809

Southern Provincial Department of Education

Year End Test - 2017

Grade - 09

Mathematics

Name/Index Number ..... Time : 2 1/2 hours

Part I

Answer all questions on this paper itself.

(01) Write the number given below in scientific notation.

0.00038 = ...

(02) Simplify and give the answer in its simplest form.

$\left(\frac{1}{3} + \frac{1}{4}\right) \div \frac{1}{12}$

(03) Find the 2nd term and the 7th term of the number pattern which the following general term represents.

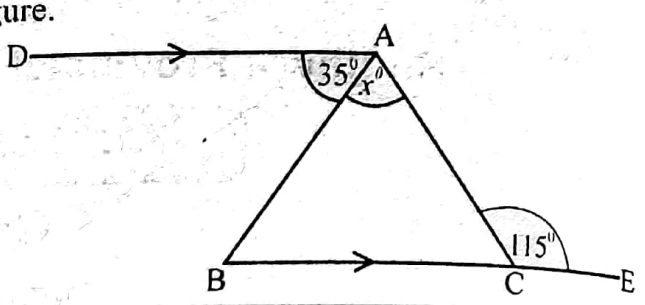
$\frac{3}{2n - 1}$

(04) A broker who charges a 5% commission on the selling price of a house, was paid Rs 48 000 as commission. Find the selling price of the house.

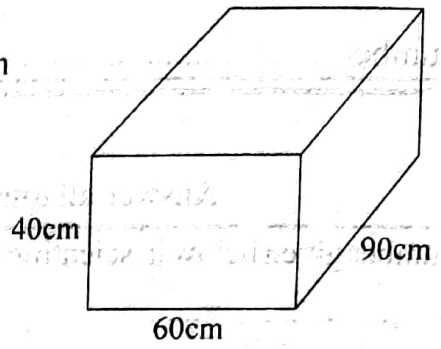
(05) Draw a sketch with the relevant measurements to show the area of rectangle represented by $(a+5)(a+2)$

(06) Using the knowledge of factors find the value of $(6.5^2 - 3.5^2)$.

(07) Find x with the help of the information given in the figure.



(08) Find the capacity of a small tank the shape of a cuboid, whose internal length, breadth and height are 90cm, 60cm and 40cm respectively.



(09) Madusha takes 2 hours to travel a certain distance at a speed of 5 kilometers per hour. Find the time taken by Vidusha if he travels the same distance at a speed of 6 kilometers per hour.

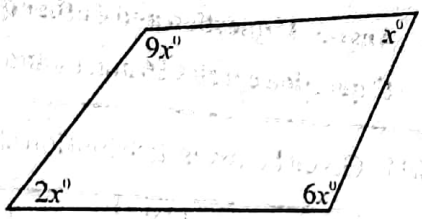
(10) A person obtains Rs 800 as monthy interest for investing Rs 80000 at a certain financial institute. Find the annual rate of interest that the financial institute pays.

(11) Simplify. $\{(a^2)^3 \times a^2\}^2$

(12) Write the expression given below in logarithmic from. "the logarithm of 243 to the base 3 is 5.

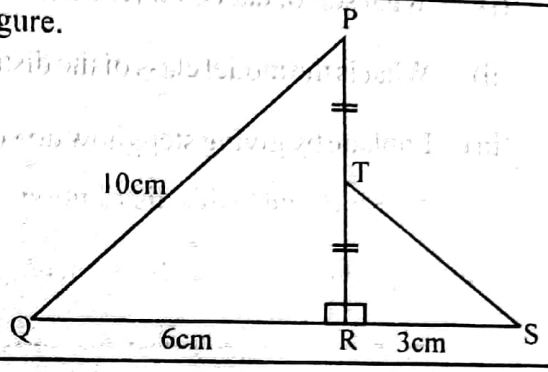
(13) Using only straight edge with a cm/mm scale and a pair of compasses with the pencil included, construct an angle of magnitude 120°.

(14) The magnitude of the angles in the quadrilateral given are expressed in terms of x. Find x.

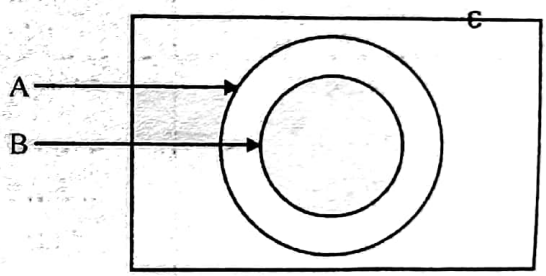


(15) Make "a" the subject of formula. $2A = 5B + 3a$

(16) Find the length of TS using the information given in the figure.



(17) Shade the region denoted by $(A \cup B)'$



(18) For a regular polygon in which one exterior angle is 18^0, Find

(i) The number of sides

(ii) The magnitude of one interior angle.

(19) The figure shows a frame formed by bending a wire obtaining a semicircular shape. If the diameter of it, is 21cm find the total length of the wire used.

(20) A scale used by a surveyor to draw a plan is given as 1 : 1000. The length and the breadth of a rectangular land in the plan are 1cm and 3cm respectively. Find the actual length and the breadth of the land.

Part II

- **Answer 1" question and 4 other questions.**
- **1" question carries 16 marks and other questions carry 11 marks each.**

(01) Given below is distribution showing the number of eggs sold a day in a ertain shop, during 60 days.

Class interval (No of eggs sold a day)	01-09	10-18	19-27	28-36	37-45	46-54	55-63	64-72	73-81	82-90
frequently (No of days)	6	8	10	14	7	6	4	2	2	1

(i) What sort of data is represented in the distribution above.

(ii) What is the model class of the distribution.

(iii) Enplane by giving steps how do you find the median class of a distribution and mention the median class relevant to this distribution.

(iv) Copy the table given below. Complete them by using the information included in the table above.

Class interval	frequently (f)	Mid value (x)	fx
1 - 9	6	5	30
10 - 18	.....	.....	.....
19 - 27	.....	.....	.....
28 - 36	14	32	448
37 - 45	.....	.....	.....
46 - 54	.....	.....	.....
55 - 63	4	59	236
64 - 72	.....	.....	.....
73 - 81	.....	.....	.....
82 - 90	1	86	86
	Σf = ...		Σfx = ...

Answer the questions using the table that you have completed.

(i) Find the total no of days.

(ii) Find the total no of eggs sold within those days.

(iii) What is the formula that is used to find the mean number of eggs sold a day.

(iv) Round off the value obtained as the mean number of egg sold a day, to the nearest whole number.

(02) (a) Simplify and express the answer in its simplest from.

$1\frac{6}{7}$ of $(1+\frac{8}{13}) \div 1\frac{1}{2}$

(b) Madawa has invested Rs 120 000 in a certain financial institute which pays 12% simple interest per year. After 2 years the rate of interest was decreased to 10% by the institute. Some how Madawa has not decided to withdraw the account and the account was remained untill 5 years were completed.

(i) Find the interest obtained by Madawa in first 2 years.

(ii) Find the interest obtained by Madawa in next 3 years.

(iii) After completing 5 years, How much money is remained in total in his account.

(03) (a) $\varepsilon = \{a, b, c, d, e, f, g, h\}$

$A = \{a, d, f, h\}$, $B = \{a, f\}$

(i) Represent the sets mentioned above in a vean diagram.

(ii) By listing elements, express the set B'

(iii) By listing elements, express the set $(A \cup B)$

(iv) Represent the relation between the sets A and B, in set notation.

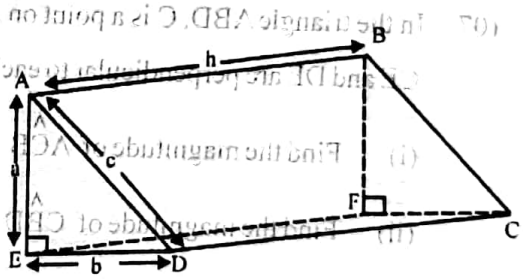
(b) (i) Difine "the sample space"

(ii) Write the relevant sample space of the experiment "Tossing a fair die numbered 1 to 6 in its faces"

(c) A bag contains 7 identical balls which are in two colours. 4 of them are red and they are marked as R_1 , R_2, R_3 and R_4. Other 2 balls are blue and they are marked as B_1 and B_2. When a ball is taken randomly, find the probability of obtaining a ball,

(i) being a red one (ii) being a blue one. (iii) being R_1.

(04) (a) (i) Using the information given in the figure build up an expression to represent the total surface area of the prism,
If AE = a, AD = c, ED = b and AB = h

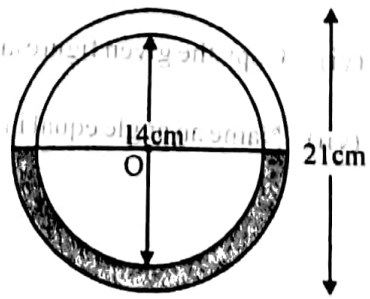


(ii) Taking a = 8cm and b = 6cm show that c = 10cm

(iii) If h = 15cm , find the total surface area of the prism.

(iv) Find the volume of the prism.

(b) "O" is the centre of two concentric circles.
The diameters of the small and big circles are 14cm and 21 cm respectively.
Find the area of the shaded region.



(05) (a) (i) Factorize. $x^2 + 6x - 72$

(ii) Solve. $2\left(\frac{x}{2} - 2\right) = 10$

(iii) Solve the simultaneous equations mentioned below.

$2x + 3y = 9$

$2x + y = 7$

(b) Simplify. (i) $\frac{5a}{3} - \frac{a}{3} - \frac{2a}{3}$ (ii) $\frac{7+x}{x-1} - \frac{x}{x-1}$

(06) (a) (i) Write the gradients of the following functions separately. $y = 2x - 1$, $y = -x + 2$

(ii) Copy and complete the table given below which are prepared to draw the graphs of the functions, $y = 2x - 1$ and $y = -x + 2$

x	$2x - 1$	y
-2	2 x (-2) - 1	-5
-1	2 x (-1) - 1	-3
0	.....	.....
1	2 x 1 - 1	1
2	.....	.....

x	$(-x + 2)$	y
0	-0 + 2	2
1	.....	.....
2	-2 + 2	0
3	.....	.....
4	-4 + 2	-2

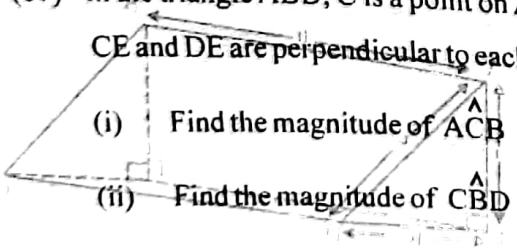
(iii) Using the coordinates in two tables above draw the graphs of the functions $y = 2x - 1$ and $y = -x + 2$ in a same Cartesian plane.

(iv) Write the coordinates of the point of intersection of two graphs as an ordered pair.

(b) (i) Draw the straight lines denoted by $x = -3$ and $x = 1$ in a same Cartesian plane.

(ii) Shade the region denoted by $-3 \leq x \leq 1$

(07) In the triangle ABD, C is a point on AD such that BA = BC. CE is a line drawn through C parallel to BD CE and DE are perpendicular to each other, $A\hat{B}C = A\hat{D}S = 20^0$



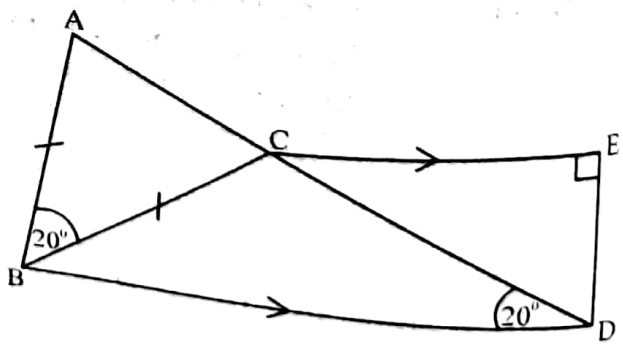
(i) Find the magnitude of $A\hat{C}B$

(ii) Find the magnitude of $C\hat{B}D$

(iii) Giving reasons, find the magnitude of $D\hat{C}E$

(iv) Find the magnitude of $C\hat{D}E$

(v) Name an angle equal in magnitude to $C\hat{E}D$



(vi) Copy the given figure and construct a line through E parallel to CD to meet BD produced at F.

(vii) Name an angle equal in magnitude to $D\hat{E}F$ and find its value.