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First Term Test - 2020

32	E	I,II

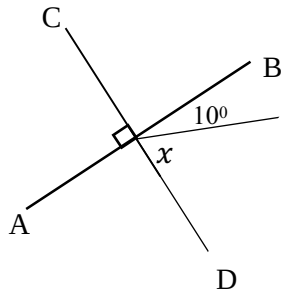
Mathematics I, II Time – 03 hours

Name / Index No - ..... **Grade 10**

Part I

- Answer all question.

(01). Four men who were given the responsibility of completing a task were able to finish only $\frac{1}{3}$ of it by working for 5 days. What is the magnitude of the task in man days?

(02). 

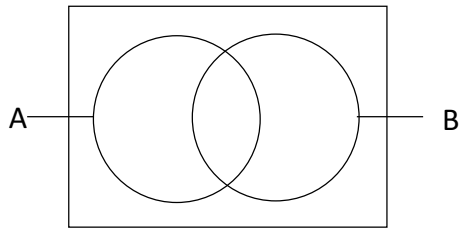
Using the information given in the figure, find the value of x

(03). Factorize $2x^2 - 50$

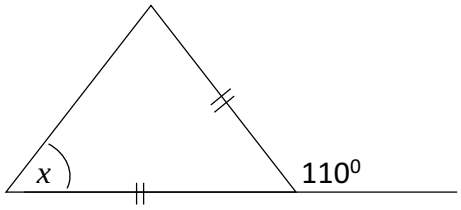
(04). Simplify, $\log_3 81$

(05). Simplify $\frac{2x+3}{7} = 3$

(06). Shade the region represented by A∪B in the Venn diagram.

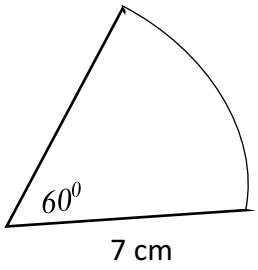


(07). Find the Value of x



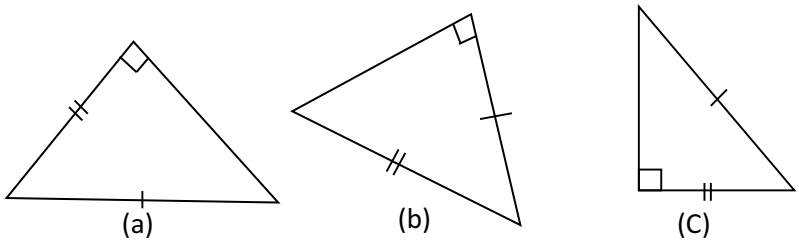
(08). Find the least common multiple (LCM) of the three algebraic expressions $2a, 3a$ and $5a$.

(09). Find the perimeter of the given sector.

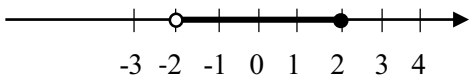


(10). A probability of a motor cyclist is in T junction selecting a way is $\frac{2}{5}$. Find the probability of the selecting other way.

(11). Select a pair of triangles which are congruent in the above figure. Write down the case also.



(12). Write the inequality represented on the given number line.



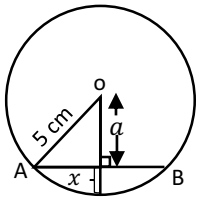
(13). Find the first approximation of $\sqrt{600}$

(14). Find the ratio of the areas of two circles of radii r and 2r units each.

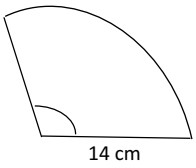
(15). Simplify

$$\frac{2}{x+3} - \frac{3}{2x}$$

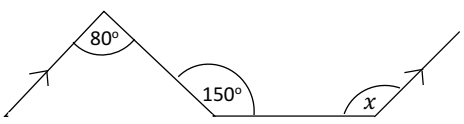
(16). If AB = 8 cm, Find the value of x



(17). If the area of the given sector is A, find the magnitude of the angle at the centre of the sector in terms of A



(18). Find the value of x.



(19). If $(2x + 1)^2 = ax^2 + bx + C$, Find the values of a, b and c.

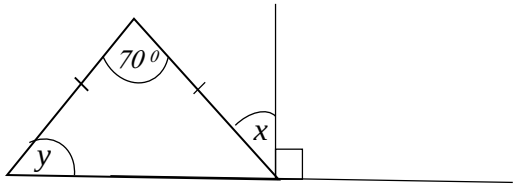
(20). The mean of the group of data 7, 5, x, 9, 11, x and 15 is 9. Find
i. the value of x
ii. the median

(21). If the straight line given by the equation is $2x + 1 = 3y$, Find,
i. the gradient
ii. the intercept

(22). If the length, breadth and the height of the cuboidal shaped tank is *2*m, *1*m and *1.5*m respectively. Find the capacity of the tank in liters.

(23). If $x + 2y = 7$
$2x + y = 5$ find the value of $x + y$

(24). Find the values of x and y based on the information given in the diagram.



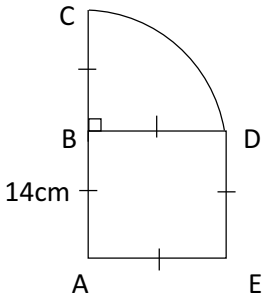
(25). The house was located 10m away the straight road. House owner wants to fix light post 12m away from home and close to straight road. Sketch, using your knowledge of loci, the place where the light post can be situated.

Part B

(01). A mother use $\frac{2}{5}$ of a fabric for a bed sheet and $\frac{3}{4}$ of the rest for pillow covers.

i. Find the fraction of the remaining fabric after remove a portion for the bed sheet.
ii. Find the what fraction of the fabric used for pillow covers.
iii. If the length of fabric used for bed sheet and pillow covers is 9m, find the total length of the fabric
iv. If a bed sheet needs 3m and pillow cover needs $\frac{3}{4}$ m fabric, find how many of such sets can be made out of the total length

(02).



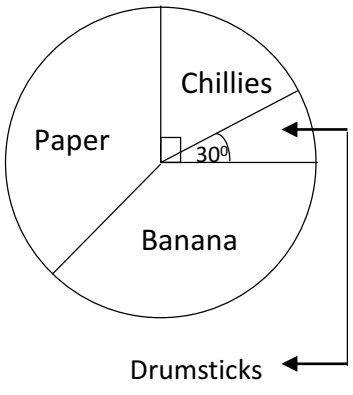
i. Find the are length DC.
ii. Find the perimeter of the sector BDC
iii. Find the area of the sector BCD
iv. Find the area of the whole (composite) plane figure.
v. Find the perimeter of the composite plane figure.

(03). In a certain farm has sufficient food for 40 hens for 30 day.

i. For how many days is the food in the farm sufficient for a hen
ii. 18 days later, another 8 hens were brought to the farm, find how many days is the food sufficient for them.
iii. After 4 days when 8 hens were brought to the farm, 12 of them had been dead due to illness. Find how many more days will the food that is remaining be sufficient.

(04). The following pie – chart illustrates the information on the types of crops cultivated by 300 farmers.

i. How many farmers were cultivated chilies?
ii. Number of farmers who cultivated banana is four times of farmers who cultivated drumsticks. Find the number of farmers who cultivate banana.
iii. What is the magnitude of the angle at the centre of the sector which cultivate paper.
iv. If $\frac{1}{3}$ of, farmers are cultivating paper shifted to crop chillies, find the magnitude of the angle at the centre of the sector which represents the farmers growing chillies



(05). If,

Σ= { 1,2,3,4,5,6,7,8,9,10}
A = { 2,4,6,7}
B = { 1,4,7,9,10}

i. Represent the above information using a Venn diagram.
ii. Write the below sets with the elements.
   1) A'∩B
   2) A ∩ B
   3) A'
   4) B'

Part II

- Answer ten questions selecting five question from Part A and five questions from Part B.
- Each question carries 10 Marks.

Part A

(01). Piyal bought 4000 oranges as 5 oranges for for Rs.10 and sold out it as 4 oranges for Rs.10. Kamal bought 2400 oranges as 4 oranges for Rs. 10 and sold out it as 3 oranges for Rs.10.

i. Find the profit percentage of piyal.

ii. Find the Profit Percentage of Kamal.

iii. Who got the larger profit? Either Piyal or Kamal?

(02).

i. Factorize
   a) $x^2 + 8x + 15$
   b) $x^2 - 49$

ii. Find the value by using the knowledge of factors.

$$\frac{22}{7} \times 34^2 - \frac{22}{7} \times 20^2$$

iii. If $a + b = 5$ and $ab = 6$, then find the value of $a^2 + b^2$

(03). When 5 is added to two times of P the breadth of the rectangle is obtained. The length of the rectangle is two times of its breadth. Find the area of the rectangle in the form of $Ax^2 + bx + C$ and find the values of A, B and C

(04). The radius of a cylindrical tank is 49 cm and water is filled up to the height of 0.5m

i. Find the area of the bottom of the tank.

ii. The above volume of water is poured in to a cuboid shaped tank with length of 100 cm and breadth of 80 cm. To what height the water rises?

(05). An incomplete table prepared to draw the straight line of $y = 2x + 1$ is given below

i. Fill in the blanks.

x	-2	-1	0	1	2
y	-3	.....	1	.....	.....

ii. By selecting a suitable Cartesian plane draw the graph.

iii. By using the graph find the gradient and the intercept of it.

iv. Shade the region of $y \leq 2x + 1$

(06). Here are the details of selling milk packets in a certain canteen during 30 days.

22, 13, 20, 44, 55, 41, 12, 58, 45, 32, 19, 23, 11, 15, 51,
27, 08, 29, 38, 39, 25, 09, 10, 39, 45, 33, 28, 30, 60, 29

By using this information complete the table given below.

Class Interval	Tally Mark	Frequency (f)	Mid value (x)	f x x
01 – 10				
11 – 20				
21 – 30				
31 – 40				
41 – 50				
51 – 60				

i. What is the modal class?
ii. Find the mean of this data

Part B

(07).

i. Simplify.

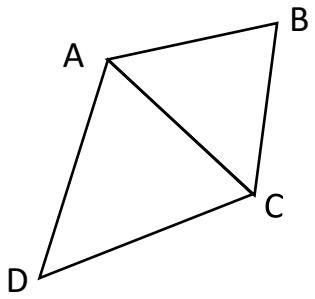
a) $\frac{5}{x} - \frac{2}{3x}$

b) $\frac{2x}{3} + \frac{x}{5}$

c) $\frac{1}{(x-a)} + \frac{2a}{(x^2 - a^2)}$

ii. In a certain question paper out of 50 questions a student was able to answer only 45 questions during 1 hour 30 minutes. How many more time is needed to supply answer for all questions?

(08).



ABCD is a quadrilateral. Here AB = AD and ACD is an equilateral triangle. And also AB and CD are parallel to each other. Show that,

$\triangle$ ACD $\equiv$ $\triangle$ ABC

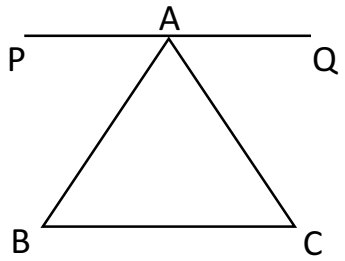
(09).

i. PQ = 6cm, QR = 8 cm and $P\hat{Q}R = 120$ construct the triangle PQR
ii. Construct the angle bisector of $P\hat{Q}R$ and it meets PR at M. Mark the point M
iii. Construct the angle bisector of $P\hat{Q}M$ and it meets PR at N. Mark the point N.
iv. Measure and write the value of $N\hat{Q}R$.
v. By using calculations, Show that the answer you obtained in (iv) is correct.

(10).

i. The exterior angle formed when a side of a triangle is produced is equal to the sum of the two interior opposite angles. Prove the above theorem

ii.



In the triangle ABC the line PQ is drawn through A parallel to BC. And also, AB = BC

a) Draw this figure and mark the data given here on the figure.
b) Show that $B\hat{A}C = C\hat{A}Q$

(11).

a) A telephone post (XY) is planted in a horizontal plane. A point Z is 80m far away from the bottom of the telephone post (Y) and the angle of elevation of the top of the post (X) from the point Z is 30^0 .

i. Represent this data in a rough sketch.
ii. By using the scale of 10m = 1cm, draw a scale diagram.
iii. By using the scale diagram, find the height of the telephone post.

b)

i. A tank can be filled with water of $6m^3$ A water pump supply water to this tank with the speed of $30l$ per minute. Find the volume of water find within an hour.
ii. How long will it take to fill the tank completely?

(12). $\sum$ = { Counting numbers from 1 to 15}
A = { Prime numbers less than 15 }
B = { Even numbers less than 15 }

i. Write these sets as elements.
ii. Represent this data in a Venn diagram
iii. Find
   a) {A∩B}
   b) {AUB}'
   c) n(AUB)
iv. Shade the region A'