# THE POLYTECHNIC, IBADAN
## DEPARTMENT OF MATHEMATICS & STATISTICS
## FIRST SEMESTER EXAMINATION 2020/2021 SESSION

Course title: Computing for Statistics
Course code: COM 114
Class: NDI FT Computer Studies
Time Allowed: Two hours

Instructions: Attempt any four (4) questions

1(a) What do you understand by statistics? What are the uses of Statistics?
(b)List out and explain any three methods of collecting primary data and state one merit and one demerit of each of the methods.
In how many ways can the word MATHEMATICALLY be arranged?

2. The final grades in Statistics of 50 students in a department at Polytechnic are recorded using the following set of data

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | 81 | 44 | 43 | 60 | 88 | 86 | 41 | 87 | 94 | 23 | 26 | 22 |
| 95 | 67 | 59 | 63 | 83 | 90 | 46 | 50 | 55 | 81 | 83 | 82 | 70 |
| 55 | 40 | 74 | 28 | 25 | 60 | 85 | 34 | 64 | 41 | 24 | 31 | 28 |
| 45 | 33 | 92 | 78 | 26 | 20 | 37 | 66 | 54 | 20 | 35 | | |

(i) Prepare a frequency distribution table for the above data using the class size of 10 (i.e 20-29, 30-39 etc)
(ii) Compute (a) mean grade (b) median (c) mode for the above data.
(iii) Construct a cumulative frequency curve.

3(a) Distinguish between the following:
(i) Sample and Sampling
(ii)Simple random sampling and Stratified sampling techniques
(iii) Combination and Permutation
(iv) Finite and Infinite sets

(b) The following table shows the yearly productions of some selected farms products (in tones) for the period of 2005 and 2008

| Year | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|
| Maize | 40 | 50 | 35 | 60 |
| Rice | 60 | 80 | 70 | 50 |
| Millet | 30 | 50 | 60 | 80 |

Represent the above using component bar chart.

4 (a) What is a chart? Explain three types of charts you know.

(b) Draw a pie chart, using the following information. Exports of some crops in 2016

| Crop | Value (₦m) |
|---|---|
| Cocoa | 50.2 |
| Groundnut | 28.4 |
| Palm product | 30.6 |
| Millets | 70.5 |

A box contains 20 balls, of which 12 are yellow while the rest are blue. If two balls are selected at random, what is the probability of selecting; (a) same colour, (b) different colours. (i)With replacement, (ii) Without replacement

5a (i) What are the functions of statistics?

(ii) State and explain in brief methods of collecting Secondary data.

(iii) Mention and explain Scales of Measurement you know.

5b. A coin is tossed three times. What is the probability of obtaining;

(i) at least two heads, (ii) three heads or tails

6 (a) Distinguish between the following terms:

(i) Set and Subset (ii) Null and disjoint sets (iii) Universal set and Complement of a set

(b) State laws of sets

(c) If $x$ is an integer and $U = [x: 1 \leq x \leq 15]$

$A = [x: 1 \leq x \leq 10]$, $B = [x: 4 < x \leq 12]$ *and* $C = [x: 3 \leq x < 7]$

Show that: (i) $(A \cup B) \cup C \equiv A \cup (B \cup C)$.

(ii) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

$U = \{0, 1, 2, 3 \ldots 15\}$.

$A = [1, 2, 3 \ldots 10]$

$B = [3, 4, 5 \ldots 12]$.

$C = [3 \ldots 6]$.