# S.6 TEST

## NORMAL DISTRIBUTION

### TIME: 2HOURS

**Instructions**

- ✓ Attempt all questions
- ✓ All questions carry equal marks
- ✓ Pass marks 70%
- ✓ Neat work is a must

## QUESTION ONE

The drying time of a newly manufactured point is normally distributed with mean 110.5 minutes and standard deviation 12minutes.

a) Find the probability that the point dries between 104 and 109 minutes

b) If a random sample of 20 tins of the point was taken, find the probability that the mean drying time of the sample is between 108 and 112 minutes ( **12 mks)**

## QUESTION TWO

c) The marks in an examination were normally disturbed with mean $\mu$ and standard deviation $\delta$. 20% of the candidates scored more than 75marks. Find the

a) Values of $\mu$ $and$ $\delta$

b) Percentage of candidates who scored more than 50marks. **(12mks)**

## QUESTION THREE

The chance that a cow recovers from a certain mouth disease when treated is 0.72. if 100cows are treated by the same vaccine. Find 99% confidence limits for the means number of cows that recover. (12mks)

## QUESTION FOUR

The ages of the taxis on a route are normally disturbed with a standard deviation of 1.5 years. A sample of 100 taxis inspected on a particular day gave a mean age of S.6 years.

**Determine;**

a) A99% confidence interval for the mean age of all taxis that operate on the route

b) The probability that the taxis were of ages between 5.4 and 5.8 years

## QUESTION FIVE

Sixty students sat a computer test where pass mark was 40marks.
Their scores in the test were normally distributed. 9 students scored
less than 20marks while 3 scored more than 70marks.
Find the

a) Mean score and standard deviation
b) Probability that a student chosen at random passed the test

(12mks)

## QUESTION SIX

Among the spectators watching a football match, 80% were the
horn team's supporters white the rest were the visitor's team
supporters. If 2500 of the spectators are selected at random.
What is the probability that there were more than 540 visitors in
this sample? (12mks)

## QUESTION SEVEN

The times a factory takes to makes units of a product are normally
distributed. A sample of 49 units of the products was taken and
funds to take average of 50minutes with a standard deviation of 2
minutes. Calculate the 99%confidence limits of the mean time of
making all the units the products. (12mks)

## QUESTION EIGHT

At a certain school, the heights of students are normally
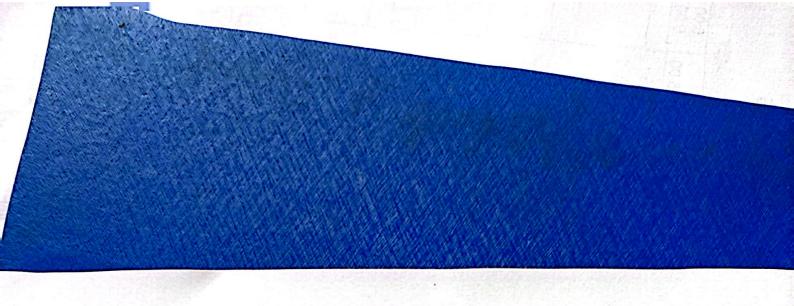distributed 105 are over 1.8 meters and 20% are below 1.6 meters

a) Find $\mu$ and $\delta$
b) Interquartile range

## QUESTION NINE

The masses of articles produced in a particular shop are
normally distributed with mean $\mu$ and standard deviation $\delta$ 5
% of the articles have masses greater than 85g and 10% have
less than 25g.

i)    Find the value of $\mu$ and $\delta$
ii)   Limits of middle 70% of the masses

## QUESTION TEN

Mr. James has a kid whose always counts numbers randomly

20,14,15,17,18,20,14,16,18,20,16,17,19,20,14,and 16

Find

a) The unbiased population mean of the numbers
b) The unbiased population variance
c) Find 95% confidence limit of the mean

"END"

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