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Department Of Education – Western Province

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முதலாம் தவணை பரீட்சை - 2019
First Term Evaluation

ශ්‍රේණිය தரம் Grade	11	විෂයය பாடம் Subject	Mathematics	පත්‍රය வினாத்தாள் Paper	II	කාලය காலம் Time	3hours

- **Answer 10 questions selecting 05 questions from part A and 05 questions from part B.**
- **Each question carries 10 marks. This question paper carries 100 marks.**
- **Volume of a cone with the radius r and the height h is $\frac{1}{3}\pi r^2 h$.**
- **Volume of a sphere with the radius r is $\frac{4}{3}\pi r^3$.**

Part A

Answer five questions only.

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

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

(a) (i) Find the value of y when x = 0

(ii) Using a suitable scale, draw the graph of the function on the given graph paper.

(b) Using the graph,

(i) Find the maximum value of the function.

(ii) Write the interval of values of x where $y \geq 3$.

(iii) Find the roots of the equation $(2 - x)(2 + x) = 0$.

(iv) Find the interval of values of x, where the function decreases negatively.

02. A certain urban council charges an annual rates of 12% from a house of assessed annual value Rs. 50 000. The house owner rented this house for a monthly rental of Rs. 10 000, taking the annual rent money at once. From that money, he paid the annual rates and spent Rs. 15 000 for annual maintenance of the house. He deposited the remaining amount in a bank which pays an annual simple interest of 10%. What is the total amount he received at the end of the year?

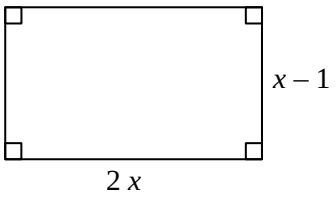
03. **(a)** A class teacher distributed 3 pens for each boy in the class and 5 pens for each girl in the class. The number of boys in the class is 5 less than the three times the number of girls. The total number of pens distributed were 153.

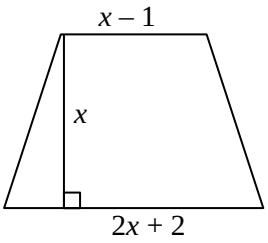
(i) By taking the number of boys in the class as x and the number of girls in the class as y, build up a pair of simultaneous equations.

(ii) Solve the pair of equations and find the number of boys and the number of girls in the class.

(b) Expand $(x + 5)^3$

04. From the following figures, the area of the rectangle is $3cm^2$ less than the area of the trapezium. All the measurements shown in the figures are given in centimeters. Using these information, build up a quadratic equation and by solving it, show that there exists two different values for the area of the rectangle.





05. Following table illustrate the information on the number of refrigerators manufactured by a certain refrigerator manufacturing factory during a certain month.

No of refrigerators	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
No of days	3	6	8	7	4	2

(i) What is the modal class of the distribution?

(ii) By taking the mid value of the modal class as assumed mean, find the mean number of refrigerators manufactured in a day.

(iii) If the manufacturing company gained a profit of Rs. 5 000 by selling a refrigerator, show that the profit gained by the company during the month exceeds 7 million rupees.

06. **(a)** A solid metal cone with the radius a and the height twice the radius, is melted and a solid hemisphere is made without wasting the metal. Show that the radius of the hemisphere is equal to the radius of the cone.

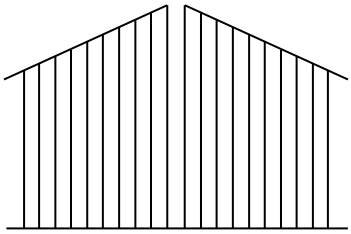
(b) Find the value of the following expression using logarithmic tables.

$$6.82^2 \times \sqrt[3]{0.005}$$

Part B

Answer five questions only.

07. Figure shows a two panel gate made of iron rods. The shortest rod of it is 70 cm and every next rod is 5cm more than the previous rod. One panel of the gate is made using 10 such iron rods.



(i) What is the height of the 10^{th} rod?

(ii) What is the total length of the iron rods used to make one panel of the gate, in meters?

(iii) What is the total length of the iron rods used to make the both panels of the gate?

(iv) If 1m of the iron rod costs Rs. 300, calculate the total amount spent for the iron rods to make both panels of the gate.

08. For the following constructions use only a straight edge with the scale cm / mm and the pair of compasses only. Show the construction lines clearly.

(i) Construct a circle with the radius 3.5cm.

(ii) Mark a point A on the circle and construct a chord where AB = 5cm.

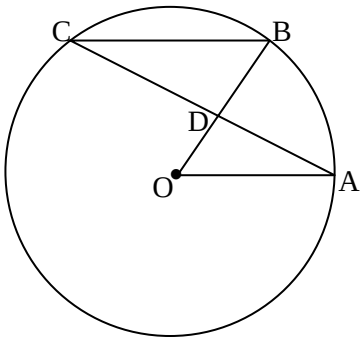
(iii) Construct a point D on the circle such that $A\hat{B}D = 30^{o}$.

(iv) Construct a parallel line to AB through D and mark the intersection point of it and the circle as C. Measure and write the CD length.

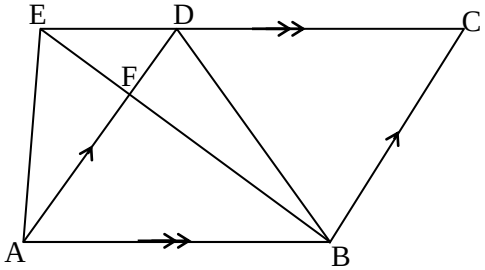
(v) Construct the perpendicular bisector of CD.

(vi) Name an angle equal to $A\hat{D}B$.

09. O is the centre of the given circle. OA // BC and $A\hat{O}B = 60^{o}$. The lines OB and AC intersects at D. Giving reasons show that AD = CD and show that Δ OAD $\equiv \Delta$ BCD.



10. In the given figure ABCD is a parallelogram and ABDE is a trapezium. Lines AD and BE intersect at F.

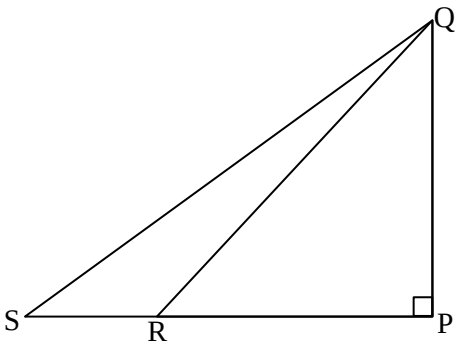


(i) Name two triangles which are equal to the area of the triangle ABD.

(ii) Show that, Area of AEF Δ = Area of BDF Δ

(iii) If AB = 2 ED, show that the ratio between the area of the parallelogram ABCD and the area of the trapezium ABDE is 4 : 3.

11. Figure shows a PQ vertical building situated in the horizontal land and a point R, which is situated 40 m away from the foot of the building. A person who is at R, observes the top of the building at an angle of elevation of 50^0. A person who is at the top of the building, observes a point S, which is situated at the same side of R, at an angle of depression of 30^0. Copy the given figure in your answer sheet and mark the above information on it.



By drawing a suitable scale diagram, calculate the actual length between R and S.

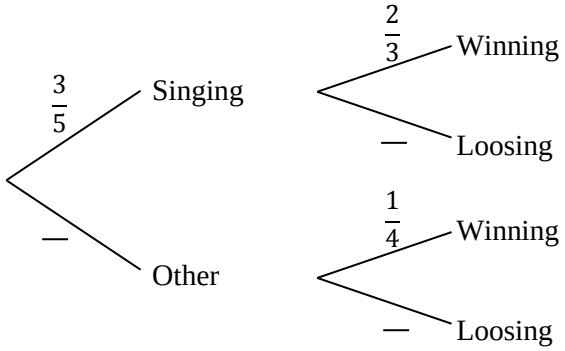
12. **(a)** Among 50 members who are training in a certain art academy, 30 members practice singing and 28 practice playing music. 10 members do not practice either singing or playing music.

(i) Represent the above information on a Venn diagram.

(ii) Using the Venn diagram, find the number of members who practice both singing and playing music.

(b) For a certain competition, a member is selected randomly from the art academy. The probability of selecting a competitor from the singing section is $\frac{3}{5}$. The probability of a competitor who was selected from singing section winning the competition is $\frac{2}{3}$. The probability of a competitor who was selected from other sections, winning the competition is $\frac{1}{4}$.

(i) Following tree diagram is drawn to illustrate the above information. Copy it in your answer sheet and fill the blanks.



(ii) Find the probability of the selected competitor winning the competition.