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University Examinations 2023/2024

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DIPLOMA IN ANIMAL
HEALTH PRODUCTION

SMF 2164: BIOSTATISTICS AND BASIC COMPUTER APPLICATIONS

DATE: APRIL 2024

TIME: 1¹/₂ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a) Explain the following terms as used in biostatistics
- Descriptive and inferential statistics (2 marks)
 - Population and sample (2 marks)
 - Parametric and non-parametric tests (2 marks)
- b) If 4% of pesticides manufactured by a firm are in effective. Find the probability that in a sample of 200 pesticides
- At most 2 are ineffective (2 marks)
 - At least 3 are ineffective (2 marks)
- c) The probability distribution of the number of heads occurred when a coin is tossed 4 times is as follows

x	0	1	2	3	4
$p(x = x)$	$1/16$	$4/16$	$6/16$	$4/16$	$1/16$

- i) Calculate the mean of the discrete probability above (4 marks)
- ii) Calculate the variance of the discrete probability distribution above (3 marks)
- d) Explain the utility of fundamental statistical measures in conduction of agricultural research (4 marks)
- e) Give five functions of a computer (5 marks)
- f) Highlight four methods of data collection used when carrying out an agricultural research (4 marks)

QUESTION TWO (15 MARKS)

- a) Water samples from 30 randomly selected swimming pools were selected for acidity. The following data listed the PH for each sample

6.4	6.6	6.2	7.2	6.2
7.4	7.0	5.9	5.7	7.0
6.0	6.5	7.0	6.3	7.0
7.2	6.3	5.6	6.8	5.9
5.9	7.3	7.7	7.5	5.2
6.4	6.3	6.2	7.5	6.4

- i. Construct a frequency distribution table, with intervals 5.0-5.4, 5.5-5.9.... (3 marks)
- ii. Compute the arithmetic mean, standard deviation and variance (8 marks)
- iii. Present the data using a histogram and a frequency curve (4 marks)

QUESTION THREE (15 MARKS)

- a) Define the following computer terms
 - i. CPU (2 marks)
 - ii. RAM (2 marks)
 - iii. Operating system (2 marks)
 - iv. Spreadsheets (2 marks)
 - v. Datasheet (2 marks)
- b) Define conditional probability and give an example (2 marks)

- c) The probability of an event is 0.4. the probability of an event B is 0.3. What is the probability of both events A and B happening $[P(A \cap B)]$ if they are independent (3 marks)

QUESTION FOUR (15 MARKS)

- a) Explain the difference between data backup and data recovery and explain why they are both important in the context of animal health data management (4 marks)
- b) The charge account at a certain department store is approximately normally distributed with an average balance of \$80 and a standard deviation of \$30. What is the probability that a charge account randomly selected has a balance
- i. Over \$ 125 (2 marks)
 - ii. Between \$65 and \$95 (3 marks)
- c) Discuss the importance of computer application in managing animal health and production. Discuss the specific software or tools commonly used in the field (6 marks)

QUESTION FIVE (15 MARKS)

- a) Discuss the challenges and ethical consideration related to the use of computer application in animal health research and production management (10 marks)
- b) Highlight common data manipulation techniques that can be used in excel for data analysis (5 marks)