PT4/ANNUAL EXAMINATION, 2023-24
MATHEMATICS

Time – 3 hrs.   **Class – VIII**   **M.M. – 80**

Name of the student _____ *Section* _____ *Date - 10.02.2024 (Saturday)*

GENERAL INSTRUCTIONS -

- SECTION A consists of **3** Questions.Question1 with **10** sub-parts. Question 2 with **5** sub-parts. Question 3 with **5** sub-parts. Each sub-parts carry **1** mark. Attempt **all** the questions.
- SECTION B consists of **5** Questions (**Q4-Q8**) of **2** marks each. Attempt **all** the questions.
- SECTION C consists of **7** Questions (**Q9-Q15**) of **4** marks each. Attempt **any 5** questions.
- SECTION D consists of **8** Questions (**Q16-Q23**) of **5** marks each. Attempt **any 6** questions.
- Draw neat diagrams wherever needed.
- Show the required calculations in fair.

SECTION A
(Attempt all questions)

Q1. **Choose the correct option for the following questions:**   **(10x1=10)**

(i) The ratio of speed of cycle 12 km per hour to the speed of scooter 36 km per hour is

   A) 1:2   B) 1:3   C) 1:4   D) None of these

(ii) You buy a house for Rs 40,00,000 and pay a tax of 8%. How much is tax?

   A) Rs. 3,20,000   B) Rs. 36,80,000   C) Rs. 43,20,000   D) Rs. 8,00,000

(iii) $(a – b)^2$ is equal to:

   A) $a^2 + b^2 – 2ab$ B) $a^2 + b^2 + 2ab$ C) $a^2 + b^2$ D) $2ab$

(iv) The scale of a map is given as 1:30000. Two cities are 4 cm apart on the map. The actual distance between them is:

   A) 120000 km   B) 12000 km   C) 1.2 km   D) 12 km

(v) Value of $\left(\dfrac{1}{2}\right)^{-5}$ is

   A) $\dfrac{1}{10}$ B) $\dfrac{1}{32}$ C) 32   D) 10

(vi) What is the surface area of a cube with a side 4cm?

   A) 46 cm^2 B) 96 cm^2 C) 48 cm^2 D) 92 cm^2

(vii) The formula for the curved surface area of a right circular cylinder is :

   A) πrh B) πr^2 C) $\pi r^2 h$ D) $2\pi rh$

(viii) If x and y are inversely proportional, then

   A) $x + y = $ constant   B) $x – y = $ constant   C) $xy = $ constant   D) $\dfrac{x}{y} = $ constant

(ix) 1 litre is equal to how many cubic centimetres?

   A) 10 cu.cm   B) 100 cu.cm   C) 1000 cu.cm   ssD) 10000 cu.cm

(x) The factorisation of $12a^2b + 15ab^2$ gives:

   A) 3ab(4ab+5)   B) 3ab(4a+5b)   C) 3a(4a+5b)   D) 3b(4a + 5b)

Q2.   Fill in the blanks: **(5x1=5)**

(i)   When speed remains constant, the distance travelled is _____ proportional to time.

(ii)   If the thickness of a pile of 12 sheets is 45mm, then the thickness of the pile of 240 sheets will be _____.

(iii)   The value of $4x (8x - 5) + 4$ for $x = 2$ is_____.

(iv)   The volume of a rectangular box with length $2x$ units, breadth $3y$ units and height $3z$ units is _____cubic units.

(v)   The area of a square of side $2x$ is _____.

Q3.   Match the following.   **(5x1=5)**

	Column I			Column II
A	Pictograph	(i)		Pie chart
B	The graph with a fixed gap between two bars.	(ii)		Double bar graph.
C	Sum of the central angles is 360° in this diagram.	(iii)		a graphical representation of information that changes continuously over a period of time.
D	Line graph	(iv)		Bar graph
E	Bar graph showing two sets of data simultaneously. It is useful for comparison of the data.	(v)		All symbols must be same and of uniform size. But part of a symbol can also be used.

SECTION - B
(Attempt all questions) (5×2=10)

Q4.   A die is thrown once. Find the probability of getting a number greater than 4.

Q5.   Add: $8x^2 + 7xy - 6y^2$, $4x^2 - 3xy + 2y^2$ and $-4x^2 + xy - y^2$

Q6.   If the lengths of the diagonals of a rhombus are 16 cm and 12 cm, find its area.

Q7.   Find the value of $(4^0 + 4^{-1}) \times 2^2$

Q8.   If 15 men can do a work in 12 days, how many men will do the same work in 6 days?

SECTION - C
(Attempt any five questions) (5×4=20)

Q9.   The number of students in a hostel, speaking different languages is given below. Display the data in a pie chart.

Language	Hindi	English	Marathi	Tamil	Bengali	Total
No. of students	40	12	9	7	4	72

Q10.   Arun bought a new pair of skates at a sale where the discount given was 20%. If the amount Arun pays is ₹ 1,600, find out the marked price.

Q11.   The area of a trapezium is 34 cm^2 and the length of one of the parallel sides is 10 cm and its height is 4 cm. Find the length of the other parallel side.

Q12.   Express in standard form:

(i) 0.00000000837   (ii) 31860000000

Q13.   A car travels 14 km in 25 minutes. Find out how far the car can travel in 5 hours if the speed remains the same?

Q14.   Factorise: $x^2 + 6x - 16$

Q15. A courier-person cycles from a town to a neighbouring suburban area to deliver a parcel to a merchant. His distance from the town at different times is shown by the following graph.
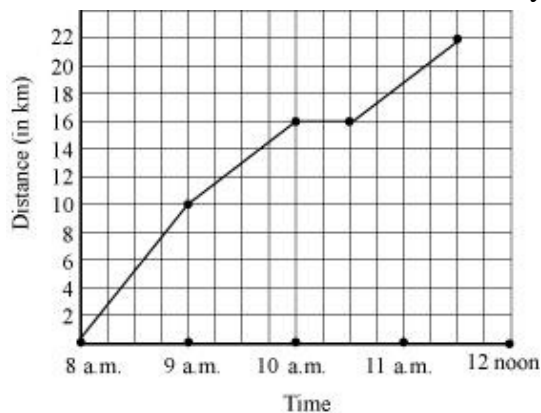
(a) What is the scale taken for the time axis?

(b) How much time did the person take for the travel?

(c) How far is the place of the merchant from the town?

(d) Did the person stop on his way? Explain.

SECTION - D

(Attempt any six questions) (6×5=30)

Q16. Solve: $(4x^2 - 100) \div 6(x + 5)$

Q17. A bank gives 10% Simple Interest (S.I.) on deposits by senior citizens. Draw a graph to illustrate the relation between the sum deposited and simple interest earned. Find from your graph

(a) the annual interest obtainable for an investment of Rs.250.

(b) the investment one has to make to get an annual simple interest of Rs. 70.

Q18 A 5m 60cm high vertical pole casts a shadow which is 3m 20cm long. Find at the same time

(i) length of the shadow cast by a different pole which is 10m 50cm high.

(ii) height of a pole which casts a shadow 5m long.

Q19. Calculate the value of x in the following equation:

$$\left(\frac{11}{9}\right)^3 \times \left(\frac{9}{11}\right)^6 = \left(\frac{11}{9}\right)^{2x-1}$$

Q20. A milk tank is in the form of a cylinder whose radius is 1.5 m and length is 7 m. Find the quantity of milk in litres that can be stored in the tank.

Q21. Simplify : $(a^2 + 5)(b^3 + 3) + 5$

Q22. The adjoining pie chart gives the marks scored in an examination by a student in Hindi, English, Mathematics, Social Science and Science. If the total marks obtained by the students were 540, answer the following questions.

(i) In which subject did the student score 105 marks?

(ii) How many more marks were obtained by the student in Mathematics than in Hindi?

(iii) Examine whether the sum of the marks obtained in Social Science and Mathematics is more than that in Science and Hindi

Q23. In a certain laboratory, the bacteria count in a particular experiment increased at 2.5% per hour. Find the bacteria at the end of exactly 2 hours if the count was initially 5,06,000.