

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

FOUR-SEMESTER BACHELOR OF EDUCATION PROGRAMME
THIRD YEAR, END-OF-SECOND SEMESTER EXAMINATION, AUGUST, 2021

AUGUST 16, 2021

EDUCATIONAL STATISTICS

9:30 AM – 10:45 AM

SECTION B

Answer ALL questions

1. a. The following estimate of a least-squares regression equation was obtained for headteachers' supervision rating and achievement in a private school. $Y = -5.0 + 1.5X$, where Y is the achievement score and X is the supervision rating. Mr Danso obtained a supervision rating of 40. What is the estimate of his score in achievement? (4 marks)
- b. Indicate the type of t -test you would use to analyse the data in each of the following situations:
 - i. Comparing a class average performance of learners in mathematics to a national average. (2 marks)
 - ii. Finding the difference in mean weight of boys and girls in a school. (2 marks)
 - iii. Estimating the mean difference of pre-test and post-test scores of males and females in a study. (2 marks)

Use the following information to answer question 2. Given that $\mu - 1\sigma = 0.3413$; $\mu - 1.5\sigma = 0.4332$; $\mu - 2\sigma = 0.4772$; $\mu - 3\sigma = 0.4987$.

2. a. The distribution for a Statistics examination is normal with a mean of 60 and a variance of 64 (i.e., $X \sim N(60,64)$). A student is selected at random from the class. What is the probability that the student selected obtains a score between 52 and 76? (6 marks)
- b. Given that a distribution is normal, with a mean of 50 and a standard deviation of 10. From a class of 2000 students, approximately how many students obtained scores above 70? (4 marks)
3. a. Distinguish between Types I and II errors in statistical analysis. (4 marks)
- b. i. What is statistical power? (2 marks)
- ii. State two factors that can affect the statistical power of a test. (4 marks)