AMREF INTERNATIONAL TRAINING CENTER

Qualification Code   :   031306T4PSY, 102106T4COH

Qualification   :   COMMUNITY HEALTH, COUNSELLING PSYCHOLOGY

                               LEVEL 6

Unit Code   :   HE/0S/CH/BH/02/6/A, PSY/OS/CO/BC/02/06/A

Unit of Competency   :   Demonstrate Numeracy Skills

WRITTEN ASSESSMENT

TIME 3 HOURS

INSTRUCTIONS TO CANDIDATE
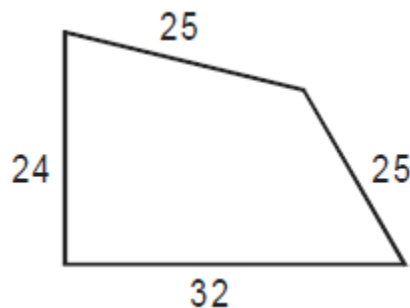
1. You have THREE hours to answer all the questions.
2. Marks for each question are indicated in the brackets.
3. The paper consists of TWO sections: A and B.
4. Do not write on the question paper.
5. A separate answer booklet will be provided.
6. Use of Scientific calculators is allowed.

This paper consists of six (6) printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated.

SECTION: A (40 MARKS)

Answer all questions in this section

1. Mark decides to paint his living room walls during December holiday. According to the can, each gallon of paint will cover 300 square feet. If his rectangular living room is 20 feet long and 15 feet wide with 10 feet ceilings, how many gallons of paint will Mark need to buy to complete his project if only one coat is needed to complete the project?   (4 Marks)

2. The local time of a town A (63^0N, 40^0E) is 11.30 am. What is the local time of the town B (34^0N, 82^0E)   (3 Marks)

3. Candidates A, B, and C were in an election in which 1000 votes were cast. Candidate A received 35% of the votes while Candidate B received 52 more votes than Candidate C. Which candidate won the election and by how many votes?   (3 Marks)

4. David wants to buy a piece of land which has the shape shown below. Two sides of the piece of land measure 32 m and 24 m and the angle between them is a perfect right angle. The other two sides measure 25 m each and the other three angles are not right angles.

   What is the area of the plot?   (4 Marks)

5. The directions on a bag of cement are to mix 1 part cement, 2 parts sand, and 3 part gravel. If you have 300 kg of sand, how many kilograms of cement and how many kilograms of gravel should be mixed with this sand?   (4 Marks)

6. The population of a city was 200 thousands in 1915, and it triples every 25 years. What will be the population in the year 2215?   (4 Marks)

7. A basket player looks directly at the rim that is 10ft high. The angle of elevation from her eye level which is 6ft above the ground is 25 degrees. How far away from the rim is she standing

                                                                           (4 Marks)

8. The following table gives the marks of 58 students in Numeracy skills formative assessment. Calculate the average marks of this group.   (4 Marks)

Marks	No. of Students
0-10	4
10-20	8
20-30	11
30-40	15
40-50	12
50-60	6
60-70	2
Total	58

9. Instead of walking along two adjacent sides of a rectangular field, a boy took a short cut along the diagonal and saved a distance equal to half the longer side. Then the ratio of the shorter side to the longer side is. (4 Marks)

10. When you started your homework assignment, your friend already had 6 exercises done. You can do about 3 exercises per minute, whereas your friend can only do 2 exercises per minute. How many minutes will it take you to catch up to your friend. (3 Marks)

11. At the final school rugby match, the ratio of children to adults is 3 ∶ 2. There are 120 children in the crowd. Each adult ticket costs kshs 100. Each child ticket costs a third of the adult ticket. How much money was collected from the ticket sale? (3 Marks)

SECTION B: (60 MARKS)

Answer question 12 and any other TWO questions in this section. Each question is 20 marks

12. a) The time taken in hours to assemble a device is measured 48 times and the results are

recorded as shown on the table below;

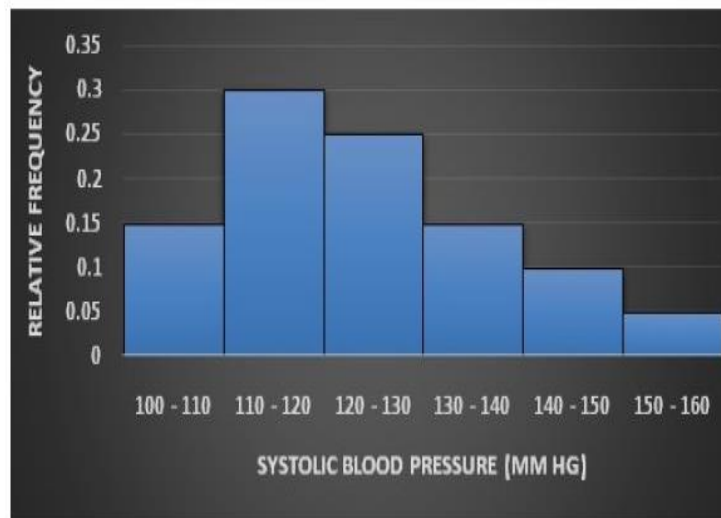| Time in hours	Frequency (f)
20.5 – 20.9	3
21.0 – 21.4	10
21.5 – 21.9	11
22.0 – 22.4	13
22.5 – 22.9	9
23.0 – 23.4	2

Determine;

   i)   The mean value of time taken to assemble the device.   (4 marks)

   ii) The standard deviation from the mean of time taken to assemble the device.   (6 marks)

   b) A learner conducted an experiment to investigate the relationship between age and resting

heart rate (in beats per minute) he sought the assistance of the local clinic. The information

for 12 people is shown in the table below

Age (in years)	47	59	32	42	50	22	39	21	20	27	40	29
Resting heart rate (beats per minute)	75	88	74	74	93	85	71	78	82	70	75	95

Draw a scatter plot to represent the data   (4 marks)

   c) A Company ERT realized in every week at least 10 hospitals are seeking maintenance

support for the machines supplied less than 2 years ago. You have been assigned to research

on the possible causes of the failures of machines. Given that the company have supplied

machines to 128 different facilities, discuss THREE sampling methods you could apply to

select a sample.   (6 marks)

13. a) A passenger plane takes off from airport A (60^0N,5^0 E) and flies directly to another airport

B (60^0N,17^0E) and then flies due North for 600 nautical miles (nm) another airport C

   i) Find the position of airport C   (3 marks)

   ii) Find the distance between airport A and B in nautical miles   (3 marks)

   iii) If the plane at an average speed of 300 knots, find total flight time   (3 marks)

iv) Given that the plane left airport A at 9.20am. Find the local time of arrival at airport C

(3 marks)

b) A box with a valentine gift in it has height 10 cm, width 28 cm and length 38 cm.

   i) Draw a net of the box.   (3 marks)

   ii) Wrapping paper is 70 cm wide. What length of wrapping paper is needed if there is

   a) no overlap (no extra amount)   (3 marks)

   b) an overlap of 3 cm when folded in both directions?   (2 marks)

14. a) Ann is surveying the plants growing in some wasteland (unused land), measuring 7.5 m by

   3.2 m. She places quadrats at random within the survey area. Each quadrat is a 50 cm $\times$ 50 cm

   square.

   i) What is the maximum number of quadrats that would fit?   (6 marks)

   ii) She samples the plants in 12 quadrats randomly. What proportion of the wasteland has she

   sampled?   (2 marks)

   b) A nurse measured the blood pressure of each person who visited her clinic. Following is a

   relative frequency histogram for the systolic blood pressure readings for those people aged

   between 25 and 40. Use the histogram to answer the questions that follows. The blood

   pressure readings were given to the nearest whole number.

   i) Approximately what percentage of the people aged 25-40 had a systolic blood pressure

   between 110 and 119 inclusive   (2 marks)

ii) Approximately what percentage of the people aged 25-40 had a systolic blood pressure between 110 and 139 inclusive (2 marks)

iii) Approximately what percentage of the people aged 25-40 had a systolic blood pressure reading greater than or equal to 130 (2 marks)

c) A farmer has decided to build a wire fence along one straight side of his property. For this, he planned to place several fence-posts at 6 m intervals, with posts fixed at both ends of the side. After he bought the posts and wire, he found that the number of posts he had bought was 5 less than required. However, he discovered that the number of posts he had bought would be just sufficient if he spaced them 8 m apart. What is the length of the side of his property, how many posts did he buy and how much did he spend if one post cost Kshs. 200? (6 marks)

16. a) Wema wants to grow vegetables at his rented apartment. He buys 16 raised beds measuring 1 m by 4 m by 0.5 m.

  i) Calculate the volume of one raised bed in cubic centimeters. (4 marks)

  ii) How many 40-litre bags of soil will Wema need for each raised bed (3 marks)

  iii) How much will soil cost for one raised bed A 40-litre bag of soil costs Ksh. 250. (3 marks)

  iv) How much will she spend on soil in total? (2 marks)

 b) The distance between Nakuru city and Nairobi city is 165 km. what would be the distance between these two cities on a map with a scale of

  i) 1: 50000 (2 marks)

  ii) 1:1000000 (2 marks)

 c) Outline the steps of finding the value of $\dfrac{220.3 \times 3 + 411}{312 - 2(34)}$ using a calculator (4 Marks)