

TERM - 1 EXAMINATION (SEPTEMBER 2017-2018)

SUBJECT - IX

CLASS - MATHEMATICS

TIME: 3 Hrs.

INSTRUCTIONS:-

M.M. 80

- 1) All questions are compulsory.
- 2) There are 28 questions in all divided into sections. Marks are written along with each section.
- 3) Draw neat figures using geometrical instruments only wherever necessary.
- 4) Use of calculators is not allowed.

SECTION A

(1 MARK EACH)

1. Write two different irrational numbers between  $\frac{5}{7}$  and  $\frac{9}{11}$
2. Find the zero of the polynomial:-  
 $P(x) = ax + d$ .
3. In which quadrant or axis do the following points lie?  
i)  $(-3, -5)$                       ii)  $(0, -6)$
4. Write the equivalent version of Euclid's fifth postulate.

SECTION B

(2 MARKS)

5. Prove the angle sum property of a triangle
6. The following observation have been arranged in ascending order. If the median of the data is 63. Find  $x$  29, 32, 48, 50,  $x$ ,  $x+2$ , 72, 78, 84, 95
7. If a point C lies between two points A & B such that  $AC=BC$ , then prove that  $AC = \frac{1}{2}AB$ . Explain by drawing figure.
8. Calculate  $(28)^3 + (-15)^3 + (-13)^3$  by using suitable identity.
9. Factorise:  $4x^2 + y^2 + z^2 - 4xy - 2yz - 4xz$
10. Find the value of  $k$  if  $x-1$  is a factor of  $p(x)$  :  $p(x) = \frac{kx^2}{kn^2} - \sqrt{2}x + 1$

SECTION C

(3 MARKS)

11. Express  $0.2\overline{35}$  in the form of  $p/q$  where  $p$  &  $q$  are integers &  $q \neq 0$ .

12. Rationalise the denominator and simplify:-

$$\frac{4+\sqrt{5}}{4-\sqrt{5}} + \frac{4-\sqrt{5}}{4+\sqrt{5}}$$

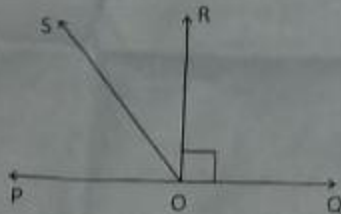
13. Give the geometric representations of  $2x+9=0$  as an equation

- a) in one variable                      b) in two variable

(No graph is required in this ques)

14. In the fig. POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP & OR. Prove that

$$\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$$



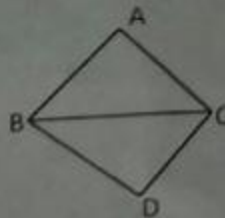
15. line  $l$  is the bisector of an angle  $\angle A$  and  $B$  is any point on  $l$ .  $BP$  &  $BQ$  are perpendiculars from  $B$  to the arms of  $\angle A$ . Show that

- i)  $\triangle APB \cong \triangle AQB$                       ii)  $BP = BQ$

16. Construct a frequency distribution table of the following data for heights of 50 students to the nearest cm. What can you conclude from the table?

154	161	150	154	165	168	151	162	150	151
156	162	154	171	165	158	154	172	160	170
166	155	150	161	170	162	153	163	165	164
160	154	152	153	156	158	162	161	173	166
158	161	159	162	167	168	159	153	154	153

17. ABC & DBC are two isosceles triangles on the same base BC. Show that  $\angle ABD = \angle ACD$ .

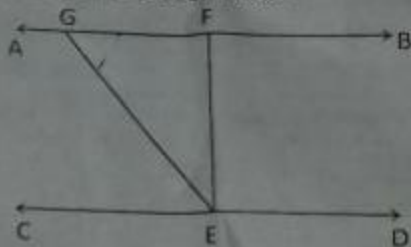


18. The taxi fare in a city is as follows: For the first km, the fare is ₹ 8 & for subsequent distance it is ₹ 5 per Km. Taking the distance covered as x Km, & fare is ₹ y. Write a linear equation & draw its graph.

SECTION-D

(4 MARKS)

19. Factorise:  $x^3 + 13x^2 + 32x + 20$
20. Factorise:  $27p^3 - \frac{1}{216} - \frac{9}{2}p^2 + \frac{1}{4}p$
21. In fig. if  $AB \parallel CD$ ,  $EF \perp CD$  &  $\angle GED = 126^\circ$ . Find  $\angle AGE$ ,  $\angle GEF$ , &  $\angle FGE$ . State the reasons also.



23. List the points (x, y) given in the following table on the plane, choosing suitable units of distance on the axes. (use graph paper)

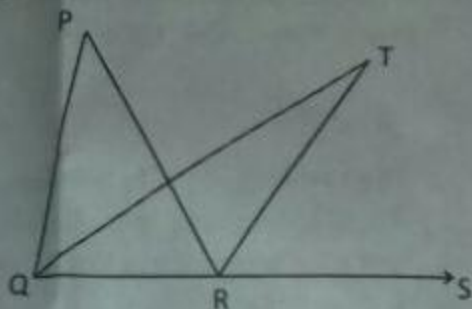
x	-2	1	0	1	3	6
y	8	7	2	-3	-1	0

Answer the following questions:-

- i) What are the co-ordinates of origin
- ii) What is the distance of a point P (6, 3) from the X-axis.

24. The side QR of  $\Delta PQR$  is produced to a point S. If the Bisectors of  $\angle PQR$  &  $\angle PRS$  meet at point T. then prove that

$$\angle QTR = \frac{1}{2} \angle QPR$$



25.  $\Delta ABC$  is an isosceles  $\Delta$  in which  $AB = AC$ . Side BA is produced to D such that  $AD = AB$ . Show that  $\angle BCD$  is a right angle.
26. AB & CD are respectively the smallest and longest sides of a quadrilateral ABCD. Show that  $\angle A > \angle C$  &  $\angle B > \angle D$  (draw fig yourself)
27. Represent  $\sqrt{5}$  on the number line. (graph not required)

28. The following table given the distribution of students of two sections according to the marks obtained by them:-

Section A	
Marks	Frequency
0-10	3
10-20	9
20-30	17
30-40	12
40-50	9

Section B	
Marks	Frequency
0-10	5
10-20	19
20-30	15
30-40	10
40-50	1

Represent the above data on the same graph by two frequency polygrams. Also compare the performance of the two section from the two polygrams.

Expand the following :

$$\left[ \frac{1}{4}a - \frac{1}{2}b + 9c \right]^2$$