Delhi Public School, Howrah

Final Examination (2024-25)

Class-VIII

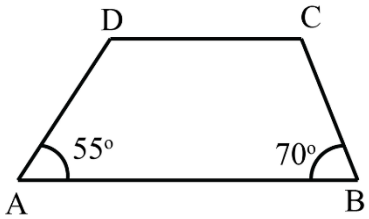
Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence

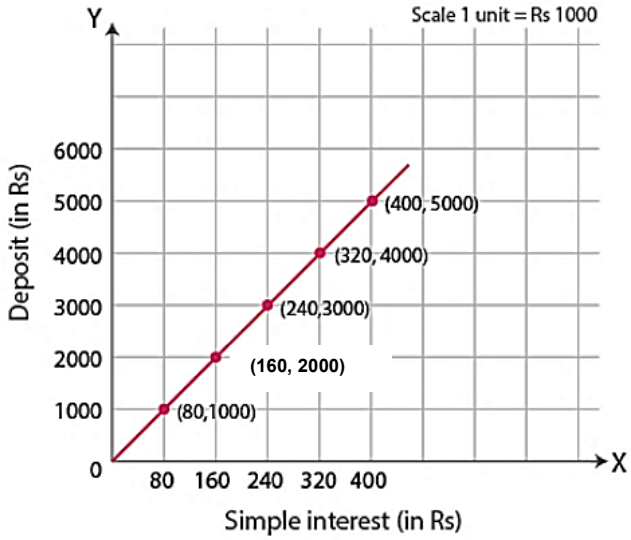
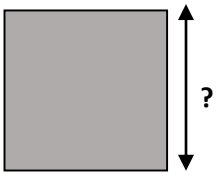
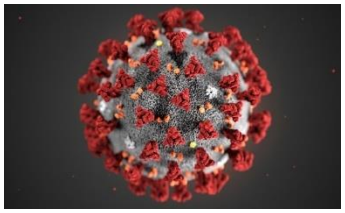
Subject: - Mathematics

Time: 3 Hours **Maximum Marks: 80**

General Instructions:

1. This Question Paper has five sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 2 marks each.
4. Section C has 6 questions carrying 3 marks each.
5. Section D has 4 questions carrying 5 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All questions are compulsory. However, an internal choice in 2 questions of 2 marks, 2 questions of 3 marks and 2 questions in 5 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.

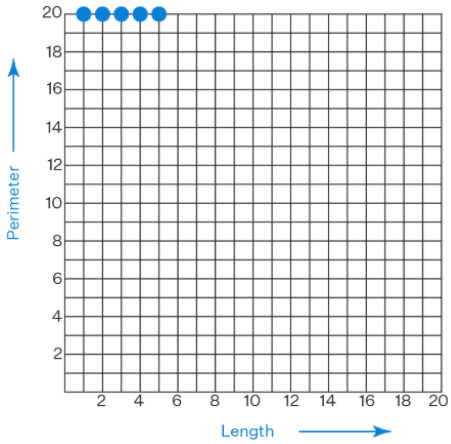
	SECTION A	
	Section A consists of 20 questions of 1 mark each	
	DIRECTION: In question numbers 1 to 16, there are four choices (a), (b), (c) and (d) out of which **ONLY ONE** is correct.	
1.	If two quantities p and q vary inversely with each other, then (a) $p + q$ remains constant (b) $p - q$ remains constant (c) $p \times q$ remains constant (d) $\frac{p}{q}$ remains constant	1
2.	Which subtraction(s) is correct? Subtraction I: $5p^2q - 3pq^2 = 2p^2q^2$ Subtraction II: $x^3 - x^2 = x$ (a) Only I (b) Only II (c) Both I and II (d) None of these.	1
3.	Suppose for the principal P, rate $R\%$ per annum and time $T(> 1\ year)$, the simple interest is S and compound interest is C. Then which of the following is correct? (a) $C > S$ (b) $C = S$ (c) $C < S$ (d) Can't be determined.	1
4.	Fill in the blank box with the correct number: $(\mathbf{27})^{-\mathbf{12}} = (\mathbf{3})^{\square}$ (a) -36 (b) -48 (c) -27 (d) -9	1
5.	In the given trapezium ABCD, the $\angle D$ is  (a) $110°$ (b) $105°$ (c) $125°$ (d) $55°$	1

6.	The following graph shows interest on deposits for a year.  Use the graph to find the interest on ₹ 2500 for a year. (a) ₹ 160 (b) ₹ 200 (c) ₹ 240 (d) ₹ 220	1
7.	If the area of a square is given by the expression $(a^2 + 8ab + 16b^2)$ sq. unit, then the side of the square will be  (a) $(a + 4b)$ unit (b) $(4a + b)$ unit (c) $(a + 8b)$ unit (d) $(a + 2b)$ unit	1
8.	The volume of a cube whose edge is 3 cm is (a) 27 cm^2 (b) 9 cm^3 (c) 9 cm^2 (d) 27 cm^3	1
9	x is in direct proportion with y. If x is 72 and the constant of proportion is 12, then the value of y is (a) 864 (b) 6 (c) 12 (d) 108	1
10.	The lateral surface area of a cuboid whose length, breadth and height are 11 cm, 8 cm and 5 cm respectively is (a) 19 cm^3 (b) 190 cm^2 (c) 366 cm^3 (d) 366 cm^2	1
11.	A microbiologist, was working in her lab on an experiment to study the structure of the coronavirus. After several tests, she determined that the average size of the virus was 0.000014 cm. Write the size of in standard form.  (a) 1.4×10^{-6} cm (b) 1.4×10^{-5} cm (c) 14×10^{-7} cm (d) 0.14×10^{-8} cm	1
12.	For a fixed point on the graph paper, the x-coordinate is 2 and the y-coordinate is 1, then the point can be written as (a) (2,1) (b) (1,2) (c) (0,1) (d) Insufficient information given.	1
13.	The answer of the following multiplication shown below is a trinomial. $\boldsymbol{3l^4m^5 \times (Unknown\ polynomial)}$ The unknown polynomial will be a (a) Monomial (b) Binomial (c) Trinomial (d) Insufficient information given.	1
14.	The common factor of $2x^2y^2z$ and $-4x^2y$ is (a) $2x^2y^2$ (b) $-2x^2y$ (c) $2x^2y^2z$ (d) $2x^2y$	1

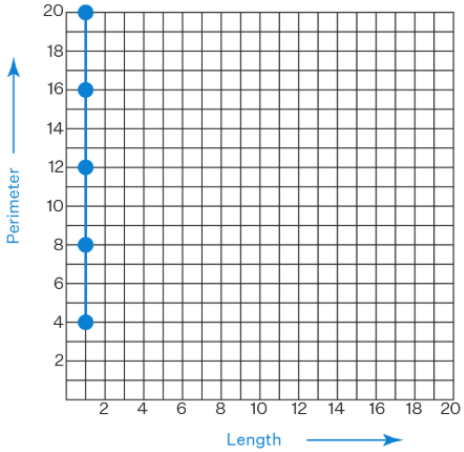
15. Which graph of the following represent the table below? 1

Length of side of a square (in meter)	1	2	3	4	5
Perimeter (in meter)	4	8	12	16	20

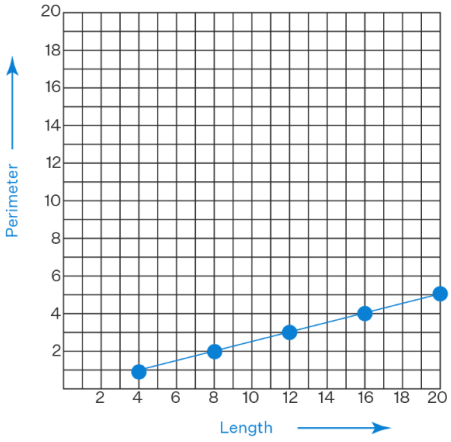
(a)



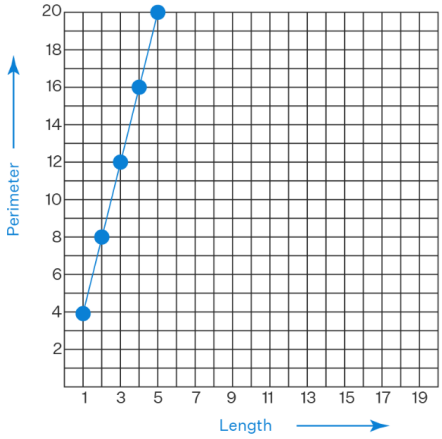
(b)



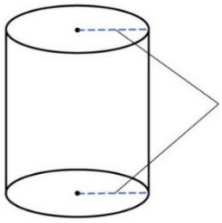
(c)



(d)



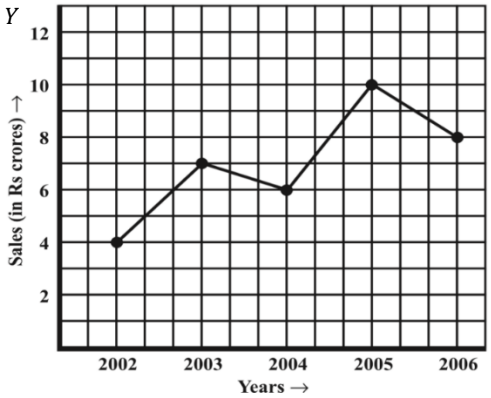
16. The height of a right circular cylinder whose volume is 462 m^3 is 1



(a) 1.2 meter (b) 12 meter (c) 25 meter (d) 15 meter

DIRECTION: Choose the correct answer/s.

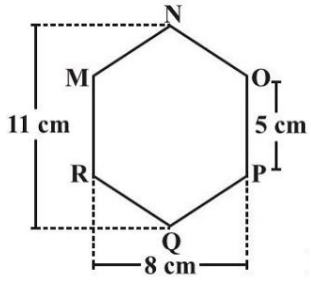
17. The following line graph shows the yearly sales figure for a manufacturing company: 1

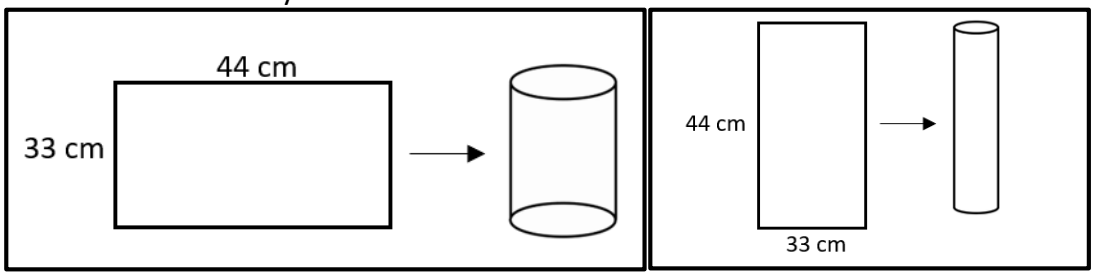


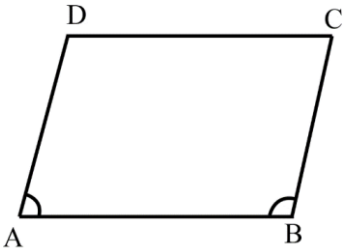
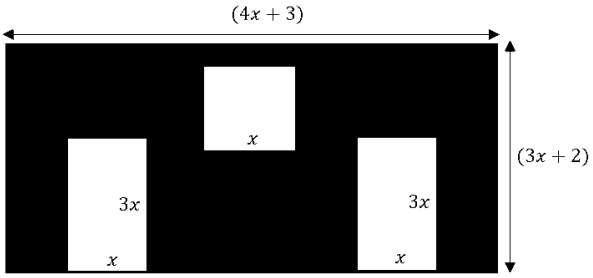
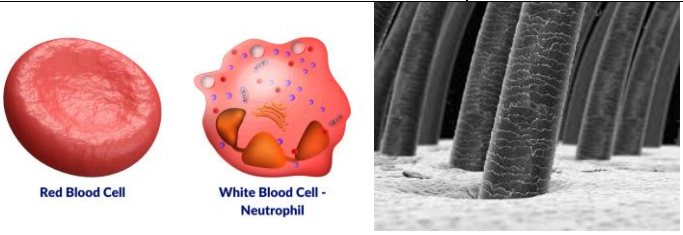
In which year(s) does the sales show a downward trend?

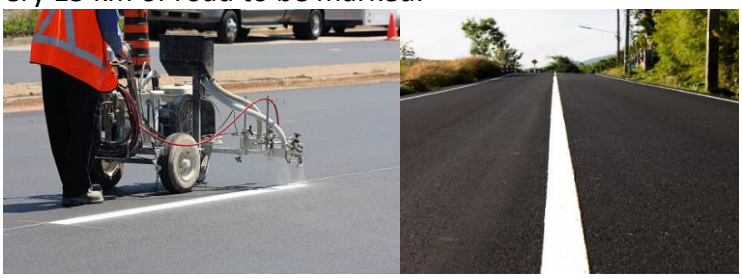
(a) 2002—2003 (b) 2004—2005

(c) 2003—2004 (d) 2005—2006

18.	Which of the following is same as $\frac{9^2}{5^4}$ (a) $\left(\frac{3}{5}\right)^4$ (b) $3^4 \times (5)^{-4}$ (c) $\frac{1}{(3)^{-4}\times 5^4}$ (d) $\left(\frac{5}{3}\right)^{-4}$	1
	DIRECTION: In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.	
19.	**Assertion(A):** Out of 50 students in a class 30 are girls and the ratio of the number of boys to the number of girls is 2 : 3 **Reason(R):** Ratio is a term that is used to compare two or more numbers. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
20.	**Assertion(A):** Length of the diagonal of a rectangle whose sides are 10 cm and 24 cm is 34 cm. **Reason(R):** If l be the length of the rectangle and b be the breadth of the rectangle, then the diagonal $d = \sqrt{l^2 + b^2}$. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
	SECTION B	
	Section B consists of 5 questions of 2 marks each	
21.	**(a)** Salim bought an article for ₹ 784 which included GST of 12%. What is the price of the article before GST was added? **OR** **(b)** A wireless earbud was sold for ₹ 1056 after allowing a discount of 12%. Find the marked price of the earbud.	2
22.	If the weight of 12 pages of a textbook is 40 grams, how many pages would weigh $2\frac{1}{2}$ kilograms?	2
23.	Divide: $x^2y^2(4x^2 - 9y^2)$ by $xy(2x + 3y)$.	2
24.	How many sides does a regular polygon have if each of its interior angles is $175°$?	2
25.	**(a)** There is regular hexagon MNOPQR with side 5 cm. Find the area of the hexagon.  **OR** **(b)** The area of a trapezium is 105 cm^2. If one of the parallel sides is 28 cm and the distance between the parallel sides is 5 cm, find the length of the other parallel side.	2
	SECTION C	
	Section C consists of 6 questions of 3 marks each	
26.	**(a)** Find the value of x, if: $(-3)^{18} \times \left(-\frac{1}{3}\right)^7 \div \left(-\frac{1}{3}\right)^{-8} = \left(-\frac{1}{3}\right)^{-2x+1}$ **OR** (b) Simplify: $\frac{(9^{-2})^2\times(25^2)^{-3}\times(t^{-3})^2}{(3^{-2})^5\times(5^3)^{-2}\times(t^{-4})^3}$	3
27.	Factorise: $(a - b)^4 - b^4$.	3

28.	**(a)** Add the product of $2p^2q^2$ and $\left(\frac{-3}{4}p^3q\right)$ to the product of $(-5p^4q)$ and (pq^2) **OR** **(b)** The expression $(2x-3)$ cm represents the length of the locker. The breadth of the locker is 5 cm and the height is 2 cm longer than its length.  (i) Write an expression for the height of the locker. (ii) Find the volume of the locker.	3
29.	**(a)** Evaluate: $12p^3q^2r(9x^2-24xy+16y^2) \div 3pqr(9x^2-16y^2)$ **OR** **(b)** A teacher has a basket of apples that she wants to distribute equally among her students. The total number of apples is given by $(x^2+7x+12)$. If each student receives $(x+3)$ apples, how many students are there?	3
30.	In an army camp, the supplies were carefully stocked to ensure all the cadets would have enough resources. There is sufficient food for 120 cadets for 24 days. Now, answer the following questions from the given data.  (i) If 48 cadets leave the camp, how long would the food last? (ii) If the same quantity of food last for 20 days, then how many cadets are there in the camp?	3
31.	Simplify: $(2x+3)(3x-2)-(x-4)(2x+1)$	3
	SECTION D	
	Section D consists of 4 questions of 5 marks each	
32.	**(a)** A rectangular sheet of paper can be transformed into the right circular cylinder in two different ways, i.e. either by rolling the paper along its length or along its breadth. Find the ratio of the volumes of the two cylinders thus formed.  **OR** **(b)** The dimensions of an encyclopaedia are 24 cm × 12 cm × 6 cm. It is to be covered with a plastic sheet. If each encyclopaedia requires 170 cm^2 of extra sheet for folding, how much plastic sheet is required to wrap 50 such encyclopaedias? What will be the total cost of wrapping 50 books at the rate of ₹20 per cm^2.  	5
33.	The population of a town grew to 60,500 in 2010 at an annual growth rate of 10%. (i) Find the population of the town in 2008. (ii) What would be its population in 2012?	5

34.	ABCD is a parallelogram where AB $= 25$ cm, BC $= 16$ cm, CD $= (3x + 1)$ cm and DA $= 4y$ cm. Also $\angle A = (5z + 10)°$ and $\angle B = 110°$. Find the values of x, y and z. Find $\angle C$ and $\angle D$.  	5
35.	Temperature at different intervals of time of a liquid was observed as shown in the table below. **Time (in min)** | 0 | 4 | 8 | 12 | 16 | 18 | 20 **Temperature (in °C)** | 10 | 30 | 50 | 70 | 90 | 100 | 100 Draw a temperature-time graph. Use the graph to answer the following questions: (i) What is the temperature of liquid at 10 minutes? (ii) After how many minutes the temperature is 80°C?	5
	SECTION E	
	Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.	
36.	A manufacturer shows the model of wall of a house with one square window and two doors. The dimension of the wall is $(4x + 3)$ unit and $(3x + 2)$ unit. The figure shows the dimensions of a wall having a square window of side x unit and two identical doors of length $3x$ unit and width x unit.  Based on the given informations answer the following questions.	
	(i) What will be the area of the wall (including the doors and the window)?	1
	(ii) What will be the area of each door?	1
	(iii) (a) If the wall needs to be painted, write an algebraic expression for the area of the wall to be painted. **OR** **(b)** Find the ratio of the area of the wall to the area of the window if the value of $x = 2$.	2
37.	During a project work a student is accumulating data about the measure of certain things related to our health as shown in the table. Diameter of RBC (red blood cells) | 10^{-4} meter Diameter of WBC (white blood cells) | 10^{-5} meter Thickness of the human hair | 7.5×10^{-6} meter  Based on the given data answer the following questions.	
	(i) Express the diameter of RBC and WBC in usual form.	1
	(ii) Between RBC and WBC, whose diameter is smaller?	1

	(iii) **(a)** Find the sum of the diameter of RBC and the thickness of the human hair? Express the answer in standard form. **OR** **(b)** Find the difference between the thickness of human hair and the diameter of WBC. Express the answer in standard form.	2
38.	The highway department was planning to repaint the road. To complete the task efficiently, they decided to use a specialized machine designed for painting the road lines. It requires 300 litres of paint for every 15 km of road to be marked.  Based on the given data answer the following questions.	
	(i) If x represents the amount of paint and y represents the distance to be marked by the machine, then x and y is in which proportion?	1
	(ii) What is the value of the constant of proportion for the given consideration?	1
	(iii) **(a)** How many litres of paint would be needed to mark 200 km of the road? **OR** **(b)** What length of the road could be marked with 75 litres of paint?	2