



CHUMEY HIGHER SECONDARY SCHOOL  
BUMTHANG



Class: VIII

Full Mark: 80

Subject: Mathematics

Writing Time: 2 hours

Index Code:

--	--	--	--	--	--	--	--	--	--

**READ THE FOLLOWING INSTRUCTIONS CAREFULLY**

1. **Do not** write for the first fifteen minutes. This time is to be spent in reading the questions. After having read the questions, you will be given two **hours** to answer all questions.
2. All questions are compulsory and have to be answered on the provided answer sheet.
3. There are two sections. **Section A** and **Section B**.
4. Write your answers to each question in the **given space**. The mark for the question is given in the **brackets**.
5. Do not forget to write down your **INDEX CODE** clearly on the answer script provided.

**Section A [15 Questions-30 Marks]**

**ANSWER ALL QUESTIONS**

**Question 1**

**[30]**

**Direction:** For each question, there are **FOUR** responses: **A, B, C and D**. Choose the correct alternative and **CIRCLE** it. **DO** not circle more than one alternative. If there are more than **ONE** choice circled, **NO** score will be awarded.

i. Which number is a perfect square?

- A 35
- B 100
- C 300
- D 475

ii. The product of negative and negative integer is

- A Negative
- B Positive
- C Zero
- D Both positive and negative

iii. Sonam writes the number and its scientific notation in the table given below.

Number	Scientific notation
3405	$3.406 \times 10^{-3}$
1,200,000	$12 \times 10^5$
0.021	$2.1 \times 10^{-2}$
23	$23 \times 10^0$

Which scientific notation is correct?

- A  $3.406 \times 10^{-3}$
- B  $12 \times 10^5$
- C  $2.1 \times 10^{-2}$
- D  $23 \times 10^0$

iv. Tenzin earns a rate of commission of 4%. What is his commission on a sale of Nu 16,000?

- A Nu 160
- B Nu 640
- C Nu 4000
- D Nu 64,000

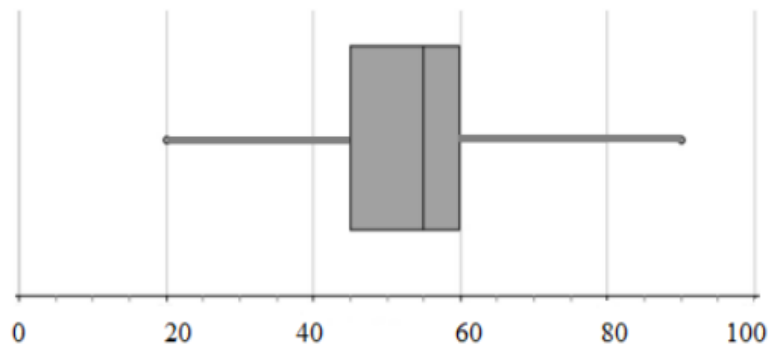
v. Simplify  $[(-6) + (-10)] \div [(-4) \times 2]$ .

- A 2
- B -2
- C 16
- D -16

vi. What is the edge length of a cube with volume  $64 \text{ cm}^3$ ?

- A 8 cm
- B 4 cm
- C 21 cm
- D 32 cm

vii. The box and whisker plot below displays the Mathematics marks scored by the students of class VIII.



What is the median mark?

- A 20
- B 45
- C 55
- D 60

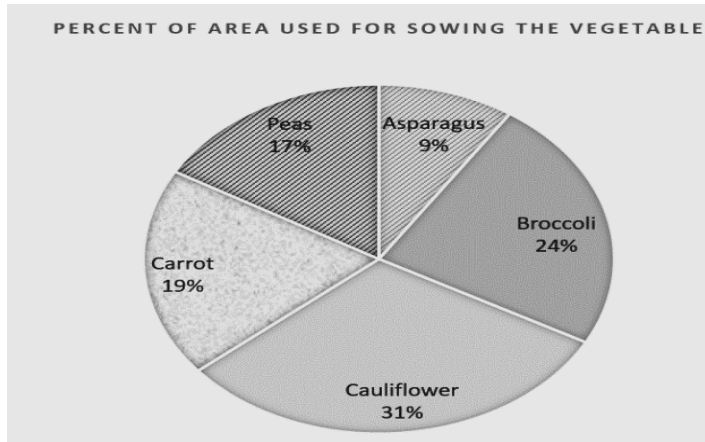
viii. What is the slope of the equation  $y = -4x + 10$ ?

- A -2
- B 4
- C -4
- D 10

ix. If selling price is less than cost price then the shopkeeper

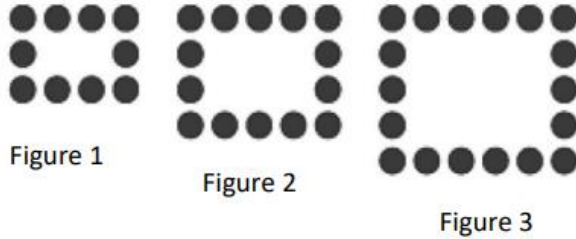
- A earns a profit.
- B suffers a loss.
- C earns nothing.
- D earns commission.

- x. As per the survey carried out by Ministry of Agriculture and Forest in 2019, 2819.74 acres of land in Bhutan was used for sowing varieties of vegetables as shown in the figure below.



- What acre of the land was used to cultivate Asparagus?
- A 148.82 acres  
B 253.78 acres  
C 874.11 acres  
D 2819.74 acres
- xi. A bag contains 2 black, 1 grey, and 3 white marbles. Dorji took a marble from the bag. What is the probability of getting white marble from the bag?
- A  $\frac{1}{6}$   
B  $\frac{2}{6}$   
C  $\frac{3}{6}$   
D  $\frac{5}{6}$
- xii. Calculate the annual interest rate, for the interest of Nu 270 with the principal of Nu 1500 for 2 years.
- A 0.12%  
B 1.5%  
C 15%  
D 0.09%

xiii. Look at the pattern in the figure below.



Which equation describes the relationship between the figure number ( $f$ ) and the number of dots ( $d$ ) in the above pattern?

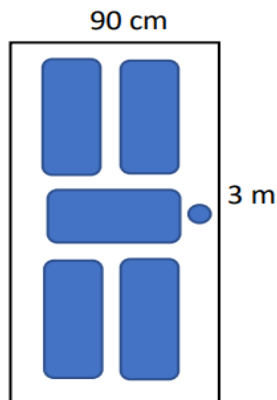
- A  $d = 4f + 6$
- B  $d = 4f + 10$
- C  $d = 4f + 14$
- D  $d = 4f + 18$

xiv. The temperature in Bumthang started at  $3^{\circ}\text{C}$ . It fell  $2^{\circ}\text{C}$  every hour until it was  $-5^{\circ}\text{C}$ . Over how many hours did the temperature fall?

- A +4
- B +3
- C -3
- D -4

xv. What is the area of door?

- A  $0.27 \text{ m}^2$
- B  $2.7 \text{ m}^2$
- C  $27 \text{ m}^2$
- D  $270 \text{ m}^2$



## Section B

Answer ALL the questions [5 questions - 50 Marks]

### Question 2

a. Write 0.1367 in scientific notation. [2]

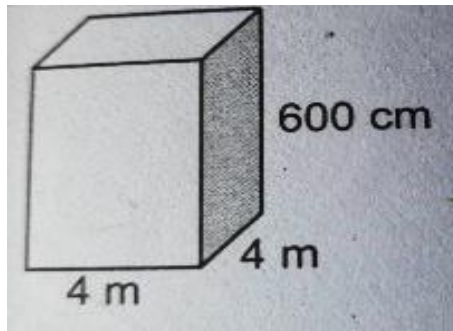
b. Subtract  $(5x + 2) - (2x + 1)$  using tiles. [3]

### Question 3

a. A man bought a TV set at Nu 25000. If he wants to make a profit of 15% by it then what will be its selling price? [2]

b. What is the total surface area of this box?

[3]



**Question 4**

a. The chart shows the major sources of cooking oil in Bhutan, according to the 2005 census. [3]

**Major Sources of Cooking Fuel**

Source of cooking fuel	Percent
Electricity	30.6%
Firewood	37.2%
LPG	25.5%
Others	6.7%

i. Calculate the sector angle each data represents.

ii. Create a circle graph of the data.

b. Write the following number in standard form [2]  
 $5 \times 10^2 + 3 \times 10^1 + 2 \times 10^{-2} + 3 \times 10^{-3} + 2 \times 10^{-4}$



**Question 5**

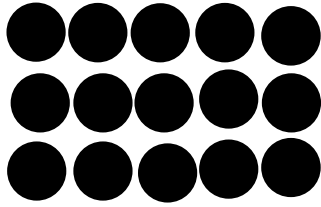
a. Use  $\sqrt{56} \approx 7.5$  to calculate  $\sqrt{560,000}$ . [1]

b. The ratio of the number of people standing to the number of people sitting in a bus is 3:13. If 9 people are standing, how many are sitting? [2]

c. What is the slope of a line that passes through set of points (2, 5) and (3, 8)? [2]

**Question 6**

- a. Write the multiplication and division expression for the following model. [3]



- b. If you graph these two equations on the same grid, which line will be steeper? How do you know? [2]

$$y = 4x + 11$$

$$y = 5x - 13$$

**Question 7**

- a. Solve for x: [2]  
 $5 - 4x = 17$

- b. The chart below shows the average monthly rainfall (in millimeters) in Trashigang.

[3]

**Average Monthly Rainfall in Trashigang**

<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
0.6	8.0	28.0	53.7	62.3	135.0	163.2	120.2	94.0	36.0	8.0	0.3

- i. Find the median ( $Q_2$ ), the lower quartile ( $Q_1$ ), and the upper quartile ( $Q_3$ ).

- ii. Create a box and whisker plot to display the data.

**Question 8**

a. Create a problem that could be modelled by the equation  $100 - 4x = 44$ . [2]

b. Calculate:  $4\frac{2}{3} \div 2\frac{1}{3}$ . [1]

c. Wangchuk rents out 20 homes. He wants to find out whether his tenants are happy. Describe how he might select a sample of five tenants to survey. [2]

**Question 9**

a. The temperature in Trongsa started at  $2^{\circ}\text{C}$ . It fell  $3^{\circ}\text{C}$  every hour until it was  $-13^{\circ}\text{C}$ .

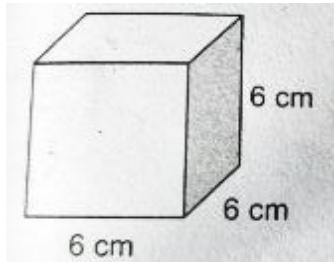
[3]

i. Draw a number line to represent the temperature change.

iii. Over how many hours did the temperature fall?

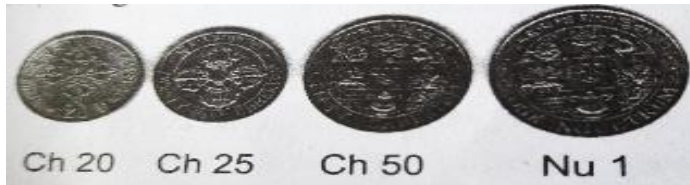
b. Find the volume of this cube.

[2]



### Question 10

- a. A container contains Ch 20, Ch 25, Ch 50, and Nu 1 coins.



Tshogyal took a coin from the container and then replaced it. Then she took another coin and found the sum of the two coins she had taken. Determine each theoretical probability.

[3]

i.  $P(\text{sum} = \text{Ch } 40)$

ii.  $P(\text{sum} \neq \text{Ch } 40)$

- b. Simplify  $(5 - 4x) + (2x - 3)$  using tiles. [2]

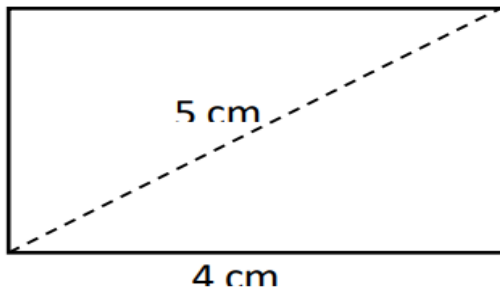
**Question 11**

a. Calculate:  $[(-8) \div (4 \times 2)] + [6 \div (-2)] - 1$

[2]

b. Find the perimeter of rectangle whose diagonal is 5cm and one of its sides is 4 cm.

[3]



## **Rough work**