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අනුරූප පරීක්ෂණ - 2020
Diagnostic Test - 2020

32 E

Mathematics

Time : 01½ hours

Name / Index No :

Grade 11

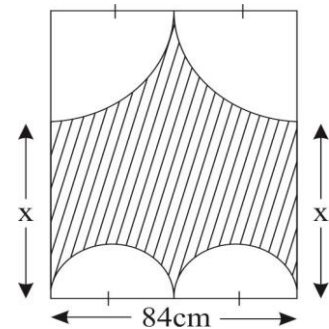
- Answer 4 questions selecting 2 questions from Part A and 2 from Part B.

- In selection for a musical competition, $\frac{1}{4}$ is out in the first round, $\frac{1}{3}$ is out in the second round. Out of the rest $\frac{3}{5}$ is out in the third round. The number selected for the final round is 60.
 - What fraction of the competitors were out in the first and second rounds?
 - What fraction was out in the third round?
 - What fraction competitors participated for the final round?
 - What is the no. of competitors contested in the third round?

- A rectangular shaped door design is shown in the figure. Except the two semi circles and the two sectors, the shaded region is made with a wood carving. The width of the door is 84cm.

(Take $\pi=22/7$)

- Find the radius of a sector.
- Find the arc length of a sector.
- Find the area of a semi circle.
- If the length of the door is $2\frac{1}{2}$ times of its width, find the height indicated by x .
- Find the perimeter of the shaded region.



- (a) A table with the information on how taxes are calculated in the Inland Revenue Department is given below.

Annual Income	Tax %
Initial Rs. 500000	Tax Free
Next Rs. 500000	6%
Next Rs. 500000	10%

The annual income of a certain businessman is Rs. 750000/-

- What is the taxable income?
- If the income tax can be paid quarterly. Find the income tax that have to be paid quarterly.

Not for Sale

Not for Sale

- (b) It was estimated that 9 men take 15 days to dig a canal.
- Estimate the number of man days needed to dig the canal.
Five days after the work is commenced, 4 men didn't attend to work due to an illness.
 - How many more days are needed for the remaining men to complete the work?
 - If the daily salary of a man is Rs. 1200, find the total amount spent on salaries.

1. An incomplete table of values prepared to draw the graph of the function $y = 4 - (x - 1)^2$ is given below.

x	-2	-1	0	1	2	3	4
y	-5	0	3	-	3	0	-5

- Find the value of y when $x=1$
 - By taking a suitable scale, draw the graph of the above function.
- Find the maximum value of the function.
 - Write the equation of the axis of symmetry.
 - Write the range of values of x for which the function is positive.
 - Find the roots of the equation, $-x^2 + 2x + 3 = 0$

2. The following table shows the number of shirts produced in a factory during a month.

No. of shirts	4-8	9-13	14-18	19-23	24-28	29-33	34-38
No. of days	2	3	4	11	5	4	1

- According to the above details, how many shirts can be produced maximumly during a day?
- Find the mean number of shirts produced in a day.
- The factory owner says that he can produced more than 7500 shirts during a year. Explain whether his statement is true.
- If the production cost of a shirt is Rs. 950/- and the selling price of a shirt is Rs. 1250/-, find the profit during a month.

3. 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.

- Construct a quadrilateral PQRS such that $PQ=3\text{cm}$, $PS=4\text{cm}$, $\widehat{SPQ} = 90^\circ$, $QR=5\text{cm}$ and $RS=6\text{cm}$.
- Construct a line through R parallel to SQ.
- Produced the line PQ as it meets the above parallel line at T. Join ST.
- Name a triangle which is equal in area to the triangle QST. Give the reasons.