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மத்திய மாகாண கல்வித் திணைக்களம்
DEPARTMENT OF EDUCATION - CENTRAL PROVINCE

G.C.E. (O/L) Practice Test - 2020

Grade 11 | **Mathematics - I** | **32 E I**

Time : 2 hours

Index Number: .....

Certified correct

.....

Signature of invigilator

Important :-

- This question paper consists of 8 pages.
- Write your index number correctly in the space provided on this page and on page three
- Answer all questions on this question paper itself.
- Use the space provided under each question for working and writing the answer.
- Indicate the relevant steps and the correct units when answering the questions
- Marks are awarded as follows :-

  In Part A
  2 marks for each question

  In Part B
  10 marks for each question

- Blank papers can be obtained for scratch work.

For the use of the examiner only

Part	Question number	Marks
A	1-25	
B	1	
	2	
	3	
	4	
	5	
Total		

..... First Examiner	..... Code Number
..... Second Examiner	..... Code Number
..... Arithmetic Checker	..... Code Number
..... Chief Examiner	..... Code Number

Part - A

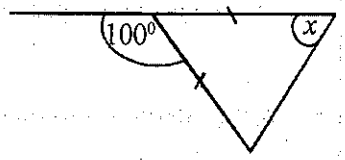
Answer all questions on this question paper itself.

(01) A person borrowed an amount of 10,000 rupees at an annual simple interest rate of 12%. Find the amount of interest he has to pay at the end of the year.

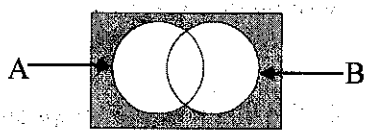
(02) Simplify $\frac{3}{4x} - \frac{1}{2x}$

(03) Represent in index form $\log_2\left(\frac{1}{8}\right) = (-3)$

(04) Find the value if x using the information given in the figure.



(05) Express the region represented in the Venn diagram in set notation.



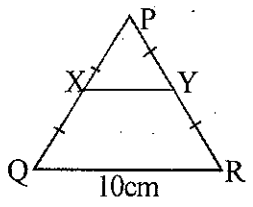
(06) Find the values of x + y without solving the following equations.

$2x + y = 13$

$x + 2y = 17$

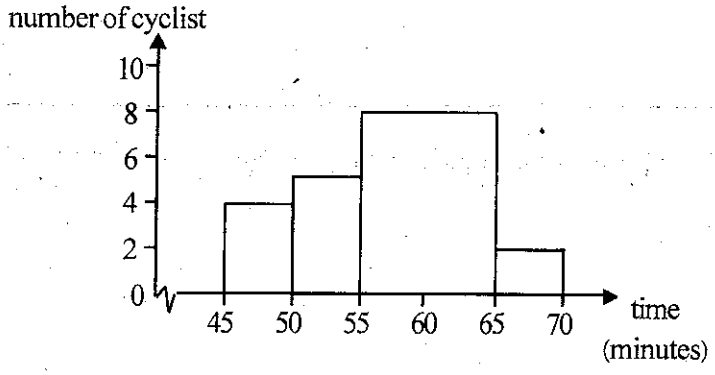
(07) It takes 8 men 3 days to complete a certain task. How many more men will they have to employ to complete the task within a day?

(08) PQR is an equilateral triangle of side length 10cm. The mind points of PQ and PR are X and Y respectively. Find the perimeter of the quadrilateral XYQR



(09) Find the volume of a right circular cylinder of base area $77cm^2$ and height 12cm. (The volume of a right circular cylinder of base radius r and height h is $\pi r^2 h$)

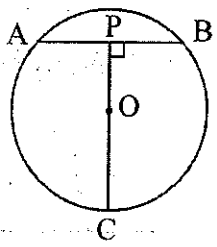
(10) The following histogram shows the time taken to complete a certain cycle race for the cyclists. What is the total number of cyclists who completed the race



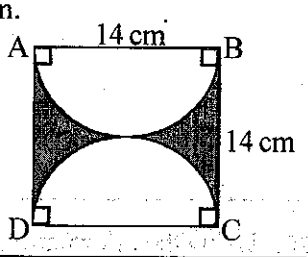
(11) Select and underline the correct answer for the least common multiple of the algebraic terms $6x^2$ and $4xy^2$

(i) $24x^3y^2$ (ii) $24x^2y^2$ (iii) $12x^2y^2$

(12) In the figure the radius of the circle with centre 0 is 5cm. $AB \perp OP$ and $PC = 8cm$. Find the length of the chord AB.

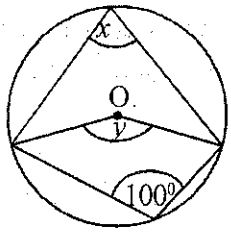


(13) Find the area of the shaded portion according to the information given in the diagram.



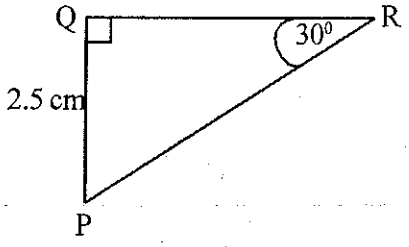
(14) An unbrased coin is tossed twice and the outcome is recorded. Find the probability of getting heads both times.

(15) Using the information given in the figure, find the values of x and y (the centre of the circle is 0)



(16) If $8.3^2 = 68.89$ and $8.4^2 = 70.86$ what is the most suitable value for $\sqrt{70}$, from the numbers 8.3 and 8.4?

(17) PQR is a right angled triangle. If $P\hat{Q}R = 90^0$ and $PQ = 2.5$cm, find the length of the sides PR ($\sin 30^0 = \frac{1}{2}$)



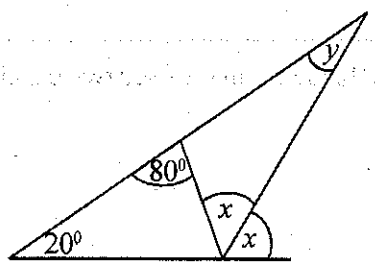
(18) A straight line passes through the origin and the point (2, 6)

i. Find the gardient

ii. Write the equation of the straight line

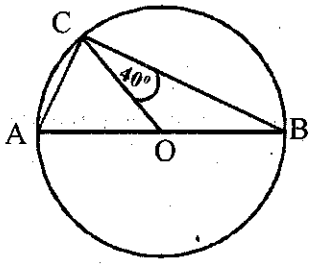
(19) $2x^2 - x - 3 = (2x - a)(x + b)$ Find the suitable values for a and b.

(20) Using the information given in the figure find the value of x and y.



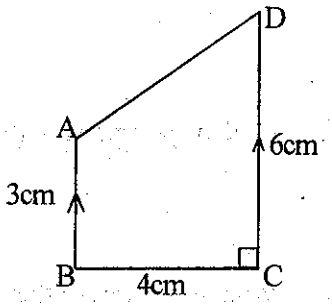
(21) If a vehicle travels 60km in 30 minutes at a uniform speed, find the speed of the vehicle in kilometres per hour.

(22) AB is a chord of a circle with centre O. If $O\hat{C}B = 40^0$, find the magnitude of $O\hat{A}C$.

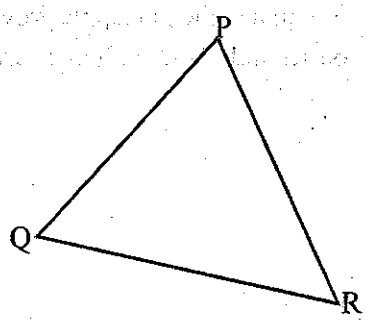


(23) Solve the inequalityu $2x - 5 \geq 4$ and write down the least integral value that x can take.

(24) $ABCD$ is a trapezium. Using the informtion given find the length of the side AD.



(25) PQ, QR and PR are 3 straight lined roads. A lamp post should be fixed on the point S on the road, which is equidistant to the roads PQ and QR. Draw a sketch of the construction to represent the position of S.



Part B

Answer all questions on this paper itself.

(01) A person gives $\frac{2}{5}$ of his wealth to his school studied, and $\frac{1}{3}$ to the temple. He donated $\frac{1}{4}$ of the remaining amount to the elders home.

i. What fraction of the total amount of money did he donate to the school and the temple

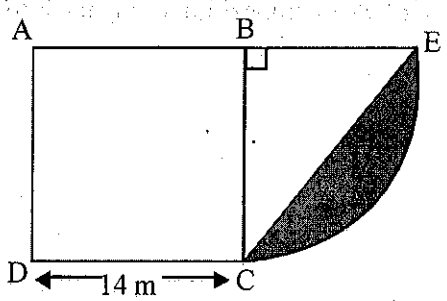
ii. What fraction of the total amount did he donate to the elders home.

iii. If the amount donated to the elders home is Rs.45 000, find the amount of money donated to the temple.

iv. Find the remaining amount he had.

(02) The diagram shows a plot of land consisting of a square shaped part *ABCD* and a sector shaped. part *BCE* attached to it. Pineapple has been grown in the shaded area.

i. Find the length of the boundary *CE*.



ii. Find the perimeter of the land.

iii. What is the area of the section in which pineapple has been grown?

iv. It is decided to separate out a rectangular plot of land inside the square ABCD for growing chilli, So that its area is equal to the pineapple grown area and BC is to be one of its boundaries. Sketch the plot of land that can be separated out with measurements on the diagram given.

(03) Upul invested 30 000 rupees to buy shares of a company which pays annual dividends of Rs. 15 per share.

i. After 1 year, the dividends income he received was Rs.30 000. Find the number of shares he bought.

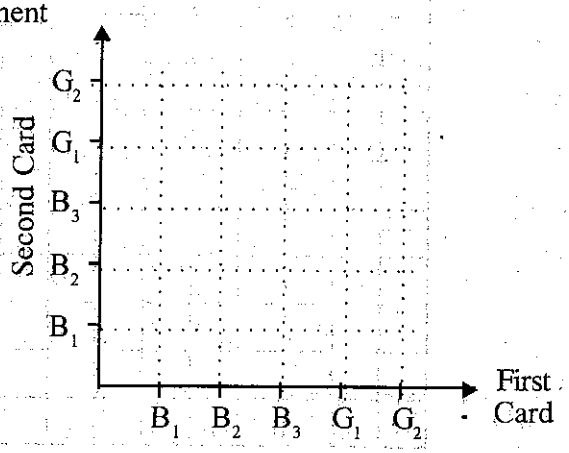
ii. What is the marked price of a share, when buying?

iii. After receiving dividends he sold all his shares when the market price was Rs.200, per share. Find his capital gain.

iv. Express the total amount of the capital gain and the dividends income as a percentage of the amount invested.

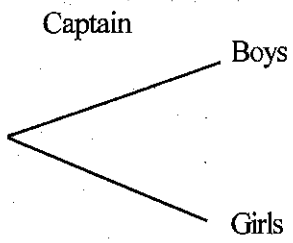
(04) a) A project group of the A/L section in a certain school consists of 3 boys and 2 girls. It is decided to select 2 of them as a captain and a vice caption. 5 identical cards have been prepared to denote the 3 boys and 2 girls as B1, B2, B3 and G1, G2 respectively. A card is taken randomly and the student who possess that card is selected as the captain. The student who possess the second randomly taken card is selected as the vice captain.

i. Represent the sample space of the above experiment in the given grid.



ii. Find the probability of selecting a boy as the captain and a girl as the vice captain.

b) Given below shows an incomplete tree diagram drawn to represent the above selection.



i. complete the tree diagram by indicating the relevant probabilities in order to select the positions.

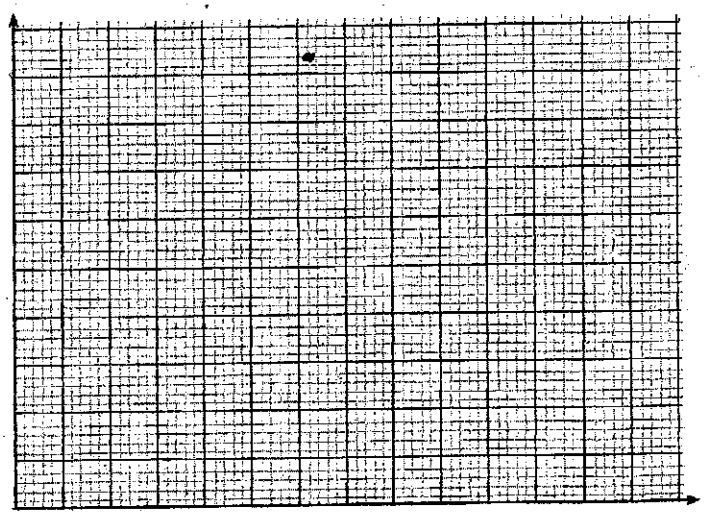
ii. Find the probability of selecting a girl at least for one of the two positions.

(05) Given below shows an incomplete table of frequency distribution on the marks obtained by a group of students who faced the selection test in a pool of sports. (15 - 30 indicates $15 \leq x < 30$)

Marks x	Frequency f	Cumulative Frequency (f)
0 - 15	5	5
15 - 30	.....	11
30 - 45	8	.....
45 - 60	.....	30
60 - 75	13	.....
75 - 90	7	.....

i. Fill in the blanks in the table

ii. Draw the cumulative frequency curve on the given coordinate plane.



iii. Using the cumulative frequency curve. Find the median of the frequency distribution.

iv. If only 20 students are selected for the pool of sports, what is the cut off mark of she selection.

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DEPARTMENT OF EDUCATION - CENTRAL PROVINCE

G.C.E. (O/L) Practice Test - 2020

Grade 11 | **Mathematics - II** | **32 E II**

Time : 3 hours | **Additional Reading Time : 10 minutes**

Use additional reading time to go through the question Paper, select the questions and organize on the questions that you give priority in answering

Important :

* **Answer the questions selecting five questions from part A and five questions from part B.**
* **Write the relevant steps and the correct units in answering the questions.**
* **Each question carries 10 marks.**
* **The volume of a sphare of radius r is $\frac{4}{3}\pi r^3$ and the volume of a right circular cylinder of base radius r and height h is $\pi r^2 h$**

Part - A
Answer Five questions only

(01) A refrigerator priced at Rs.80 000 for out right purchase can be bought by paying $\frac{1}{4}$ of its price as a down payment and paying the rest in 12 equal monthly installments of Rs.5975. If the interest is calculated on the reducing loan balance, find the annual interest rate.

(02) An incomplete table of values prepared to drow the graph of the quadratic function $y = 3-(x-1)^2$ on the interval $-2 \le x \le 4$ is given below

x	-2	-1	0	1	2	3	4
y	-6	-1	2	3	.....	-1	-6

i. Find the value of y when x = -2

ii. Using a suitable scale with standard axes, and the table of values, draw the graph of the quadratic function

iii. Find the maximum value of the function

iv. Find the roots of $3-(x-1)^2 = 0$ to the nearest first decimal place and hence find an appoximate value for $\sqrt{3}$

v. Write down the range of values of x for which the function is positive.

(03) a) If $(2 \quad 5)\begin{pmatrix}3 & 0\\ 1 & 2\end{pmatrix} = (a \quad b)$ find the valus of a and b

b) A parcel of prize prepared for a price giving, consists of 10 exercise books of the same type and 2 boxes of colour pencils of the same type. The price of a box of colour pencil is Rs.50 less than the twice the price of an exercise book. If the price of a parcel is Rs.1300,

i. Taking the price of an exercise book as x and the price of a box of colour pencils as y construct a pair of simultaneous equations.

ii. By solving the pair of simultaneous equations, find separately the price of an exercise book and the price of a box of colour pencils.

(04) A frequency distribution prepared using the distance travelled by a certain motor car during a month is shown below

Distance (km)	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
Number of days	3	4	7	9	5	2

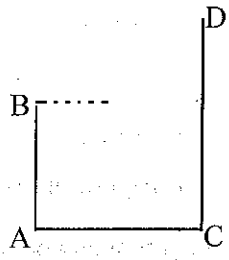
(In the table, 0 - 20 denotes the distance "greater than o and less than or equal to 20" and the other denotes similarly.)

i. Using a suitable assumed mean or otherwise, find the mean distance travelled by the motor car during a day.

ii. Express the number of days which traveled greater than the mean distance as a percentage of the total number of days.

iii. This motor car travels the distance of 12km from one litre of fuel. If the price of one litre of fuel is Rs.165 find the monthy expenditure of fuel to the nearest thousand rupees.

(05) In the figre AB and CD are two vertical buildings situated on a horizontal ground. The height of the building CD is 15m greater than the height of AB. The angle of elevation of D from B is 30^0 and the angle of depression of C from B is 50^0

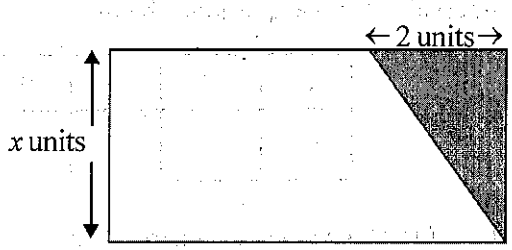


i. Copy the given figure in your answer script and include the above information in it.

ii. Find the distance AC between the two buildings.

iii. Find the height of the building CD to the nearest metre.

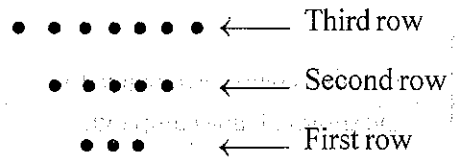
(06) The breadth of a rectangular plate $ABCD$ is x units. Its length is 5 units greater than its breadth. As shown in the figure a right angle triangular portion is removed from one side of it. If the area of the remaining portion is 7 square units, show that x satisfies the quadratic equation $x^2 + 4x - 7 = 0$ Solve the above equation by completing the square or by any other method and find the length of the rectangular plate to the nearest first decimal place (Take $\sqrt{11} = 3.32$)



Part B

Answer five questions only

(07) a) In a drill display the positions of the students in the first 3 rows are shown in the figure. The distance between the two nearby students is 1 metre



i. How many student are in the fourth row

ii. If the distance between the students who are standingh in the two ends of the last row is 30m find the total number of rows in the drill display

iii. Nayana says that more than 250 students participate in the drill display. Show that this statemeny is true or falls with reasons.

b) Find the some of the first 8 terms of a geometric progression of which the first term 3 and the common ratio (-2)

(08) Use only a straight edge with a cm / mm scale and a pair of compasses for the following constructions. The construction lines should be drawn clearly.

i. Construct the triangle LMN such that $LM = MN = 7$cm and $L\hat{M}N = 90^0$

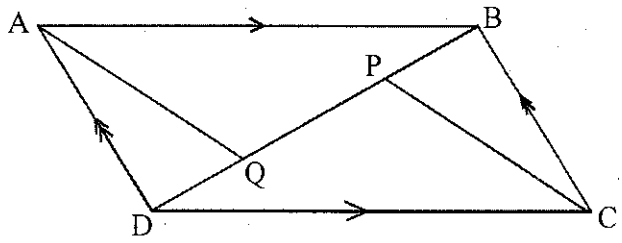
ii. Construct the angle bisector of $L\hat{M}N$

iii. Construct a line parallel to LM through the point N such that it meets the angle bisector at K.

iv. Construct a circle which goes through the points L, M and N.

v. Give reasons for $L\hat{N}M = L\hat{K}M$.

(09) $ABCD$ is a parallelogram. The angular bisectors of $B\hat{C}D$ and $B\hat{A}D$ meet the diagonal BD at the points P and Q respectively.

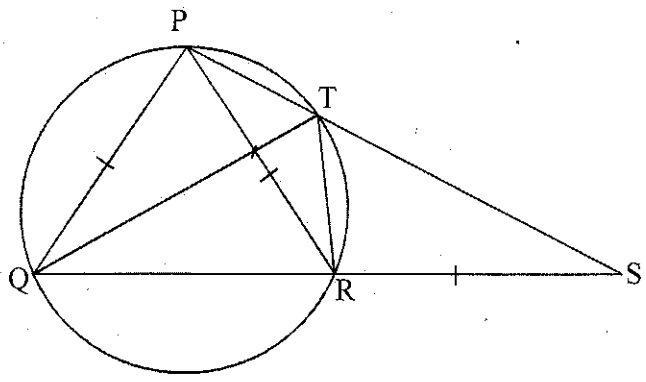


i. Show that $B\hat{A}Q = P\hat{C}D$

ii. Show that $ABQ\Delta \equiv CDP\Delta$

iii. Prove that $APCQ$ is a parallelogram.

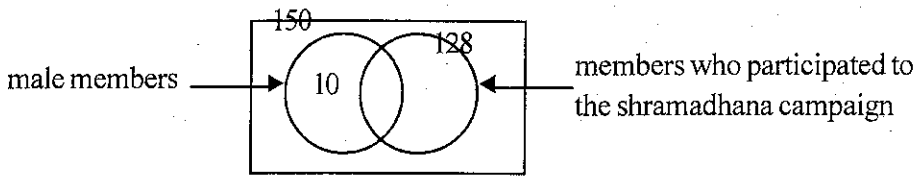
(10) P, Q and R are 3 points on the circle given in the figure. $PQ = PR$. The line QR is produced to S such that $PQ = RS$. The line PS meets the circle at the point T. Show that $P\hat{Q}R$ is bisected by the line QT. Then show that $PT = TR$



(11) A shramadhana compaign was organized by a certain welfare society. Total numbers of members were 150. Out of them,

* 128 members participated to the campaign and 70 of them were female
* Number of males who did not participate was 10

i. Copy the given venn diagram in your answer script and write down the elements in the relevant regions.



ii. What is the numbers of female members who did not participate?

3 males and 2 females who participated to shramadhana and, 5 males and 4 females who did not participate to shramadhana were engaged in the serving task.

iii. Copy the venn diagram again and include the set of members who engaged in serving and mention the relevant number of elements belonging to each region.

iv. If a member is selected randomly, find the probability of not participating any of the task from serving of shramadhana.

(12) A cylindrical metal rod of radius r and the height, 6 times the radius is made by melting a solid sphere of radius a without any wastage.

Show that $a = \sqrt[3]{4.5r}$

Using logarithm tables find the value of a to the nearest second decimal place ($r = 3.5$ units)

***