PROVINCIAL DEPARTMENT OF EDUCATION
NORTHERN PROVINCE
Year End Examination– 2018
Mathematics

Grade : 11 | **32 TI** | **Time :- 2 Hours**

Index No :...
Supervisor Signature :....................

Instructions

❖ Write your index number correctly.
❖ To use the under space Part IA, IB questions get answer method.
❖ Answer the all questions must be done part I A & I B.
❖ Not allowed to get out the answer sheet from the exam hall after the examination.

Important:

➤ Part IA has 25 questions each has 2 marks totally 50 marks given.

➤ Part I B has 5 questions each has 10 marks totally 50 marks

Marking examiner:

....

Cross examiner :

....

Examiner use only :

Part	Question	Marks
IA	1-25	
IB	1	
	2	
	3	
	4	
	5	
	Total	

Answer all questions

01) If an item worth Rs 3000 is sold at a profit of 12%, calculate the profit?

02) Find the distance that a motorbike which travels at a uniform speed of $80km/h$, covers during 4 hours?

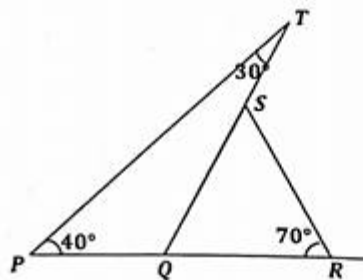03) Express $2^7 = 128$ as logarithm form

04) Simplify : $\frac{2}{3x} + \frac{1}{6x}$

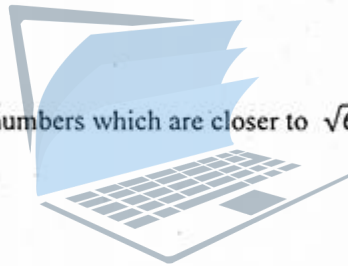05) In the given figure PQR is a straightline.

    (i)   Find the value of $S\hat{Q}R$?

    (ii)   Name two equal sides.

06) It took 8 men 5 days to complete a certain task. How many days will 10 men require to complete the same task?
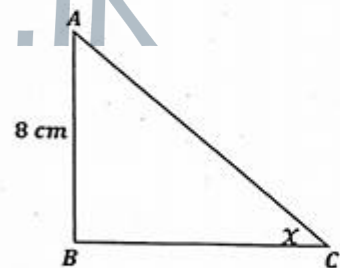
07) Find the Least common Multiple of the algebraic expressions $4ab$ and $12a^2$.

08) Write two consecutive whole numbers which are closer to $\sqrt{67}$?
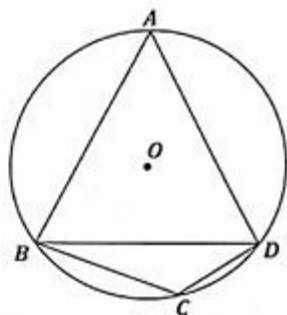
09) According to the given diagram, find the length of AC. Where $\sin x = \frac{4}{7}$.

10) P and Q are two set. If $n(P) = 5$, $n(Q) = 6$ and $n(P \cap Q) = 3$, Find $n(P \cup Q)$.

11) Factorize $4a^2 - 9$.

12) In the given figure ABD is an equilateral triangle. Find the value of $B\hat{C}D$.
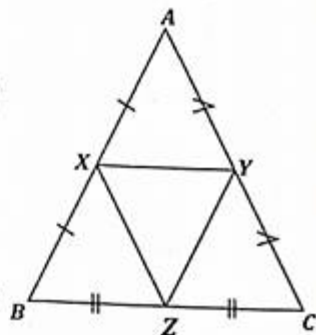

13) Solve : $(a - 5)(a + 3) = 0$.

14) Mark '✓' or '✗' according to the following statements.

   (i) If the perimeter of $\triangle ABC$ is $60\ cm$ then the perimeter of $\triangle XYZ$ is $30\ cm$.   (   )

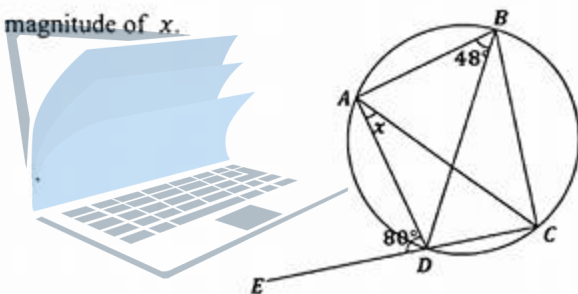   (ii) The ratio between the area of $\triangle ABC$ and $\triangle XYZ$ is $2 : 1$.   (   )

15) The pie chart drawn with the information gathered from grade 11 students of a certain school who learnt Sinhala (S) medium, Tamil (T) medium and English (E) medium.
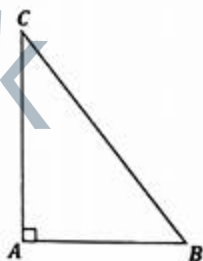If the English medium (E) students was 45, find the number of students in Tamil medium (T)?
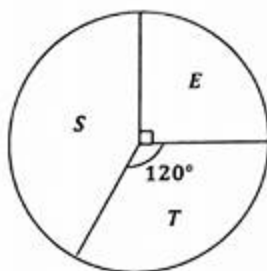

16) In the given figure, Find the magnitude of x.

17) The angle of elevation of the top of a building C to the flat ground B is $50°$ and the perpendicular distance from B to the bottom the building is $5\ m$. Represent the given data on the diagram.
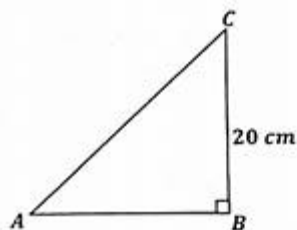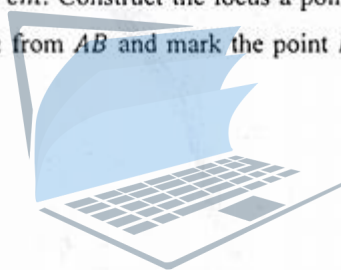(neglect the height of the person)

18) A and B are two matrices where $A = \begin{pmatrix} 1 & 0 \\ 1 & 1 \end{pmatrix}$ and $B = \begin{pmatrix} 2 & 0 \\ 0 & 2 \end{pmatrix}$. Find the matrix $A \times B$.

19) According to the given figure,

    (i)   Write a pair of congruent triangles.
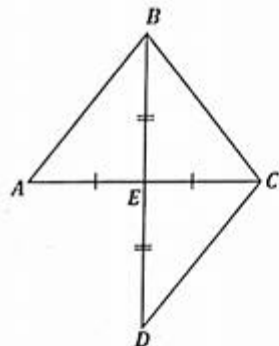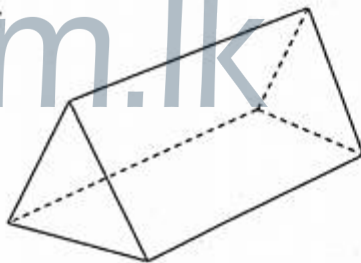
    (ii)   Give the rules of congruency of that?

20) In the given figure $BC = 20\ cm$. Construct the locus a point moving equidistance $10\ cm$ from AB and mark the point P lies on AC.

21) Find the volume of a prism of which the area of cross section is $25\ cm^2$ and its length is $30\ cm$.

22) Write all positive integer solution of the inequality $\frac{x}{2} + 6 \le 7$.

23) The curved surface area of a right circular cylinder is $660\ cm^2$ and its radius $7\ cm$. Find its height?

24) Find the probability of taking a triangular number from 1 - 10 numbers.

25) Find the gradient of the given straight line.
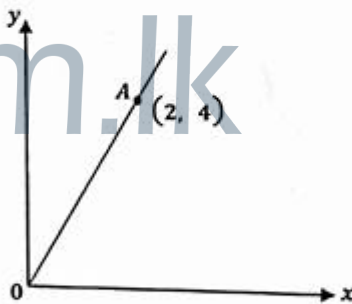
Part - 1 B
Answer all questions

01) A foreign country donated a particular amount of money to a particular school. $\frac{2}{7}$ of that money was spent for buying furniture. $\frac{1}{4}$ for buying books.

   (i) What fraction of whole money was spent for furniture and books.

   (ii) $\frac{4}{13}$ of remaining money was spent for buying presents. The rest was used to repairing the building. What fraction of whole money was spent for buying presents?
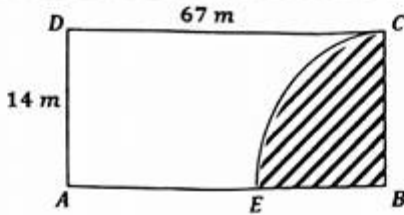
   (iii) What fraction of whole money spent for building repairs presents?

   (iv) It Rs 180 000 used for repairing buildings, find the total amount of donation was given by foreign country?

$(2 + 3 + 2 + 3 = 10$ Marks$)$

02)

D ———— 67 m ———— C

14 m

A ———— E ———— B

A quarter circular part of a floor cloth is removed from a rectangular cloth. The length and breadth of this rectangular cloth are 67 m and 14 m respectively.

(i)   Find the area of rectangle $ABCD$.

(ii)   Calculate the area of quarter circular part?

(iii) Find the area of remaining portion $AECD$?

(iv)   Find the length of a side of a square cloth of which the area is equal to the area of remaining portion $AECD$.

(v)   Calculate the perimeter of remaining portion $AECDA$.

$(1 + 2 + 1 + 3 + 3 = 10$ Marks$)$

03) Kamal who owned 1500 shares. She then sold all these shares as Rs 90000 after receiving the annual dividend income. She received a capital gain a s Rs 9000.

(i) What was the selling price of a share?

(ii) What was the purchase price of a share?

(iii) The company that pays an annual dividends of Rs. 4 per share. Find the annual dividends income she gained?

(iv) Kamal deposited the money, she received by capital gain and annual dividends income at the rate of 12% annual compound interest. Calculate the total amount she received at the end of 2 years.

(2 + 3 + 2 + 3 = 10 Marks)

04)

Age (Years)	26 – 31	31 – 36	36 – 41	41 – 51	51 – 56
Frequency	4	12	15	....	5

26 – 31 means 26, more than 26 and less than 31.

The age groups that 50 development officers serving in a certain educational division belong to are given in the above table.

(i)   Find number of development officers who are in the age group 41 – 51.

(ii)   Complete the following Histogram using the above information.
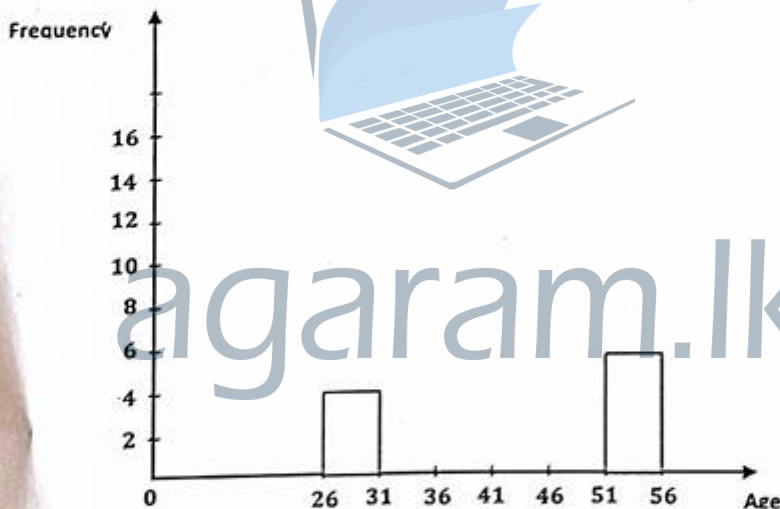
(iii) Using histogram, draw the frequency polygon.

(iv) Which age group of officers worked mostly?

(v)   Give the officers as percentage who worked below 41 years of whole officers.

(2 + 2 + 3 + 1 + 2 = 10 Marks)

05) a)   A bag contains 5 red balls and 3 blue balls. A ball is taken from the bag at random and then another ball is taken out without replacement after its colour is recorded. According to
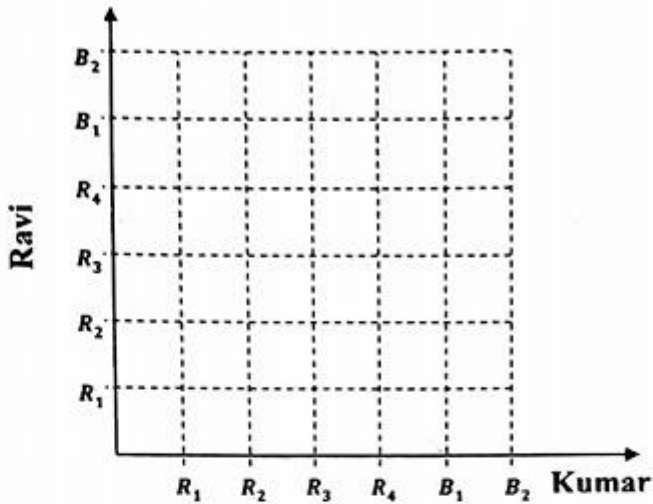
(i)   Complete the tree diagram.

First   Second
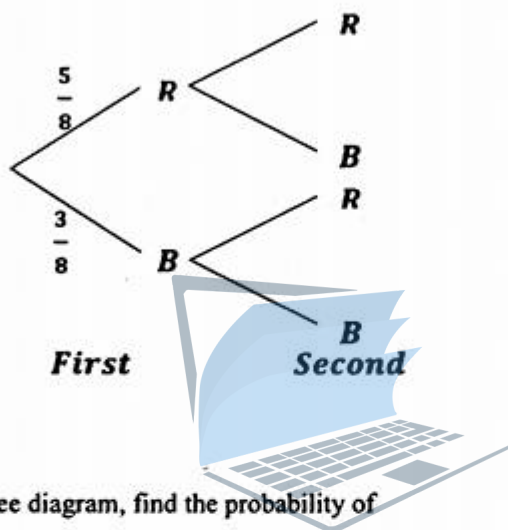
Using tree diagram, find the probability of

(ii)   That first ball being red.

(iii)   At least one of the balls being red.

b)

A box contains 6 identical marbles 4 red and rest blue. A marble is taken out randomly by Kumar and its colour is recorded and it is put back in the box. A marble is randomly taken out by Ravi and its colour is recorded.

(i)   Represent the sample space relevant to this experiment on the given grid.

(ii)   Find the probability of Kumar taking blue marble and Ravi taking red marble.

(2+2+2+2+2=10 marks)

Part - II B

07) (a) In an arithmetic progression, the first term is 10 and the fifth term is 30.

    (i) Find the common difference.

    (ii) Write down the first three terms.

    (iii) Find the 15th term.

    (iv) Find the sum of first 15 terms.

  (b) In a geometric progression, common ratio is 2 and fourth term is **24** more than the third term.

    (i) Find the first term.

    (ii) Show that 8th term is 768.

08) (i) Construct a triangle ABC where $AB = 7.5\, cm$, $AC = 4\, cm$ and $BC = 8.5\, cm$ by using pairs of compass and straight edge.

    (ii) Construct the circum circle of ΔABC.

    (iii) Construct a tangent to the circle through the point A

    (iv) Name the point of intersection of the tangent drawn through A and BC produced as P.

    (v) Construct another tangent to the circle from the point P. Measure and write the length of it?

    (vi) If the length of tangent drawn in (V) is equal the length of PA, Give a corresponding theorem for that?

09) In the given figure, $ABCD$ is a square and the side DC touches the circle at E. A, B, Q and P are points on the circle and $AB = 6\, cm$.

    (i) If the Centre lies on PB. Give reason?

    (ii) Write an angle equal to $D\hat{E}P$. Give reason.

    (iii) Show that $\Delta DEP \equiv \Delta ECQ$.

    (iv) Find the length of BQ.
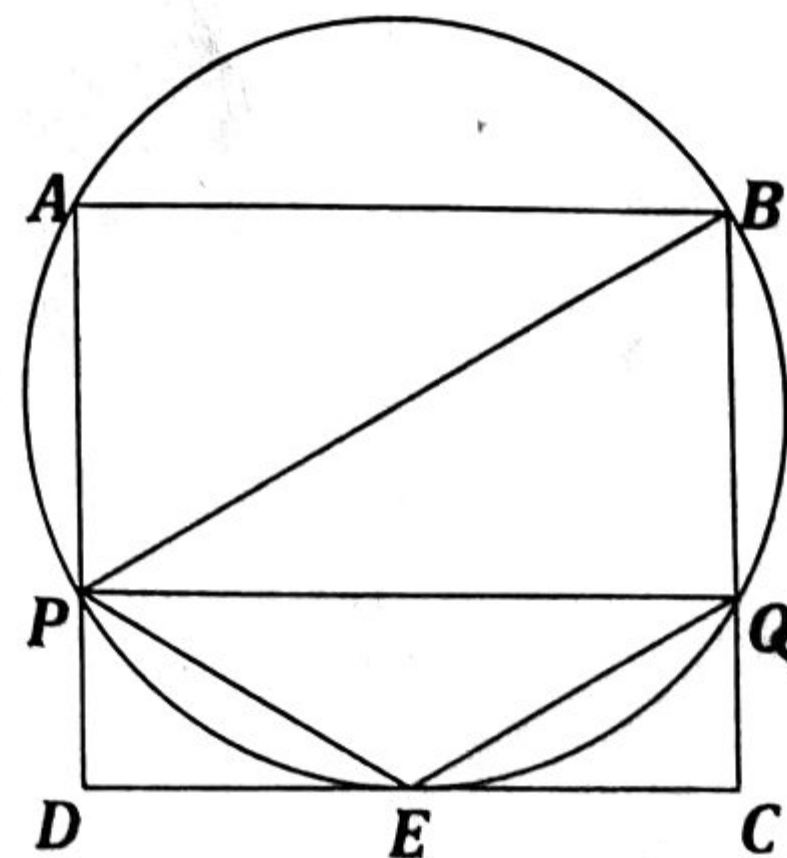
10)
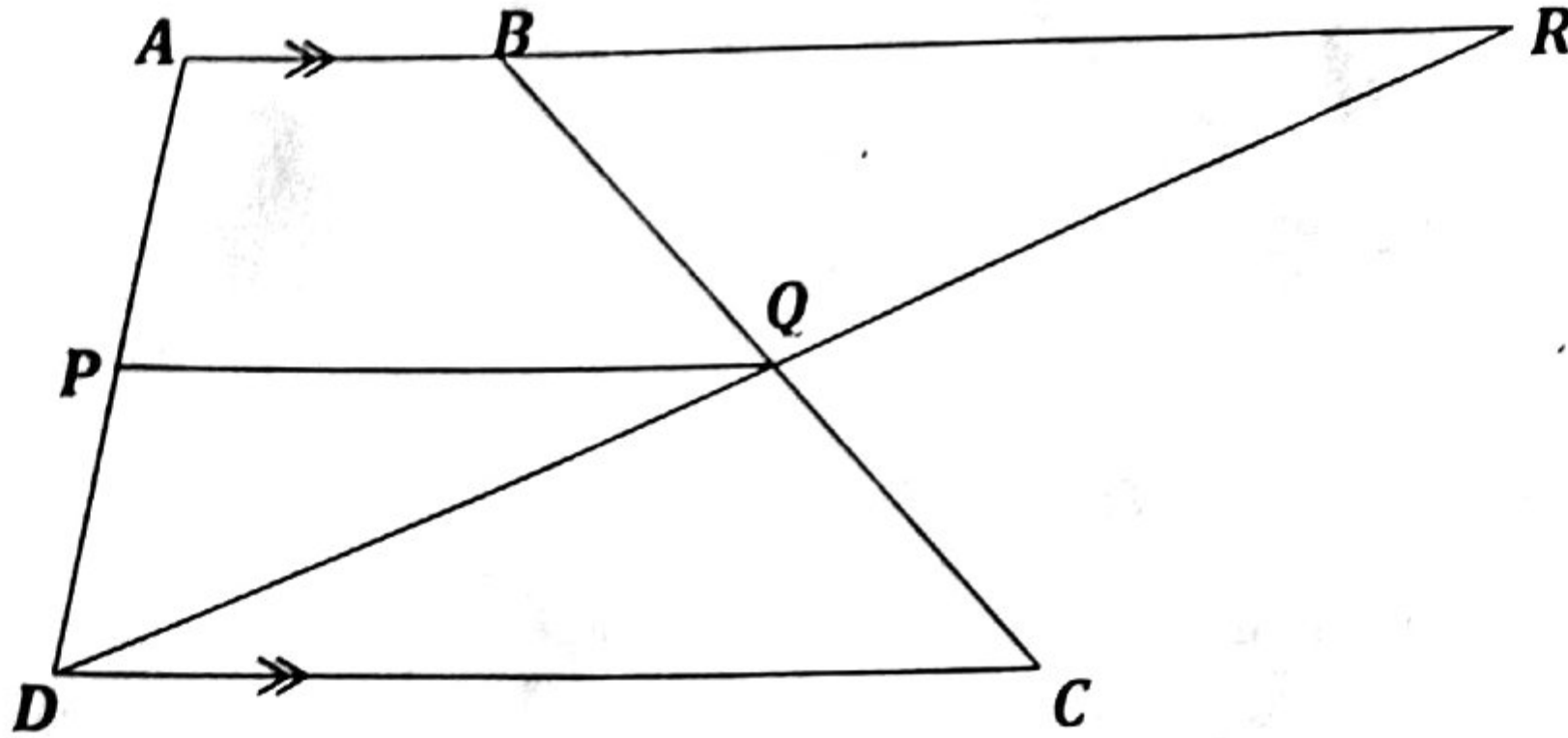
In the trapezium $ABCD$, $AB//DC$. P and Q are the midpoints of AD and BC respectievely.

(i) Prove that $\triangle BQR \equiv \triangle CQD$.

(ii) If $B\hat{Q} = QR$, Give reason for that.

(iii) Show that $PQ//AB$.

(iv) Show that $AB + DC = 2PQ$.

11) 8 cm diameter and 6 cm height of a cylindrical shaped vessel contains water of height equal to its radius. Five equal spheres are put into this vessel without wastage of water and keep the level of water is equal to the height of cylinder.
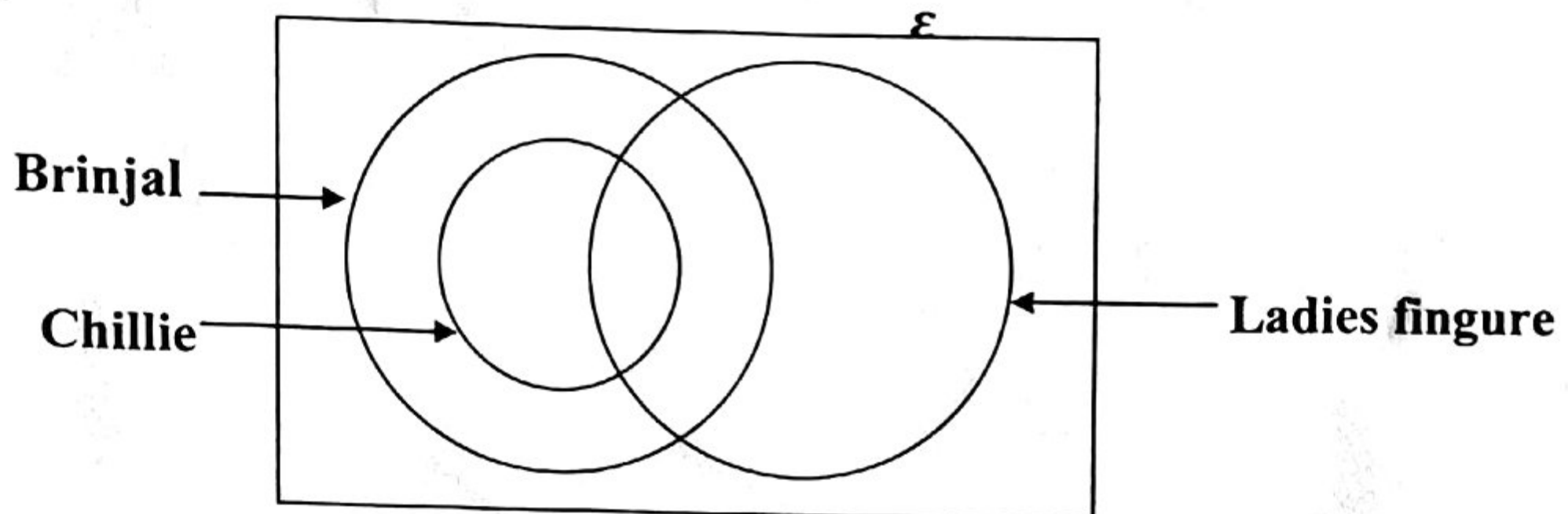
(i) Find the volume of empty space at the beginning.

(ii) Write the equation of volume of a sphere in terms of 'r'. Where r is radius of a sphere.

(iii) Show that $r = \sqrt[3]{\dfrac{24}{5}}$.

(iv) Find the radius of a sphere by using log table.

12)

In formation on the types of vegetables that were planted by the farmers all who plant either brinjal or chillie or Ladies figure.

1) 14 Farmers who plant brinjal and ladies fingure and do not plant chillie

2) 17 of them who plant only brinjal

3) The number of farmers who plant brinjal and chillie and do not plant ladies fingure is 3, more than the number of farmers who plant ladies fingure only.

4) 26 of them who plant ladies fingure.

(i)   Copy the Venn diagram and represent the given data on it.

(ii) Find the number of farmers who plant chillie.

(iii) Find the number of farmers who plant brinjal.