QUARTERLY EXAMINATION, 2022. | Reg. No.

VIII – MATHS

Time : 2.30 Hrs.   Maximum Marks : 100

PART – A

I   **Choose the correct answer**   (14×1=14)

1. Which of the following rational numbers is the greatest?
   a) $\frac{-17}{24}$ b) $\frac{-13}{16}$ c) $\frac{7}{-8}$ d) $\frac{-31}{32}$

2. Closure property is not true for division of rational numbers because of the number   a) 1   b) -1   c) 0   d) 1/2

3. The longest chord of a circle is _____
   a) radius   b) diameter   c) arc   d) circumference

4. A cube has _____ faces
   a) 5   b) 6   c) 7   d) 8

5. The cross section of a solid cylinder is _____
   a) circle   b) diameter   c) cone   d) cylinder

6. The product of $7P^2$ and $(2P^2)^2$ is
   a) $14P^{12}$ b) $28P^7$ c) $9P^7$ d) $11P^{12}$

7. If the area of a square is $36x^4y^2$ then, its sides is _____
   a) $6x^4y^2$ b) $8x^2y^2$ c) $6x^2y$ d) $-6x^2y$

8. If the area of a rectangular land is (a^2-b^2) sq.units whose breadth is $(a - b)$ then, its length is _____
   a) $a - b$ b) $a + b$ c) $a^2 - b^2$ d) $(a + b)^2$

9. When 60 is subtracted from 60% of a number to give 60, the number is
   a) 60   b) 100   c) 150   d) 200

10. Loss or gain percentage is always calculated on the _____
    a) Cost price   b) Selling price   c) Discount   d) Marked price

11. The number of conversion periods in a year, if the interest on a principal is compounded every two months is _____
    a) 2   b) 4   c) 6   d) 12

12. Two similar triangles will always have _____ angles
    a) acute   b) obtuse   c) right   d) matching

13. The hypotenuse of a right angled triangle of sides 12cm and 16cm is _____
    a) 28cm   b) 20cm   c) 24cm   d) 21cm

14. How many 2 digit numbers contain the number 7?
    a) 10   b) 18   c) 19   d) 20

PART – B

(10×2=20)
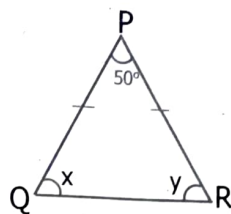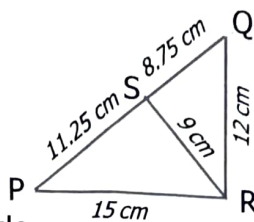
II   *Answer any 10 questions.*

15. Find atleast two rational numbers between $\frac{-3}{4}$ and $\frac{-2}{5}$

16. Find the square root of 324 by prime factorisation.

17. Show that 1944 is not a perfect cube.

18. **Fill in the blanks.**
    i) Length of the arc = _____
    ii) Area of the sector = _____

19. The radius of a sector is 21cm and its central angle is 120°. Find the length of the arc.

20. Verify Euler's formula for a polyhedron having 10 faces, 6 vertices and 12 edges.

21. Find the product of the terms $3x^2y$, $-3xy^3$, x^2y^2

22. Divide : $27y^3$ by $3y$

23. Simplify : $\frac{3m^2}{m} + \frac{2m^4}{m^3}$

24. 48 is 32% of which number?

25. If the selling price of 10 rulers is the same as the cost price of 15 rulers, then find the profit percentage.

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26. Find the difference in C.I. and S.I. for P = 5,000, r = 4%p.a., n = 2 years.

27. Prove that $\triangle PQR \sim \triangle PRS$ in the given figure.

28. Can a right triangle have sides that measure 5cm, 12cm and 13cm?

29. Find the unknown side in the given triangle.

PART - C

III. Answer any 10 Questions.   **(10×5=50)**

30. Write the following rational numbers in ascending and descending order.

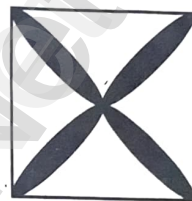$$\frac{-3}{5}, \quad \frac{7}{-10}, \quad \frac{-15}{20}, \quad \frac{14}{-30}, \quad \frac{-8}{15}$$

31. Find the square root of 11025 by long division method.

32. a) Simplify. $\dfrac{9^2 \times 7^3 \times 2^5}{84^3}$

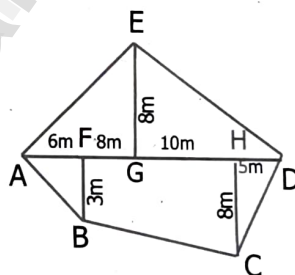   b) Find x so that $(-7)^{x+2} \times (-7)^5 = (-7)^{10}$

33. A circle of radius 120m is divided into 8 equal sectors. Find the length of the arc of each of the sectors.

34. Find the area of the shaded region in the square of side 10cm as given in the figure.

10 cm

35. Find the area of the irregular polygon shaped fields given below.

36. If $l = 4pq^2$, b = $-3p^2q$, h = $2p^3q^3$ then find the value of $l \times b \times h$

37. Multiply (2x + 5y) and (3x - 4y)

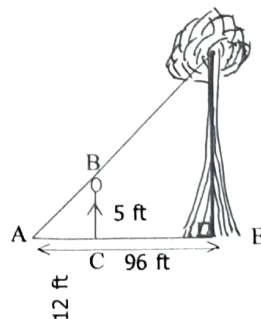38. Divide $5xy^2 - 18x^2y^3 + 6xy$ by 6xy

39. Find the quadrants without plotting the points on a graph sheet.
   i) (3, -4)   ii) (5, 7)   iii) (2, 0)   iv) (-3, -5)   v) (-7, 2)

40. The income of a person is increased by 10% and then decreased by 10%. Find the change in his income.

41. If selling an article for ₹820 causes 10% loss on the selling price, then find its cost price.

42. The value of a motor cycle 2 years ago was ₹70,000. It depreciates at the rate of 4% p.a. Find its present value.

43. The height of a man and his shadow form a triangle similar to that formed by a nearly tree and its shadow. What is the height of the tree?

44. A 20 - feet ladder leans against a wall at height of 16 feet from the ground. How far is the base of the ladder from the wall?

PART - D

IV. Answer the following questions.   **(2×8=16)**

45. Construct a Quadrilateral ABCD with AB = 5cm, BC = 4.5cm, CD = 3.8cm, DA = 4.4cm and AC =6.2cm. Also find its area.   **(OR)**
   Construct a trapezium BOAT in which $\overline{BO}$ is parallel to $\overline{TA}$, BO = 7cm, OA = 6cm, BA = 10cm and TA = 6cm. Also find its area.

46. Draw the graph of x =5   **(OR)**
   Draw the graph of y = 6.

VIII - Maths - 2

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Std-8-Maths-Quarterly Exam-2022 -Key

Part-A

1. (a) $-17/24$
2. (c) 0
3. (b) diameter
4. (b) 6
5. (a) circle
6. (b) $28p^7$
7. (c) $6x^2y$
8. (b) $a+b$
9. (d) 200
10. (a) cost price
11. (c) 6
12. (d) matching
13. (b) 20 cm
14. (b) 18

23) $\dfrac{3m^2}{m} + \dfrac{2m^4}{m^3}$

$= 3m + 2m$

$= 5m$

24) Let the number be x.

$48 = \dfrac{32}{100} \times x$
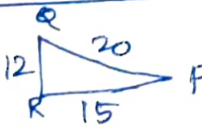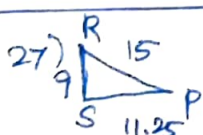
$\dfrac{48 \times 100}{32} = x$

$x = 150$

26) $C.I - S.I = P\left(\dfrac{r}{100}\right)^2$

$= 5000 \times \dfrac{4}{100} \times \dfrac{4}{100}$

$= 28$

27)

$\dfrac{PR}{PR} = \dfrac{20}{15} = \dfrac{4}{3}$; $\therefore \dfrac{PQ}{PR} = \dfrac{PR}{PS} = \dfrac{QR}{RS}$

$\dfrac{PR}{PS} = \dfrac{15}{11.25} = \dfrac{4}{3}$

$\dfrac{QR}{RS} = \dfrac{12}{9} = \dfrac{4}{3}$

$\therefore \dfrac{PQ}{PR} = \dfrac{PR}{PS} = \dfrac{QR}{RS}$

Part-B

15) $\dfrac{-3}{4} = \dfrac{-3}{4} \times \dfrac{5}{5} = \dfrac{-15}{20}$

$\dfrac{-2}{5} = \dfrac{-2}{5} \times \dfrac{4}{4} = \dfrac{-8}{20}$

Any 2 :- $\dfrac{-9}{20}, \dfrac{-10}{20}, \dots \dfrac{-14}{20}$

16)
```
2 | 324
2 | 162
9 |  81
  |   9
```
$\therefore \sqrt{324}$

$= \sqrt{2 \times 2 \times 9 \times 9}$

$= 2 \times 9$

$= 18$

17)
```
2 | 1944
2 |  972
2 |  486
3 |  243
3 |   81
3 |   27
3 |    9
  |    3
```
3 has not a triplet 1944 so not a cube.

18) (i) L·A $= \dfrac{\theta}{360} \times 2\pi r$

(ii) A·S $= \dfrac{\theta}{360} \times \pi r^2$

19) $r = 21$ cm $\theta = 120°$

L·A $= \dfrac{120}{360} \times 2 \times \dfrac{22}{7} \times 21$

$= 44$ cm

20) Euler's formula

$F + V - E = 2$

LHS: $10 + 6 - 12 = 16 - 12 = 4$

$\neq 2 = $ RHS

$\therefore$ Not satisfied.

21) product $= 3xy^2 \times -3x^2y^3 \times xy^2$

$= -9x^5y^6$

22) $\dfrac{27y^3}{3y} = 9y^2$

25) S.p of 10 ruler $= ₹. x$

S.p of 1 ruler $= ₹. \dfrac{x}{10}$

C.p of 15 ruler $= ₹. x$

C.p of 1 ruler $= ₹. \dfrac{x}{15}$

$\therefore$ profit % $= \dfrac{\text{profit}}{C·P} \times 100$

$= \dfrac{S·P - C·P}{C·P} \times 100$

$= \dfrac{\dfrac{x}{10} - \dfrac{x}{15}}{\dfrac{x}{15}} \times 100$

$= \dfrac{5x}{150} \times \dfrac{15}{x} \times 100$

$= 50\%$

28) $5^2 + 12^2 = 25 + 144$

$= 169 = 13^2$

Yes.

29) $12 = 4$ $\therefore x + x + 50 = 180$

$2x = 130$

$x = 65°$

Part-C

30) LCM = 60

$\dfrac{-3}{5} = \dfrac{-3}{5} \times \dfrac{12}{12} = \dfrac{-36}{60}$

$\dfrac{7}{-10} = \dfrac{7}{-10} \times \dfrac{6}{6} = \dfrac{-42}{60}$

$\dfrac{-15}{20} = \dfrac{-15}{20} \times \dfrac{3}{3} = \dfrac{-45}{60}$

$\dfrac{14}{-30} = \dfrac{-14}{30} \times \dfrac{2}{2} = \dfrac{-28}{60}$

$\dfrac{-8}{15} = \dfrac{-8}{15} \times \dfrac{4}{4} = \dfrac{-32}{60}$

AS: $\dfrac{-15}{20}, \dfrac{7}{-10}, \dfrac{-3}{5}, \dfrac{-8}{15}, \dfrac{14}{-30}$

DS: $\dfrac{14}{-30}, \dfrac{-8}{15}, \dfrac{-3}{5}, \dfrac{7}{-10}, \dfrac{-15}{20}$

31)

```
        1 0 5
   1 | 1 10 25
       1
  205|  10 25
        10 25
        (  0  )
           0
```

$\therefore \sqrt{11025} = 105$

32) a) $\dfrac{9^2 \times 7^3 \times 2^5}{84^3}$

$= \dfrac{3^2 \times 3^2 \times 7^3 \times 2^5}{7^3 \times 4^3 \times 3^6}$

$= \dfrac{3}{2}$

b) $(-7)^{2+2} \times (-7)^5 = (-7)^{10}$

$(-7)^{2+7} = (-7)^{10}$

$2 + 7 = 10$

$x = 3$

33) $\theta = \dfrac{360}{8} = 45°$

$r = 120\,m$

Length of arc $= \dfrac{\theta}{360} \times 2\pi r$

$LA = \dfrac{45}{360} \times 2 \times \dfrac{22}{7} \times 120$

$= 94.28\,m^2$

34) $a = 10\,Cm$

Shaded part area $= \dfrac{4}{7}a^2$

$= \dfrac{4}{7} \times 10 \times 10$

$= 57.14\,Cm^2$

35)

Area FBCH $= \dfrac{1}{2}(18)(11) = 99$

Area $\triangle DHC = \dfrac{1}{2} \times 8 \times 5 = 20$

Area $\triangle EGA = \dfrac{1}{2} \times 8 \times 14 = 56$

Area of $\triangle BFA = \dfrac{1}{2} \times 3 \times 6 = 9$

Area of $\triangle EGD = \dfrac{1}{2} \times 8 \times 15 = 60$

Total area $= 99 + 20 + 60 + 56 + 9$

$= 244\,m^2$

36)

$l \times b \times h = 4pq^2 x \times -3p^2q \times 2p^3q^3$

$= -24p^6q^6$

37) $(2x + 5y)(3x - 4y)$

$= 6x^2 - 8xy + 15xy - 20y^2$

$= 6x^2 + 7xy - 20y^2$

38) $\dfrac{5xy^2 - 18x^2y^3 + 6xy}{6xy}$

$= \dfrac{5y}{6} - 3xy^2 + 1$

39) (i) $(3, -4) \rightarrow$ IV

(ii) $(5, 7) \rightarrow$ I

(iii) $(2, 0) \rightarrow$ x-axis

(iv) $(-3, -5) \rightarrow$ III

(v) $(-7, 2) \rightarrow$ II

40) Let his income $= ₹.100$

After 10% increase is

$100 + 100 \times \dfrac{10}{100} = ₹.110$

Now, 10% decrease in

$110 - 110 \times \dfrac{10}{100} = 110 - 11 = 99.$

41) $SP = CP \times \dfrac{100 - loss\%}{100}$

$820 = CP \times \dfrac{100 - 10}{100}$

$820 = CP \times \dfrac{90}{100}$

$CP = \dfrac{820 \times 100}{90}$

$CP = 911$

42) Depreciated

Price value $= P\left(1 - \dfrac{r}{100}\right)^n$

$= 7000\left(1 - \dfrac{4}{100}\right)^2$

$= 7000 \times \dfrac{96}{100} \times \dfrac{96}{100}$

$= ₹.64512$

43) $\triangle ABC \sim \triangle ADE$

$\therefore \dfrac{AC}{AE} = \dfrac{BC}{DE}$

$\dfrac{12}{96} = \dfrac{5}{h}$

$h = \dfrac{5 \times 96}{12} = 40\,ft$

44) $20^2 = 16^2 + x^2$

$400 = 256 + x^2$

$x^2 = 400 - 256$

$x^2 = 144 = 12^2$

$x = 12\,ft.$

Part-D

45) Rough diagram.
Fair diagram
Construction.
Area.

46) Scale, table
Axes
line