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Second Term Evaluation - 2023

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- Answer 10 questions by selecting 5 questions from part A and 5 questions from part B.
- Each question carries 10 marks.
- The volume of a right cylinder with the radius of the base r and the height h is $\pi r^2 h$

Part A

Answer five (05) questions only.

01) A person who owns Rs.1000000 invests that money at the ratio of 2:3 in two companies A and B as follows.
To buy shares of company A at the market price of Rs.25 per share. The company pays a dividend income of Rs.5 per share.
To buy shares of company B at the market price of Rs.20 per share. The company pays a dividend income of Rs.4 per share.

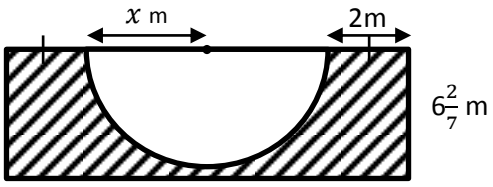
i. Find the amount of money he invested in company A
ii. Find the dividend income gained from the company A.
iii. Find the total dividend income gained from both companies.
iv. Express the total dividend income as a percentage of the money he invested.

02) Given below is an incomplete table of values prepared to draw the graph of the function $y = x^2 - 2(x + 2)$

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

i. Find the value of y when $x = 1$
ii. By taking 10 small divisions along the x axis and y axis as one unit, plot the graph of the function in a graph paper.
iii. Write the range of values of x for which the function is negative.
iv. write down the co - ordinates of the point of refraction
v. Express above function in the form $y = (x - a)^2 - b$ and find the value of $\sqrt{5}$ by means of it.

03) The figure shows a lamina prepared by removing a semicircular portion with radius $x\,cm$ from a rectangular metal strip with breadth $6\frac{2}{7}cm$. The area of the semi circular portion is equal to that of the remaining portion.
Show that x satisfies the quadratic equation $x^2 - 4x - 8 = 0$ and also the radius of the semicircle is greater than 5cm.
(Consider $\sqrt{3} = 1.73$)



04) A child is in a flat observes through a window A, a flag post CD and a house in the same horizontal plane. He observes the top of the flag post with an angle of elevation of 45° and the bottom D with an angle of depression of 30°. Point B lies on the horizontal ground just below the point A and AB=5m.

i. Draw a rough sketch according to the above information

ii. Select a suitable scale and express it as a ratio

iii. According to the scale you selected draw the scale diagram.

iv. Find the height of the flag post by means of the scale diagram.

05) There is a relationship between the price of a CR book and that of a normal exercise book as follows
The cost of three CR books and one normal exercise book is Rupees 1080
The cost of one CR book and two normal exercise book is Rupees 660

i. Build up a pair of simultaneous equations by considering the price of a CR book is as "x" and the price of a normal exercise book is as "y"

ii. Solve the pair of simultaneous equations and find the price of each book.

iii. The cost of "n" number of CR books and one normal exercise book is lesser than Rupees 2000 write an inequality including "n"

iv. Find the maximum value of n.

06) Information on manufacturing shirts in a garment factory within 100 days is given below.

No. of shirts manufactured per day	76 - 100	101-125	126 - 150	151 - 175	176-200	201-225	226-250	251-275	276-300
No. of days	5	8	10	16	20	16	11	9	8

i. Considering the mid value of the class interval 176-200 as the assumed mean calculate the mean value of shirts manufactured per day

ii. If the producing cost of one shirt is Rupees 1200, find the total cost of shirts manufactured within 6 days.

Part B

Answer five (05) questions only.

07)

(a) 25 pieces of ribbon were needed to make a decoration. The pieces were cut as follows. 5cm, 9cm, 13cm, 17cm …. etc.

i. State the type of the progression that these lengths belong to?

ii. Find the length of the 25^{th} piece

iii. All the 25 pieces were cut out from one reel of ribbon. Find the total length of the reel.

(b) $3, x, 12$ are three successive terms of a geometric progression. Show that there are two different values for x.

08) By using the straight edge with the scale cm/mm and the pair of compasses and showing the construction lines clearly do the following constructions.

i. Construct the triangle ABD where $AB = 7cm, B\hat{A}D = 60°$ and $BD = 8cm$

ii. Mark the point C, Such that $BC = DC, AC = 9cm$ and draw the quadrilateral $ABCD$

iii. Construct the line CE which is parallel to DB and E lies on AB produced

iv. Show that the area of the quadrilateral ABCD is equal to the area of the triangle ACE.

09) The mid point of the side BD of the triangle ABD is X. The line drawn parallel to AD through B meets AX produced, at C. Draw the diagram according to the information given above. Prove that ABCD is a parallelogram and $Area\ of\ \Delta\ BCX = \frac{1}{2}\ Area\ of\ \Delta ABD$

10) The points P, Q, R, S and T lie on the circle with centre O. POR is a diameter of the circle and $R\hat{P}Q = 40°$

i. Copy down the diagram in your answer script and mark the given data.

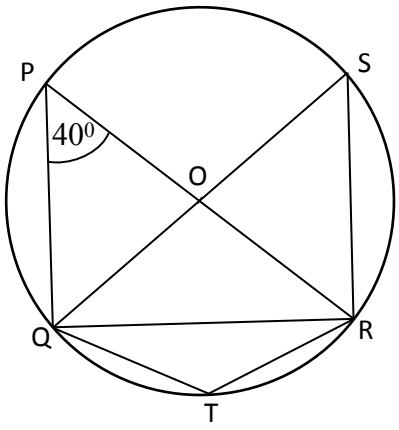
ii. Find the magnitudes of the following angles. Give reasons for your answer.

a) $P\hat{Q}O$

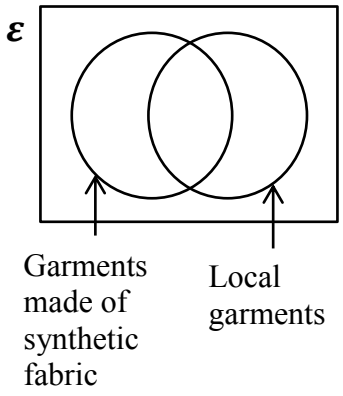
b) $Q\hat{O}R$

c) $Q\hat{S}R$

d) $Q\hat{T}R$



11) There are 40 types of readymade garments in a shop. Some of them are imported and some are local products. 26 types are made of synthetic fabric and 12 types are not synthetic and they are local products. There are 9 local types made of synthetic fabric.



i. Copy down the Venn diagram in to your answer script and submit the above data accurately.

ii. Find the number of types of imported synthetic garments.

iii. Find the number of types of imported non - synthetic garments.

iv. Find the probability of the randomly selected garment is being a non - synthetic garment.

12)

i. Find the value using logarithmic tables $\frac{8.059\times45.3}{\sqrt{0.345}}$

ii. A volume of $7.7m^2$ of soil was removed when a cylindrical well with a flat bottom was constructed. Find the depth of the well if the diameter is $1.4m$.