and tell us aabout the strength of the relationship.

.	Lower	Upper	
Male	36	64	100
Female	64	36	100
Total	100	100	200

49. The Graduate Management Aptitude Test (X) correlates with GPA (Y) at r = 0.6. You want to test the effects of a third variable, SES (Z). Suppose SES correlates with GMAT at r = 0.4 and with GPA at r = 0.5. What is the correlation between GMAT and GPA after controlling for SES?

50. During the 2014 Major League Baseball season, the average player managed 72 hits over the course of the entire season. A general manager thinks the players on his team are superior to the league average. He takes a random sample of 19 of his players and fins they average 80 hits over the course of the season, with an unbiased standard deviation of 5 hits. Test his hypothesis at alpha = .05

51. You poll a sample of 100 students at CSUN to find out their age. If the results were a mean of 24 and an unbiased standard deviation of 4 years, within what interval could you be 95% sure the actual age of the students at CSUN falls?

52. You want to study the effects of education on income, so you compile information about salaries of workers in one of three educational categories Test the hypothesis that education affects income (use alpha < .01, Fcrit = 5.90).

	Some College	Some College	Grad Post Graduate
	64	72	80
	68	76	84
Income ($000)	72	80	88
	76	84	92
	80	88	96