PROVINCIAL DEPARTMENT OF EDUCATION
NORTHERN PROVINCE
Year End Examination - 2019
Mathematics

Index No: ....

Grade-10	32 *T I*	Time : 2 Hours

Index Number...

Supervisor Signature ....

Instructions

❖ Write your index number correctly
❖ To use the answer sheet for Part IIA, IIB questions get answered method.

Important

➢ Part IA has 25 questions each has 2 marks totally 50 marks given.
➢ Part IB has 5 questions each has 10 marks totally 50 marks given.

Marking Examiner

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Cross Examiner

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Examiner use only

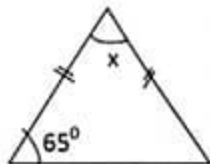| Part	Question	Marks
IA	1 – 25	
IB	1	
	2	
	3	
	4	
	5	
Total		

Part I A

(1) Calculate the following quantity. $\frac{5}{6}$ of Rs. 360 ?

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

(3) Calculate the speed of a motorbike which travels 220km in 2 hours with uniform speed?

(4) Find the magnitude of x ?

(5) Find the quarter circle's arc length when its radius is 14cm.

(6) The factor of $(9x^2-4)$ is $(3x-2)$. Find the other factor .
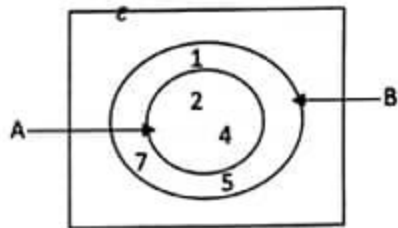
(7) Express $5^3 = 125$ as a logarithm form.

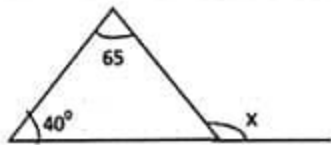(8) Solve :- $\frac{3}{(x+2)} = \frac{1}{2}$

(9) Using the given venn diagram

  (i)   Write the elements of $A \cap B$.
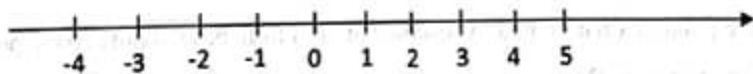
  (ii) Shaded the area $A' \cap B$

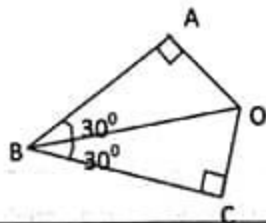(10) What are the integers between of $\sqrt{67}$?

(11) Calculate the magnitude of x .

(12) Solve the inequality $3x-2<10$ and represent the solutions on a number line.

(13) In which condition for congruent of triangles ABO and CBO

(14) Four students' mean weight is 47kg. Then 52kg weight of a student joins this group. Find the new mean weight?

(15)Find the L.C.M of $6a^2b$, 9ab ?.

(16) When a television is imported 12% of its value has to be paid as customs duty. Find the total amount with the duty included, that it cost a person to import a television worth Rs 70 000.

(17) O is the Centre of the circle. If radius is 10cm and length of chord AB is 12cm. Find the length of OC
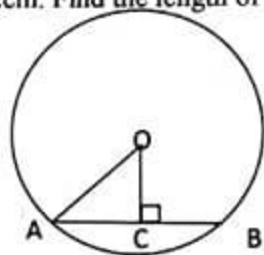
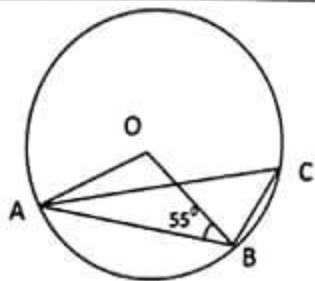(18)Make 'a' the subject of the formula V=u+at .

(19)AB is a post, C is the point in a flat ground. A distance of 10m from base of post AB to point C. Find the angle of elevation from C to B is.
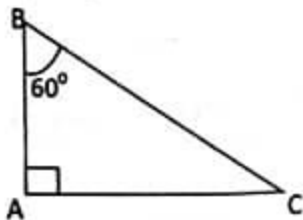
(20)The gradient of a straight line is 3, it is go through the point (1,3). Find this straight line equation?

(21) O is the center of the circle, If $A\hat{B}O = 55^0$ Find the magnitude of $A\hat{C}B$?.

(22) Find the volume of a triangular prism of 10cm length and cross section area is $45cm^2$.

(23) A bag contains 5 red, 4 white and 3 green marbles. If a person randomly takes a marble from the bag, Find the probability didn't get white marble?

(24) ABCD is a parallelogram. Find the magnitude of x ?.
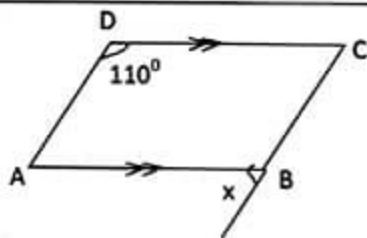
(25) Draw a sketch of the construction line required to locate the point A, when the same distance from the straight lines OP, OQ and 5cm from the line OQ.

Part I B

1) A man wished to give his wife $\frac{1}{2}$ of his land. $\frac{1}{3}$ of remaining portion to give his son and balance land will be give to his daughter.

   (i)   After giving to his wife, what fraction of the land remained?

   (ii)   What portion of the land did his son receive?

   (iii)   What portion of the land did his daughter receive?

   (iv)   State daughter's land in which multiples of son's land?

   (v)   If the value of land difference between the son and wife is Rs 200 000. Find the total value of his land?

2) The diagram shows a playground it has rectangular garden 56m long and 28m broad and having two semicircular lands at the two ends.

56m

28m
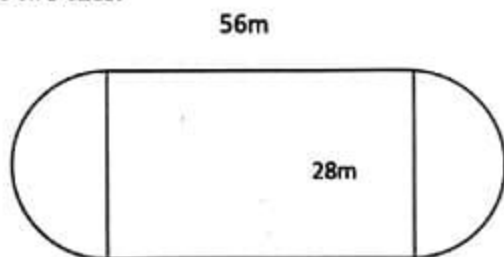
(i)   Find the radius of semicircular land .

(ii)   Find the arc length of one semi-circle.

(iii)   Find the total perimeter of this playground.

(iv)   If a runner runs 5 rounds in uniform speed 5ms^{-1} of this playground. Find the total time (in minutes and seconds) to take this event?

3) a) If the total amount that had to be paid after 3 years to settle a loan is Rs 5300, but unfortunately he settle this loan in 5 years the total amount is Rs 6000.

(i)   How much he has to paid the interest in a year?

(ii)   Find the loan amount?

(iii)   Find the simple interest rate for this loan?.

b) A house of assessed annual value Rs 40 000 is charged annual rates of 4 %.

    (i)   Calculate the annual rate?

    (ii)   Calculate the rates that have to be paid for a quarter?

4) The following pie chart illustrates the information to spend the different ways his monthly salary of a government staff.

(i)   If the amount of money to spend for food is twice of the money to spend for saving. Find the angle at the center of the sector which denotes the food?

(ii)   If he spend the money for saving is Rs 7 500. Find how much money to spend for others.
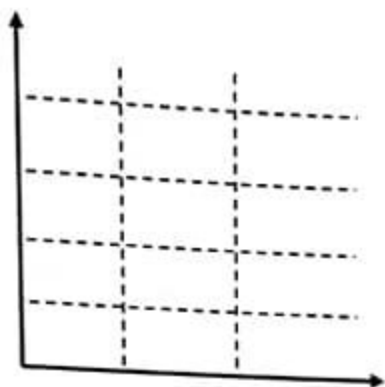

(iii)   Give the fraction, when he spends the money for travel of total salary.

(iv)   Give the percentage, when he spend the money for others of total salary?

5) i. Throwing once on unbiased tetrahedral die the faces of which are numbered from 1 to 4, Together with an unbiased coin. Illustrate the sample space graphically.

ii.   Find the probability of getting head on the coin?

iii.   Find the probability of getting a prime number on the die and tails on the coin.

iv.   The event A is getting the odd number in die and head on the coin.
        The event B is getting the even number in die and tail on the coin.
        Show that these two events A, B are disjoint sets?

PROVINCIAL DEPARTMANT OF EDUCATION
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Grade-10	32T II	Time: 3.10 Hours

❖ Select any five questions from part IIA and any five questions from part IIB and answer for totally 10 questions

❖ The volume of a right circular cylinder with a base of radius r and height h are $V = \pi r^2 h$

❖ The volume of a right circular cone with radius r and height h are $V = \frac{1}{3}\pi r^2 h$

❖ The volume of sphere with radius r is $V = \frac{4}{3}\pi r^3$

Part II A

(1)   An in completed table of x and y values suitable sketch the graph of $y = x^2 - 3$ are given below.

x	-3	-2	-1	0	1	2	3
y	6	1	-2	...?...	-2	1	6

a) i. Find the value of y when x=0
    ii. Sketch the graph of the given function by selecting a suitable scale?

b) Using the graph
    i.   Write down the coordinates of the turning point? (0,0)
    ii.   Write down the interval of values of x for which the function is negatively decreasing?
    iii.   Find the roots of the equation $x^2 - 3 = 0$ from the graph

(2)   The following table contains data on the number of units of water that was consumed during a month by 60 families who receive water from a certain water scheme.

No of units	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 – 40
No of families	4	8	12	16	10	6	4

(i)   What is the model class of the above frequency distribution?

(ii)   Calculate the mean number of units that was consumed by a family, by taking the mid value of model class as the assumed mean.

(iii)   The water supply charge Rs 10 per unit. Accordingly, what is the income that the water supply can expect to earn from these 60 families during that month?

(3)

a) Simplify :- $\dfrac{2}{(a+1)} + \dfrac{2}{a^2+a}$

b) A person has Rs 1000 in 20 rupee notes and 50 rupee notes. The total number of notes is 32.

    (i)   Taking that the number of 20 rupee notes he has is x and the number of 50 rupee notes he has is y, construct a pair of simultaneous equations..

    (ii)   Solve the pair of equation and find the number of 20 rupee notes and the number of 50 rupee notes that he has.

(4)

a) Factorize : $(2a+1)^2 - 16$
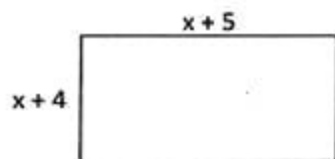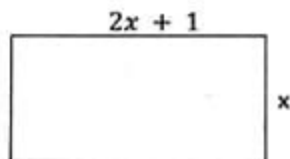
b) Two rectangles given below.

Figure I   Figure II

    (i)   Find the area of figure I in terms x.

    (ii)   Find the area of figure II in terms x.

    (iii)   If the area of figure I and Figure II are equal. Make a quadratic equation from the given information.

   (iv)   Solve the above quadratic equation, Find the suitable value of x.

(5)

a) Determine the volume of a cylindrical shaped solid base radius 7cm and height 30cm.

b) Let us consider right prism with a cross section the shape of right angled triangle. The length of sides in this triangle x, y are make a hypotenuse side.

    (i)   Find the cross section area in terms x, y.

    (ii)   If the length of the prism is 0.4m, show that its volume is V= 20xy.

    (iii)   If x = 11.6cm, y = 9.25cm. Find the volume of prism by using the log table?

(6) In this figure, AB is a 70m height of vertical telecom tower. It is fixed with the rod of the point E,F in the horizontal ground . EAF is a straight-line. The rod EC, FD make a angle with the ground such that 55^0, 60^0. AB, EA, AF are in same horizontal plane. EA = 40m, AF = 30m.
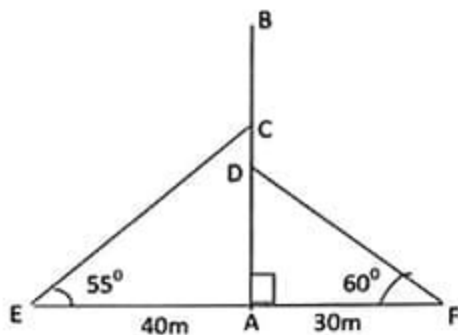
(i) Draw a scale diagram based on the sketch, using the scale of 1:1000.
(ii) Using the scale diagram, find the actual length of EC, FD.
(iii) Find the angle of depression F from B. (Neglect the person's height).
(iv) Find the actual length of CD? (C, D are joined with rod)

Part II B

(7) The student make a first three figures of pattern constructed by pasting matchstick are shown in the diagram.
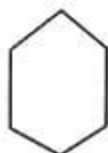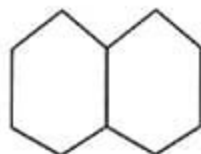

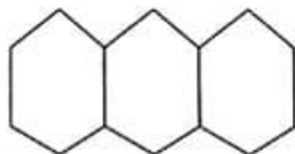figure 1   figure 2   figure 3

(i) Write down the number of matchsticks in every figure.
(ii) How many matchstick more than in figure 2 to figure 1
(iii) In these pattern in which progression.
(iv) How many matchsticks are needed to construct the figure 20 of the pattern.
(v) Find the total number of matchsticks needed to construct this patter up to the first 12th figure.

(8)   Using only a straight edge with a cm/mm scale and a pair of compasses , and showing the construction lines clearly.

(i)   Construct a straight line $AB = 9cm$.

(ii)   Make the angle $A\hat{B}C = 60^0$, $B\hat{A}C = 30^0$ in straight-line AB and then complete the triangle ABC.

(iii)   Construct a straight line parallel to AC through the point B.

(iv)   Construct a perpendicular from the point A to the above straight line (iii). Named to AD.

(v)   What is the special name of the quadrilateral ADBC?

(9)   X,Y are mid points of side BC, CD of the quadrilateral ABCD. AX produced to E when AX=XE and such that AY produced to F when AY=YF. Show that the above information in a rough sketch and proof the quadrilateral DBEF is a parallelogram?

(10)   O is the centre of the circle. Points P,Q,R,S,T,U are on the circumference. If $P\hat{U}T = 30^0$ and PS=SR

(a) Find the following magnitude of angle

(i)   P$\hat{R}$Q

(ii)   P$\hat{R}$T

(iii)   P$\hat{O}$R

(b) Using the magnitude of angle and given information

(i)   Triangle ORQ is a equilateral triangle

(ii)   Show that quadrilateral PSRQ is a rhombus.
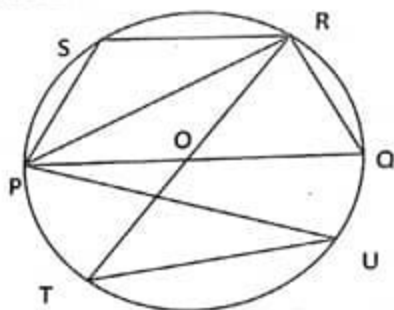
(11)

a) From a school, 80 students who went to the trip, 60% were boys. 28 students were above 18 years. 14 students of the girls who came were aged below 18 years.

(i)   Represent this information in a Venn diagram.

(ii)   How many boys were above 18 years?

(iii)   Shaded the area, when girls were above 18 years.

b) If n(A)=20, n(A∩B)=10, n(AUB)=35. Find n(B) ?

(12)

a) A land owner estimates that it would take 12 men 10 days to clear his land for farming the chilli.

(i)   What is the magnitude of the task in man days?

(ii)   If 6 days are assigned the above task, how many men want to complete the task.

(iii)   However, 6 days after 3 more men are joined to do work on a similar task. How many days will it take to complete the task?

b)   If it took 25 seconds to completely fill a 50 liter of empty tank using a pipe. What is the rate at which petrol flows through the pipe in liters per second?