V I B G Y O R H I G H

Second Term Examination

2019-2020

MATHEMATICS

Grade: VIII **Max. Marks: 80**

Date:09.03.2020 **Time Allowed: 2hours 30 mins.**

INSTRUCTIONS:-

- **Answers to this paper must be written on the paper provided separately.**
- **You will not be allowed to write during the first 15 minutes.**
- **This time is to be spent in reading the question paper.**
- **The time given at the head of this paper is the time allowed for writing the answers.**
- **The intended marks for the questions or parts of questions are given alongside the questions.**
- **All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer.**
- **Omission of essential working will result in loss of marks.**
- **Attempt ALL questions from SECTION (A) (Questions 1 to 4).**
- **Attempt ANY 4 questions from SECTION (B) (Question 5 to 11).**
- **This question paper contains** 6 **printed pages.**
- **Geometrical figures to be constructed wherever applicable.**
- **For geometry, figures should be copied to the answer script.**

SECTION A
(All questions are compulsoryfrom this Section)

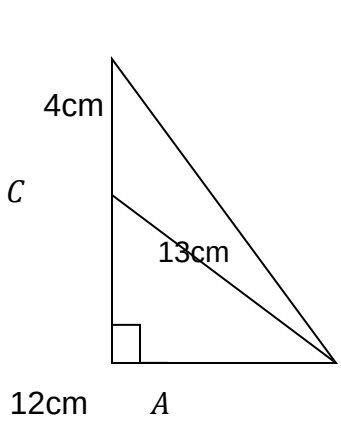
Q. 1 a. Factorize: $(2x+3y)^2 - 5(2x+3y) - 14$. **[3]**

b. Solve for x: $\frac{2x+1}{3x-2} = \frac{9}{10}$. **[3]**

c. If 56 men can do a piece of work in 42 days. How many men will do it in 14 days? **[4]**

Q. 2 **a.** In an examination,40 boys secured the following marks:
8,11,20,37,40,15,29,31,27,8,7,13,1,29,25,42,37,30,10,9,27,18,
25,9,2,17,47,32,11,29,6,15,41,37,10,40,21,39,13,15.
Represent the data in the form of frequency distribution table by taking class intervals 0-10,10-20,……,40-50. **[3]**

b. In the given figure, the length of AB=12cm, CD=4cm,AC =13cm.If ∠ABD is 90^0 , find the length of AD.



[3]

c. The diagonals of a rectangle ABCD intersects at O. If ∟BOC=68^0, find ∠ODA. **[4]**

Q 3 **a** Find the amount on ₹12,000 for 2 years at 10% per annum compounded annually. **[3]**

b Construct a rectangle ABCD,if each diagonal is 8cm and angle between them is 60^0. **[3]**

c A and B can do a piece of work in 12 days, B and C in 15 days, C and A in 20 days. How many days will be required to finish the work if: **[4]**

i. A works alone

ii. B works alone

iii. C works alone

iv. A, B and C work together

Q 4 **a** 17 cards numbered 1,2,3,….,17 are put in a box and mixed thoroughly. One person draws a card from the box. Find the probability that the number on the card is:

(i) a prime .

(ii) divisible by 3.

(iii) divisible by 3 and 2 both. **[3]**

b Show that : $\left(\frac{x^a}{x^b}\right)^c \times \left(\frac{x^b}{x^c}\right)^a \times \left(\frac{x^c}{x^a}\right)^b = 1.$ **[3]**

c Let U={x:x Є N ,x<50},A={x:x^2 Є U},B={x:x =n^2,n Є N} and C={x:x is a factor of 36}.List the elements of each of the sets A,B and C. Also, State whether thestatement n(A)< n(C) is true or false. **[4]**

SECTION B
(Answer any four Questions from this Section)

Q 5 **a** Ram Singh buys a refrigerator for ₹ 4,000 on credit. The rate of interest for the first year is 5% and of the second year is 15%. How much will it cost him if he pays the amount after two years? **[3]**

b Find x: $\left(\frac{2}{9}\right)^3 \times \left(\frac{2}{9}\right)^{-6} = \left(\frac{2}{9}\right)^{2x-1}$ **[3]**

c The denominator of a fraction is 9 more than its numerator. If the numerator and the denominator both are increased by 7, the new fraction becomes$\frac{7}{10}$. Find the original fraction. **[4]**

Q 6 **a** If U={0,1,2,3,4,5,6,7,8,9,10}, A={0,1,3,5,7,9,10}, B={2,4,5,7}

Find

(i) A-B (ii) A U B (iii) $(B - A)'$ **[3]**

b In $\Delta ABC, \angle B = 90^0$ and D is the midpoint of BC.

Prove that $AC^2=AD^2+3CD^2$. **[3]**

c Factorize the following :

(i) $x^2 – y+xy-x$

(ii) $x^2 –a^2+4a-4$ **[4]**

Q 7 **a** Express as a positive power of 3

$$\frac{(9)^{-1} \times (27)^{-2} \times (3)^0}{(81)^{-2} \times (3)^6}$$ **[3]**

b The percentage of marks obtained by a student in different subjects are given below:

Subject	**Hindi**	**Science**	**English**	**Mathematics**
Percentage of marks obtained	35	60	15	75

Draw a bar graph to represent the above data. **[3]**

c 15 boys earn ₹900 in 5 days, how much will 20 boys earn in 7 days? **[4]**

Q 8 **a** After 12 years I shall be 3 times as old as I was 4 years ago. Find my present age. **[3]**

b The result declared by a school was as under :

Passes in First division	**Passes in Second Division**	**Passed in Third Division**	**Failed**
25%	45%	20%	10%

Represent the above data by pie chart. **[3]**

c Two unbiased coins are tossed simultaneously. Find the probability of getting :

i. two heads.

ii. atleast one head.

iii. atmost one head.

iv. no head. **[4]**

Q 9 **a** Construct a rhombus PQRS where diagonal PR=6.6cm and diagonal QS=5.0cm. **[3]**

b Find the compound interest on ₹1,25,000 at 12% per annum for $1\frac{1}{2}$years, compounded half-yearly. **[3]**

c One of the diagonals of a rhombus is equal to one of its sides. Find the angles of the rhombus. **[4]**

Q 10 **a** Factorize : $14x^2 - 23x + 8$ **[3]**

b Construct a parallelogram ABCD, AB=3.6cm, BC=5.4cm and $\angle ABC = 60^0$. **[3]**

c A ladder 50dm long is placed so as to reach a window 48dm high and on turning the ladder over to the other side of the street, it reaches a point 14dm high. Find the breadth of the street. **[4]**

Q 11 **a** Maria invested ₹93,750 at 9.6% per annum for 3 years and the interest is compounded annually. Calculate the amount standing to her credit at the end of the second year. **[3]**

b Draw a Venn diagram to show the relationship between two overlapping sets A and B. Now shade the region representing.

(i) $A \cap B$

(ii) $A \cup B$

(iii) $B - A$ **[3]**

c In a parallelogram ABCD, X and Y are point on diagonal BD such that DX=BY. Prove that AXCY is a parallelogram. **[4]**

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