UNIVERSITY OF PERADENIYA
දුරස්ථ හා අබණ්ඩ අධ්‍යාපන කේන්ද්‍රය
தொடர் தொலைக் கல்வி நிலையம்
CENTRE FOR DISTANCE AND CONTINUING EDUCATION

පළමු වසර ශාස්ත්‍රවේදී උපාධි පරීක්ෂණය (බාහිර - නව නිර්දේශය)
අගෝස්තු 2018
முதலாம் வருட கலைத்தேர்வு பரீட்சை (வெளிவாரி - புதிய பாடத்திட்டம்)
ஓகஸ்ட் 2018
1st YEAR (100 LEVEL) EXAMINATION IN BACHELOR OF ARTS (EXTERNAL -
NEW SYLLABUS) AUGUST 2018

SUPE 009: INTRODUCTION TO STATISTICS

1. State whether the following statements are TRUE or FALSE. If FALSE, correct it.

   i. If X is a random variable, it will have probability distribution
   ii. Statistics play important role in the context of today's competitive environment
   iii. Knowledge of statistical techniques help us to gain insight into an unknown situation.
   iv. Descriptive statistics summarize and describe the characteristics of a set of data
   v. Histogram provides information about the shape of a distribution
   vi. A cumulative frequency curve is known as frequency polygon
   vii. Coefficient of variation does not measure relative variability
   viii. Two events are mutually exclusive if their probabilities are less than one
   ix. Standard error is used to measure variability of a statistic.
   x. Simple random sampling is a non-probability sampling method

2.
   i. What are the features of a good average?
   ii. What are the advantages of Geometric Mean?
   iii. Explain the term variation
   iv. What do you understand by coefficient of variation? Discuss its importance in business problems
   v. Explain the measure of skewness and kurtosis can be used in describing a frequency distribution.

   (4 marks each)

3. The random variable X has probability distribution as shown in the table given below.

X	P(X)	F(X)	XP(X)	$X^2 .P(X)$	$X^3 P(X)$
1	1/10				
2	2/10				
3	3/10				
4	4/10				

    i. Find $E(X)$, $E(X^2)$, $E(X^3)$ by filling the empty column
    ii. Find Var(X)
    iii. Draw vertical line graph to illustrate the distribution
    iv. Find (X<4)
    v. What information can be derived from $E(X^3)$, $E(X^2)$

(4 marks each)

4. The summary statistics for the distribution of marks that the students gained for ECNOMICS and STATISTICS courses are given below.

	ECNOMICS	STATISTICS
Mean	67.96429	74.89286
Median	68.00000	75.00000
Maximum	86.00000	95.00000
Minimum	52.00000	58.00000
Std. Dev.	9.429984	9.445121
Skewness	-0.103708	0.165586
Kurtosis	2.272946	2.471934
Observations	28	28

    i. What course is performed well?   (03 marks)
    ii. Which course has higher variability in the distribution of marks   (03 marks)
    iii. Comment on the skewness of these distributions   (03 marks)
    iv. What percentage of students score more than 68 marks in ECONOMICS   (03 marks)
    v. How these two distributions differ from a normal distribution? Explain.   (08 marks)

5. a. Explain the meaning of each of the following terms   (10 marks)
    i. Random phenomenon
    ii. Statistical experiment
    iii. Sample space.
    iv. Mutually exclusive events

b. State basic properties of probability measure   (5 marks)
c. Two unbiased coins are tossed. What is the probability of obtaining?   (5 marks)

    i. All heads
    ii. at least one head

6. i. What is the meaning of the coefficient of correlation?   (5 marks)

    ii. Why correlation analysis is useful? Explain.   (5 marks)

    iii. The following scatter diagram shows the relationship between income and savings. Describe the pattern of the relationship   (10 marks)
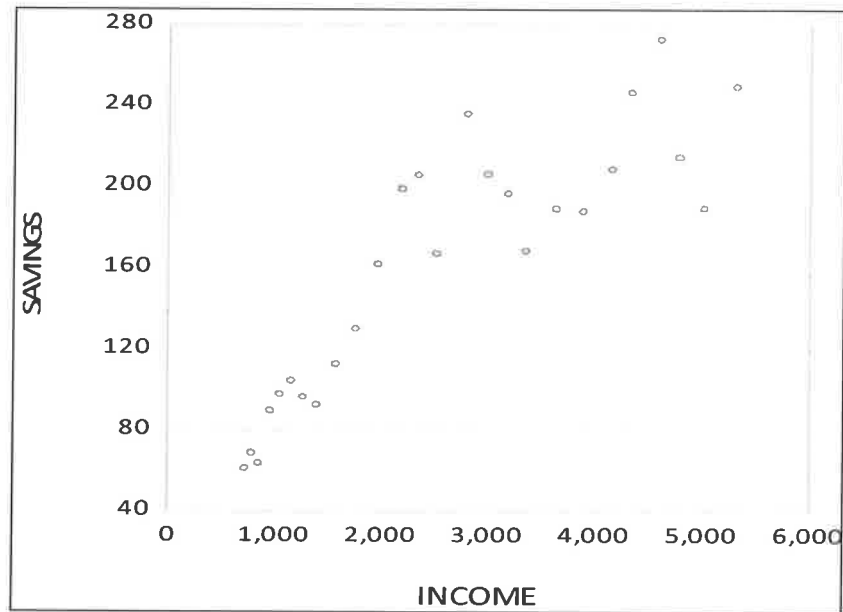
7. i.   What is sampling distribution? Explain   (5 marks)
    ii.   State the Central limit theorem   (5 marks)
    iii   What do you mean by errors in hypothesis testing   (5 marks)
    iv. What is a test statistic? Explain   (5 marks)

8. Write short notes on the following terms
    a.   Nominal Data
    b.   Independent events
    c.   Simple random sampling method
    d.   Conditional Probability
    e.   Stem-and - Leaf Displays   (4 marks each)