



Devi Balika Vidyalaya – Colombo 8
First Term Evaluation - 2016

Mathematics - I

Grade 11

Time-2 hours

- Answer all questions.

1. The price of a book is Rs 15.00. Find the price of 'x' number of books.

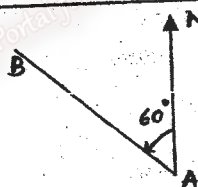
2. The length of a side of an equilateral triangle is 5.5cm. Find the perimeter of it.

3. The speed of a car is 25 km per hour. Find the distance traveled by it in 3 hours.

4. Find the maximum value that can be taken for x, if $5x \leq 20$.

5. Find the value of 2^{-3} .

6. What is the bearing of B from A?



7. How many ml are there for 5.4l?

8. Write the set of letters of the word 'BALL'.

9. If $\frac{55}{\quad} = -5$, write the suitable value for the blank

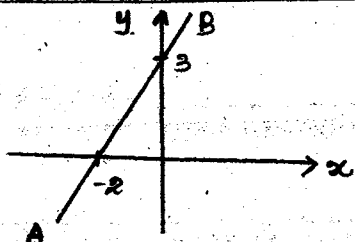
10. Simplify $6\sqrt{2} - 4\sqrt{2}$.

11. Find the value of $\log_5 125 - \log_3 3 + 2$

12. Find the value of 102×98 using the knowledge of factors.

13. If $3^x \times 9^4 = 3^5$, find the value of x .

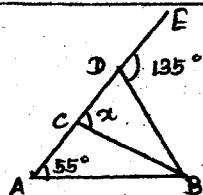
14.



Find the,

- i) intercept
- ii) gradient of the AB straight line.

15.

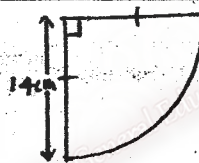


In the diagram BC is the bisector of $\hat{A}BD$. Find the value of 'x'

16. If $\lg 3 = 0.4771$, find the value of $\lg 30$.

17. Given below is a block used to make a cone.

- i. Find the slant height of it.
- ii. Find the radius of the base of the cone.

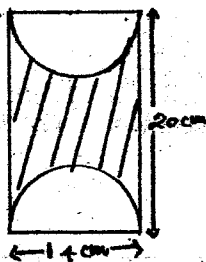


18. When selling an item a discount of 6% of the marked price is given by the seller. find the marked price of an item if it is sold for Rs 658.

19. Find the value of 'x'



20. Find the perimeter of the shaded region.



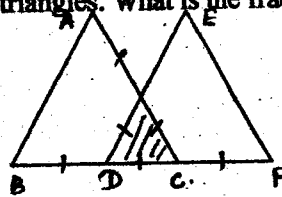
21. A map is drawn to the ratio 1:50000. If the distance between two cities on the map is 15 cm, find the real distance between the two cities?

22. If $\frac{a}{b} + \frac{b}{a} = 5$, find the value of $\frac{a^2}{b^2} + \frac{b^2}{a^2}$.

23. Rationalize the denominator of $\frac{10}{\sqrt{2}}$

24. It takes 15 minutes to fill $\frac{3}{5}$ of a tank. How long will it take to fill half of the tank?

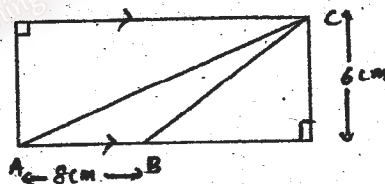
25. ABC and DEF are two equilateral triangles. What is the fraction of the shaded region out of the whole figure?



26. If $\frac{a^{-2} \times a^8}{a^3} = 8$, find the value of a.

27. Find the simplest equivalent fraction to $\frac{3(a+1)}{a^2-1}$.

28. Find the area of the triangle ABC.



29. The ratio between the length, breadth and height of a cuboid is 4:3:2. If the surface area of it is 468cm^2 , find the height of the cuboid.

30. If $\sqrt{5^a \times 2^b} = 20$, find the value denoted by 'a' and 'b'.

Part B

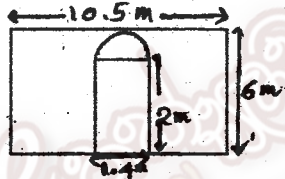
01) a) Find the fraction suitable for the blank

$$\left(4\frac{1}{2} - \dots\right) \times 1\frac{3}{13} = 4\frac{4}{5}$$

b) A trader decided to sell $\frac{1}{2}$ of the apples at Rs 50 each, $\frac{1}{5}$ of the apples at Rs 40 each and the rest at Rs 30 each.

- i) What is the remaining fraction of the apples decided to sell at Rs 30?
- ii) If the income gained by selling the rest at Rs 30 is Rs 1800, find the total number of apples.
- iii) What is the total income he received by selling all the apples?
- iv) The trader said that "If he sell, all the apples at Rs. 40 each without separating them, he would gain a loss of Rs. 400. Do you agree with him ? Give reasons.

02)



Given diagram shows a front view of a wall. The gate of it consists of a rectangular part and a semi circular part.

- i) What is the radius of the semi circular part?
- ii) Find the arc length of the semi circular part.
- iii) What is the area of the wall except the gate?
- iv) What is the perimeter of the wall except the gate?
- v) If it is needed Rs 105 to paint 1m^2 of the wall, what is the amount of money needed to paint the wall?

03) (a) A seller bought a couch for Rs 20000 and marked its price to gain a profit of 25%. After that he sold it by giving a discount of 5%.

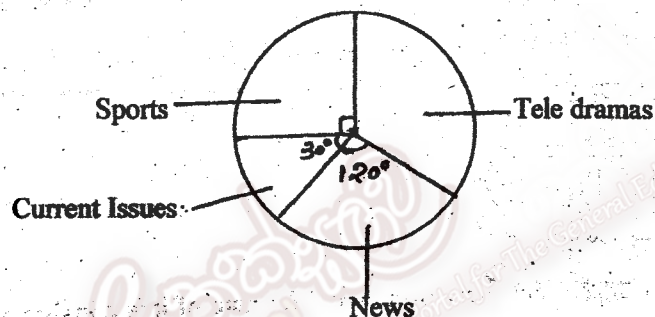
- i) What is the marked price of the settee?
- ii) What is the selling price of it?
- iii) What is the percentage profit obtained by selling it?

(b) An amount of money is divided among A, B and C as follows.

A: B = 2:3 and A: C = 5:1.

- i) Find A: B: C.
- ii) If C got Rs 520, find the amount of money divided among them.

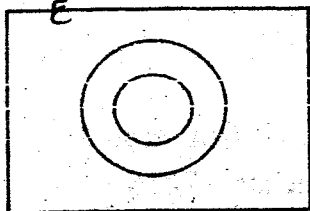
04) Given below is a pie chart including the votes about the TV programs watched by students in a certain school.



According to the given information,

- i) Which program is watched by least number of students?
- ii) If the number of students who watched current issues is 15, find the total number of students.
- iii) How many students like to watch Tele dramas?
- iv) If 15 students who watched Tele dramas decided to watch news, what is the value the new angle representing news in the pie chart?

5.



The information about 120 students of a certain school who faced for O/L examination in a certain year. All the students who passed science also passed Maths. The number of students who passed science is 40. The ratio between the number of students who passed Maths and the number of students who failed both subjects is 2:3.

- i) Represent the given information in a Venn diagram.
- ii) Find the number of students who failed both subjects.
- iii) Find the number of students who passed Maths.
- iv) Find the probability of that being a student who passed only Maths.

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Devi Balika Vidyalaya – Colombo 8
First Term Evaluation - 2016
Mathematics - II

Grade 11

Time-2½ hours

- Answer ten questions selecting five questions from part A and five questions from part B.
- Each question carries 10 marks.
- The volume of a solid sphere of radius r is $\frac{4}{3}\pi r^3$.
- The volume of a right circular cone of base radius r and height h is $\frac{1}{3}\pi r^2 h$.

Part - A

- Answer five questions only.

01.

When importing 'LIEON' vehicles the rate of the custom duty increased from 30% to 60%

- i) The cost of importing the 'LIEON' vehicle is 450000 American Dollars. If the value of one American dollar is Rs. 120, find the value of the car in Rupees.
- ii) What is the value of the vehicle before increasing the custom duty?
- iii) What is the value of the vehicle after increasing the custom duty?
- iv) After increasing the custom duty, the value of an American Dollar also increased by 25%. Find the value of the vehicle?

02.(a)i) Find the value using the laws of logarithms.

$$\left(\frac{27}{125}\right)^{-\frac{2}{3}} \times \sqrt{\frac{72}{50}} \times 3^0$$

- ii) Find the value of x without using logarithmic tables.

$$x - 2 \lg 2 = \lg 75 - \lg 3$$

- (b) Simplify $\frac{38.65 \times 0.0474^{\frac{1}{3}}}{2.076^2}$ using logarithmic tables and give the answer to the nearest second decimal place.

03. An incomplete table prepared to draw the graph of the function $y=2x^2+1$ is given below.

x	-3	-2	-1	0	1	2	3
y	19	3	3	9	19

- i) Find the value of y, when $x=-2$ and $x=0$.
 - ii) Using a scale of ten small divisions as one unit along the x-axis and ten small divisions as two units along the y-axis, draw the graph of the above function.
Using the graph,
 - iii) Find the minimum value of the function.
 - iv) Write the co-ordinates of the minimum point.
 - v) Write the interval of values of x for which $y \leq 4$.
 - vi) If the graph of the function $y=2x^2+1$ moves upward along the x-axis by 3 units, write the equation of the graph.
04. A right circular solid cone of radius $2a$ and height three times of radius was melted and equal solid spheres of radius $\frac{a}{2}$ were made out without any waste of metal.
- i) Find the volume of the cone in terms of a and π
 - ii) Find the volume of a sphere in terms of a and π .
 - iii) How many spheres can be made by melting the cone?
 - iv) If the radius of a sphere is 2cm and the weight of 1cm^3 of the solid is 10g , find the weight of spheres.
05. (a) A shop charges 12% of the assessed annual value of the property rates, has to pay quarterly rates of Rs.1200.
- i) Calculate the rates that have to be paid for a year.
 - ii) What is the assessed annual value of the shop?
The owner of the shop charged is Rs. 25000 as the monthly rent and rented the shop.
 - iii) What is the income gained by him after renting the house at the end of the year?
 - v) What is the annual income of him?
- (b) A seller bought an article and marked its price to gain a profit of 25%. He sold it at Rs 1034 by giving a discount of 6%.
- i) Find the marked price of it.
 - ii) Find the amount spent to buy the article.

6. (a) i) Factorize. $4p-6pq+9q-6$
 ii) Write 9.9^2 as a square of binomial expression and find the value of it.
- (b) Given below is a description about vehicles parked in certain area. There are 15 vehicles of two types. They are motor bicycles and cars. The number of tires in all vehicles is 64.
- i) Taking the number of motor bicycle as x and the number of cars as y , construct a pair of simultaneous equations in x and y .
- ii) Solve the pair of simultaneous equations and find the number of motor bikes and the number of cars.

Part B

- Answer five questions only.

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

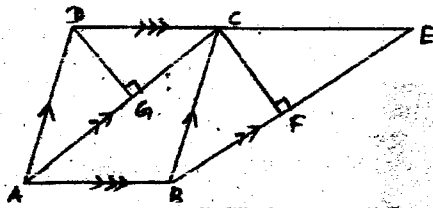
- i) Draw a sketch to construct the quadrilateral PQRS where, $PQ=7.2\text{cm}$, $QR=5.4\text{cm}$, $\hat{Q}R=75^\circ$, $QS=8.3\text{cm}$ and $RS=PS$.
- ii) Construct the quadrilateral PQRS.
- iii) Measure and write the length of RS.
- iv) Draw the perpendicular bisectors of QS and QR and name the point of intersection as T.
- v) Draw a circle by taking the radius as TQ which is moving through the points S, R and Q

08. Information on the time taken to produce dolls by the 50 workers in a certain company is given in the following table.

Time taken(min)	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60
Number of workers	2	5	7	10	14	8	3	1

- i) What is the modal class of the distribution?
- ii) Find the mean time taken by a worker to produce a doll.
- iii) If it is needed to produce 900 dolls within 8 hours, find the number of workers needed to complete the task.
- iv) If a worker exceeds 6 hours daily, Rs.70 paid for one hour as OT. What is the access amount needed to pay for the workers in (iv).

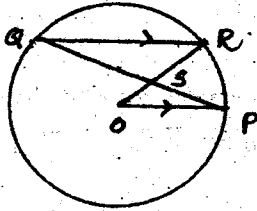
09.



i) In the given figure, ABCD is a parallelogram. BF is drawn parallel to the diagonal AC which meets produced AC at E. $AC \perp DG$ and $BE \perp CF$.

- i. Name a parallelogram equal to the area of parallelogram ABCD
- ii. Show that $DC = CE$.
- iii. Prove that $\triangle DGE = \triangle CFE$
- iv. Show that $DG \parallel CF$.
- v. Show that DGFC is a parallelogram.

10.



O is the centre of the circle. Radius, OP and chord, QR are parallel to each other. S is the intersecting point of OR and QP.

- i) Write a relationship between $\angle ROP$ and $\angle QP$. Write the theorem related to the relationship.
- ii) Name an angle equals to $\angle ROP$.
- iii) Prove that $\angle RSP = 3\angle SPO$.
- iv) If the RO produced meets the circle at T, find the value of $\angle TOR$. Give reasons.

11. The sum of the first n terms of an arithmetic progression is given by $S_n = 7n - 2n^2$.

- i) Write the first term.
- ii) Find the sum of the first two terms.
- iii) Find the common difference of the progression.
- iv) How many terms, starting from the first term, add up to -30.

12. a) i) $\frac{5}{y-3} + \frac{2}{3-y}$ $\frac{1}{m+3} + \frac{2m}{m^2-9}$

b) Sunil and Nimal is working in the same office. The probability of taking a leave on Wednesday by sunil is $\frac{1}{4}$. The probability of taking a leave on Wednesday by Nimal is $\frac{1}{5}$.

- i) Represent the above information in a tree diagram.
- ii) Find the probability taking a leave on Wednesday at least one of them.

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