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**University Examinations 2015/2016**

FIRST YEAR FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN BRIDGING MATHEMATICS

**SMB 0004: PROBABILITY AND STATISTICS**

 **DATE: NOVEMBER 2015 TIME: 11/2 HOURS**

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

**QUESTION ONE (30 MARKS)**

1. Consider the following set of data 47,52,57,60,76,74,60,61,64

Find the:

1. Mean (2 Marks)
2. Median (1 Mark)
3. Awino has 3 blue sweets and 2 pink sweets in her pocket. She takes one sweet at random and eat it. She takes another sweet and eats it too. What is the probability that.
4. The first sweet is blue. (2 Marks)
5. The second sweet is pink (2 Marks)
6. The masses to the nearest kilogram of 40 students in a college were measured and recorded in the table below. Calculate the mean mass

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mass (kg) | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Frequency | 2 | 0 | 1 | 2 | 3 | 2 | 5 | 6 | 7 | 5 | 3 | 2 | 1 | 1 |

Calculate the mean mass. (Use working mean of 53) (5 Marks)

1. From the following information, construct a pie chart. (4 Marks)

Product Sales (Kshs)

A 200

B 150

C 100

D 150

Total 600

1. Find the median from the following table:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
| Students | 2 | 18 | 30 | 45 | 35 | 20 | 6 | 3 |

 (4 Marks)

1. A card is picked at random from a well shuffled pack of 52 playing cards. what is the probability that it is:
2. A club (2 Marks)
3. The queen of spades (2 Marks)
4. Bag A contains 3 blue marbles and 2 green marbles. Bag B contains 5 blue marbles and 1 green marble. A marble is drawn from each bag at random. What is the probability that they are both blue? (3 Marks)
5. The table below gives end of term marks for a pupil in eight subjects as shown:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pupil A | 57 | 55 | 62 | 52 | 54 | 45 | 57 | 66 |

 Find the:

1. Variance. (2 Marks)
2. Standard deviation. (1 Mark)

**QUESTION TWO (10 MARKS)**

1. Bag A contains 2 white counters and 3 yellow counters. Bag B contains 5 white counters and 4 yellow counters. A bag is selected at random and two counters are drawn from it in succession, without replacement. Find the probability that: (Use free diagram to work out)
2. They are both white. (3 Marks)
3. They are both white and from bag B. (3 Marks)
4. The second counter is yellow. (4 Marks)

**QUESTION THREE (10 MARKS)**

The following table shows the number of children per family in a housing estate

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Number of children | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Number of families | 1 | 5 | 11 | 27 | 10 | 4 | 2 |

1. The mean number of children per family. (3 Marks)
2. The variance. (4 Marks)
3. The standard deviation. (3 Marks)

**QUESTION FOUR (10 MARKS)**

1. State the general binomial distribution formula. (2 Marks)
2. A dice is rolled five times. Determine the probability of obtaining three sixes (3 Marks)
3. (i) Define a Venn diagram. (1 Mark)

(ii) Given the following sets . Find the following and represent in a venn diagram;

1.  (2 Marks)
2.  (2 Marks)

**QUESTION FIVE (10 MARKS)**

1. Given the following sets:



Find:

1.  (1 Mark)
2.  (1 Marks)
3.  (2 Marks)
4.  (2 Marks)
5. Define the following terms:
6. Universal set. (1 Mark)
7. Null set. (1 Mark)
8. Union of set. (1 Mark)
9. Intersection of set (1 Mark)

**QUESTION SIX (10 MARKS)**

The table below shows the distribution of height to the nearest cm of 40 students.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Height (cm) | 145-149 | 150-154 | 155-159 | 160-164 | 165-169 | 170-174 | 175-179 |
| Frequency | 2 | 5 | 16 | 9 | 5 | 2 | 1 |

Calculate the:

1. Median height (3 Marks)
2. (i) Lower quartile (2 Marks)

(ii) Upper quartile. (2 Marks)

1. 80th percentile (3 Marks)