No. of printed pages : 11

ANNUAL EXAMINATION (2024-25)

Class- VII

Subject- Mathematics

Set C1/C2

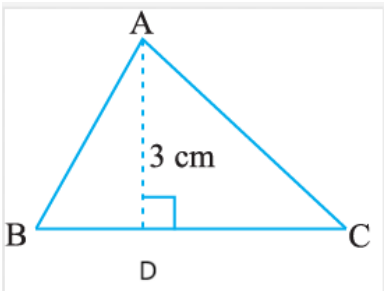
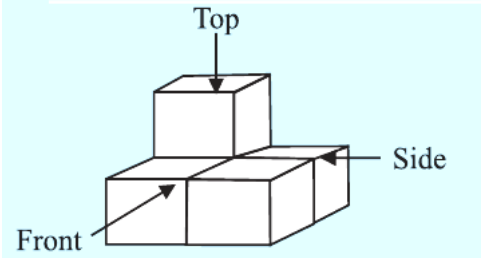
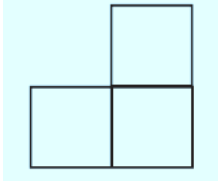
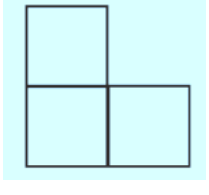
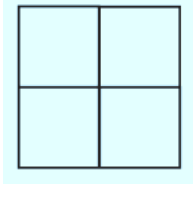
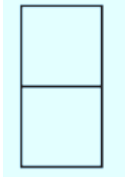
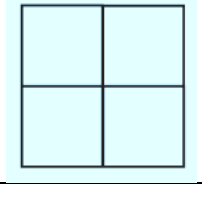
Solution set with marking key

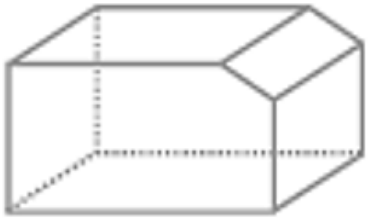
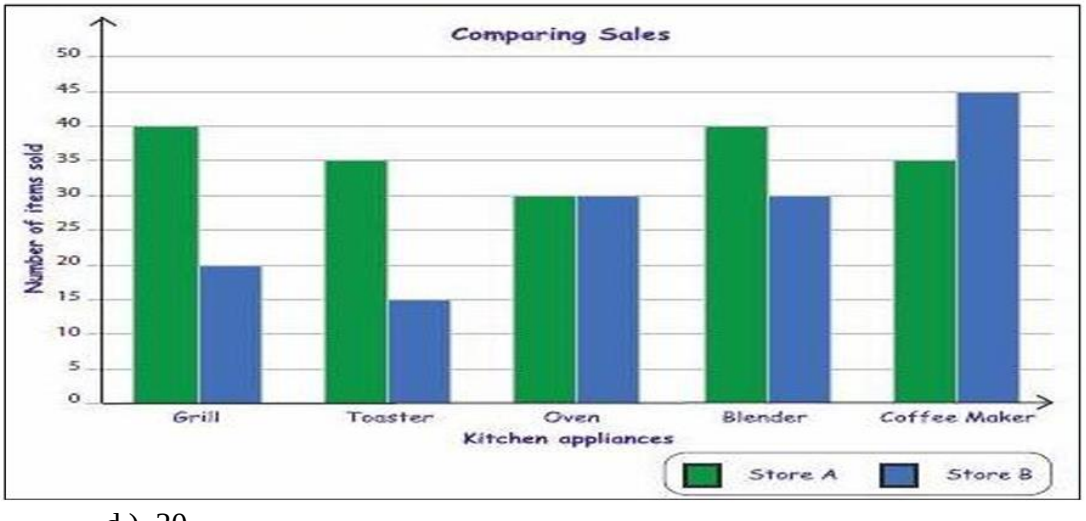
Duration: $2\frac{1}{2}$ hours **Maximum Marks: 60**

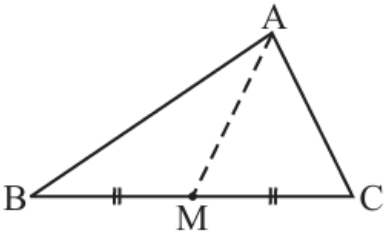
GENERAL INSTRUCTIONS: Read the following instructions carefully and follow them:

(i) This question paper contains 16 questions. All questions are compulsory.
(ii) Question paper is divided into FIVE sections – Section A, B, C, D and E.
(iii) In section A – question number 1 have multiple choice questions (MCQs) of 1 mark each.
(iv) In section B – question number 2 to 7 are Objective type questions of 2 marks each.
(v) In section C – question number 8 to 10 are Short Answer (SA) type questions carrying 3 marks each.
(vi) In section D – question number 11 to 13 are Long Answer (LA) type questions carrying 5 marks each.
(vii) In section E – question number 14 to 16 are source based/case study questions carrying 4 marks each. Internal choice is provided in 2 marks question in each source based/case study question.
(viii) There is no overall choice. However, an internal choice has been provided in 1 question in Section B, 2 question in Section C and 2 questions in Section D.

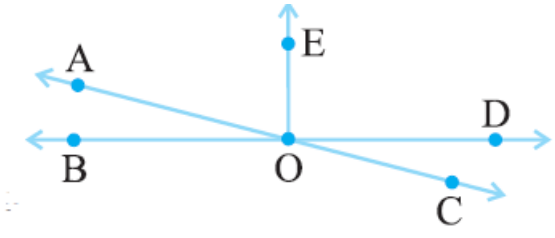
C1	C2	SECTION A	Marks
1.	1.	QUESTION 1 [(i) –(xii)]	
i)	ii)	In a sale ,the price of shirt decreased from Rs 80 to Rs 60. The percentage increase/decrease is $a)\ 33\frac{1}{3}\ \%\ increase \quad b)\ 33\frac{1}{3}\ \%\ decrease \quad c)\ 25\%\ increase \quad d)\ 25\%\ decrease$ Ans : $d)\ 25\%\ decrease$	1
ii)	iii)	The usual form of is 1.001×10^9 $a)\ 100100000 \quad b)\ 1001000000 \quad c)\ 10010000 \quad d)\ 1001000$ Ans : $b)\ 1001000000$	1
iii)	iv)	The polygon that has only rotational symmetry is a) Square b) Rectangle c) Parallelogram d) quadrilateral Ans : c) Parallelogram	1

iv)	v)	If the area of the triangle ABC is 36 cm^2 and the height AD is 3 cm, the length of BC is  a) 24 cm b) 48 cm c) 36 cm d) 40 cm Ans : a) 24 cm	1
v)	vi)	The points P, Q, R, S, T, U and V on the number line are such that, $US = SV = VR$, and $WT = TP = PQ$. The rational number represented by U  a) $-\frac{4}{5}$ b) $\frac{4}{5}$ c) $-\frac{2}{5}$ d) $-\frac{1}{5}$ Ans : a) $-\frac{4}{5}$ SET 2 The points P, Q, R, S, T, U and V on the number line are such that, $US = SV = VR$, and $WT = TP = PQ$. The rational number represented by W  a) $\frac{4}{5}$ b) $\frac{4}{5}$ c) $\frac{2}{5}$ d) $\frac{1}{5}$ Ans : d) $\frac{1}{5}$	1
vi)	vii)	The picture that describes the top view in the given figure is  a)  b)  c)  d)  Ans : c) 	1

vii)	viii	The value of $0.5 \div 0.25$ is a) 2 b) 0.2 c) 0.02 d) 20 Ans: a) 2	1
viii	ix)	The value of $3 \times (-18) + (3) \times 8$ is a) -78 b) -30 c) 30 d) 78 Ans : b) -30	1
ix)	x)	The number of faces in the given shape is a) 6 b) 7 c) 8 d) 5 Ans : b) 7 	
x)	xi)	Identify the monomial from the given expression a) $2x + 3y$ b) $3x + 5x + y$ c) $4x + 5y + 6z$ d) $3x + 5x + 2x$ Ans : d) $3x + 5x + 2x$	1
xi)	xii)	The statement "The sum of three times x and 5 is 13" in the form of equation is $a)\ 3x + 5 = 13$ $b)\ 3x - 5 = 13$ $c)\ 3x + 5 = 10$ $d)\ x + 15 = 13$ Ans : $a)\ 3x + 5 = 13$	1
xii)	i)	Mr. Peter owns two kitchen appliances stores. He compares the sales and recorded the information in the form of a double bar graph. Use the graph to answer the following questions.  What is the difference on the sales of blenders between Store A and Store B? a) 40 b) 10 c) 70 d) 30 Ans : b) 10	1
		SECTION B	
2	3	Add 37 to three times a number, you will get 247. Find the number. Ans : *let the number be* x $3x + 37 = 247 \Rightarrow 3x = 247 - 37 = 210$ $\Rightarrow x = \frac{210}{3} = 70$	2

3	4	In a class of 56 students, $\frac{3}{14}$ selected for poster making and the rest are selected for dramatics. Find the number of students in each activity. Ans : Total students in the class = 56 Students for poster making = $\frac{3}{14} \times 56 = 3 \times 4 = 12$. Students for dramatics = $56 - 12 = 48$.	2
4	5	Find the value of $2\frac{1}{5} - \left(-\frac{1}{3}\right)$. Ans : $2\frac{1}{5} - \left(-\frac{1}{3}\right) = \frac{11}{5} + \frac{1}{3} = \frac{33+5}{15} = \frac{38}{15} = 2\frac{8}{15}$.	2
5	6	Find the amount to be paid at the end of 3 years if principal is Rs 7,500 at 5% p.a. Ans : $S.I = \frac{PRT}{100} = \frac{7500 \times 5 \times 3}{100} =$ 75 x 5 × 3 = Rs 1125 $Amount = P + S.I. = 7500 + 1125 = Rs\ 8625$	2
6	7	ABC is a triangle right angled at C. If AB = 25 cm and AC = 7 cm, find BC. Ans : $Given\ lengths\ AB = 25, AC = 7$ $By\ Pythagoras\ theorem,$ $AB^2 = AC^2 + BC^2$ $Substitute\ AB = 25, AC = 7, we\ get$ $25^2 = 7^2 + BC^2 \Rightarrow 625 = 49 + BC^2$ $\Rightarrow 625 - 49 = 576 = 24^2$ $\Rightarrow BC = 24\ cm$ OR Given AM is a median of a triangle ABC. Is AB + BC + CA > 2 AM?  Ans : consider Δ ABM, ⇒ AB + BM > AM ….. [equation 1] Triangle Δ ACM ⇒ AC + CM > AM … [equation 2] By adding equation [1] and [2], we get, AB + BM + AC + CM > AM + AM From the figure we can observe that, BC = BM + CM Therefore, AB + BC + AC > 2 AM Hence, the given expression is true.	2
7	2	Observe the given figure and answer the following a) What is the order of rotation in the given figure. b) Does the figure have reflectional symmetry with respect to a vertical mirror.  Ans : a) 2 b) No	2

		SECTION C	
8	10	The diameter of a wheel of car is 70 cm. How many revolutions wheel it makes to cover 99km? OR PQRS is a parallelogram . QM is the height from Q to SR and QN is the height from Q to PS. If SR = 12 cm and QM = 7.6 cm. Find the area of the parallelogram PQRS. Also find QN, if PS = 8 cm Ans : i) diameter = 70 cm , r = 35 cm Distance covered in one round = $2\pi r = 2 \times \frac{22}{7} \times 35 = 220\ cm$ Number of revolution = $\frac{total\ distance}{dist\ covered\ in\ 1\ round} = \frac{99 \times 1000}{220} = 450\ times$ OR SR = 12 cm and QM = 7.6 cm. Area of parallelogram PQRS = Base × Height $= SR \times QM = 12\ cm \times 7.6\ cm = 91.2\ cm^2$ (b) Base = PS = 8 cm Area of the parallelogram = 91.2 cm^2 $Area\ of\ parallelogram\ PQRS = B \times Ht$ $91.2\ cm^2 = 8\ cm \times QN$ $QN = 91.2\ /\ 8\ cm \Rightarrow QN = 11.4\ cm$	3
9	9	Simplify using laws of exponents : $\frac{3^5 \times 10^5}{5^5 \times 6^5}$ Ans: $\frac{3^5 \times 10^5}{5^5 \times 6^5} = \frac{3^5 \times (2\times5)^5}{5^5 \times (2\times3)^5} = \frac{3^5 \times 2^5 \times 5^5}{5^5 \times 2^5 \times 3^5}$ $= 2^{5-5} \times 3^{5-5} \times 5^{5-5} = 2^0 \times 3^0 \times 5^0 = 1 \times 1 \times 1 = 1$	3
10	8	Sale of English and Hindi books in the years 1995, 1996, 1997 and 1998 are given below : **Years** | **1995** | **1996** | **1997** | **1998** **English** | 350 | 400 | 450 | 620 **Hindi** | 500 | 525 | 600 | 650 Draw a double bar graph by choosing a suitable scale. OR The ages in years of 11 teachers of a school are : 32, 41, 28, 35, 41, 22, 23, 33, 38, 40 , 41 i) Find the mean age of these teachers. ii) Find the mode. iii) Find the median. Ans : scale = 50 or 100 Drawing of graph OR	3

		i) Mean = $sum\ /\ no\ of\ observation\ = \left(\frac{374}{11}\right) = 34$ ii) Mode = 41 iii) Array : 22 , 23 , 28 , 32 , 33 , 35 , 38 , 40 , 41, 41,41 N= 11 , $\frac{n+1}{2}$ obs = 12/2 = 6^{th} observation = 35	
		SECTION D	
11		In the adjoining figure $OE \perp BD$, in each part name a pair of angles as directed.  a) Name a pair of obtuse vertically opposite angles b) Name two pairs of unequal supplementary angles c) Name a pair of adjacent complementary angles d) Name a pair of equal supplementary angles Ans . a) A pair of Obtuse vertically opposite angles is $\angle AOD\ , \angle BOC$ b) Unequal supplementary angles is $(\angle AOB, \angle AOD)\ and\ (\angle BOC, \angle COD)$ c) Adjacent complementary angles is $\angle AOB, \angle AOE$ d) Equal supplementary angles is $\angle EOB, \angle EOD$	1 2 1 1
12	11	i) Add : $4xy - 2yz + 7zx\ , -3xy + 5yz - 8zx\ , -2zx - 6xy$ ii) find the value of $2\ a^2 + ab + 3$ when $a\ = 5\ and\ b\ = -3$ Ans. i) $4xy - 2yz + 7zx$ $-3xy + 5yz - 8zx$ $-6xy \qquad - 2zx$ $-5xy + 3yz - 3zx$ ii) The value of the expression when a=5 and b= -3 is $2 \times 25 + 5 \times (-3) + 3 = 50 - 15 + 3 = 38.$ OR	3+2

		i) Subtract : $5a^2 - 7ab + 5b^2$ from $3ab - 2a^2 - 2b^2$. ii) Find the value of $-4x^2y^2 + 6xy + 8x + 12y - 1$ when $x = -2, y = -1$. Ans i) $3ab - 2a^2 - 2b^2 - (5a^2 - 7ab + 5b^2)$ $= 3ab - 2a^2 - 2b^2 - 5a^2 + 7ab - 5b^2$ $= -7a^2 + 10ab - 7b^2$ ii) $-4x^2y^2 + 6xy + 8x + 12y - 1$ at $x = -2$, $y = -1$. $= -4 \times (-2)^2 \times (-1)^2 + 6(-2) \times (-1) + 8 \times (-2) + 12 \times (-1) - 1$ $= -16 + 12 - 16 - 12 - 1 = -33.$	
13	13	Suppose we represent the distance above the ground by a positive integer and that below the ground by a negative integer. An elevator descends into a mine shaft at the rate of 6 metre per minute. i) If it begins to descend from 20 m above the ground, what will be its position after 30 minutes? ii) If the elevator is at 360 metre above the ground level , in how much time will it reach the ground. Ans : speed = 6 metre per minute i) Distance covered in 30 minutes = $6 \times 30 = 180m$ down As descends starts from 20 m above Position after 30 minutes $= +20 - 180 = -160$ = 160 m below the ground. ii) Total dist = 360 m , dist in 1 min = 6 min Time taken = 360/6= 60 minutes = 1 hr OR In a class test (+ 5) marks are given for every correct answer and (–3) marks are given for every incorrect answer and no marks for not attempting any question. (i) Sumit scored 30 marks. If he has got 12 correct answers, how many questions has he attempted incorrectly? (ii) Mohit has got 4 correct answers and 8 incorrect answers. What is Mohit total score? Ans : Marks are given for every correct answer = 5 Marks are given for every incorrect answer = -3 (i) Total score of sumit = 30 Score for 12 correct answers = $12 \times 5 = 60$ Score for incorrect answers = $30 - 60 = -30$ Therefore, questions has he attempted incorrectly = $\frac{-30}{-3} = 10\ questions.$ (ii) Score for 4 correct answers = $4 \times 5 = 20$ Score for 8 incorrect answers = $8 \times (-3) = -24$ Total score of Mohit = $20 - 24 = -4$ marks	3+2

(SET 2)

Suppose we represent the distance above the ground by a positive integer and that below the ground by a negative integer. An elevator descends into a mine shaft at the rate of 6 metre per minute.

i) If it begins to descend from 30 m above the ground, what will be its position after 30 minutes?

ii) If the elevator is at 270 metre above the ground level , in how much time will it reach the ground.

Ans : speed = 6 metre per minute

i) Distance covered in 30 minutes = $6 \times 30 = 180m$ down

As descends starts from 30 m above Position after 30 minutes

$= +30 - 180 = -150$ = 150 m below the ground.

ii) Total dist = 270 m , dist in 1 min = 6 min

Time taken = 270/6 = 45 minutes

OR

In a class test (+ 5) marks are given for every correct answer and (–2) marks are given for every incorrect answer and no marks for not attempting any question.

i) Sumit scored 30 marks. If he has got 10 correct answers, how many questions has he attempted incorrectly?

ii) Mohit has got 4 correct answers and 8 incorrect answers. What is Mohit total score?

Ans :

Marks are given for every correct answer = 5

Marks are given for every incorrect answer = -3

(i) Total score of sumit = 30

Score for 12 correct answers = $10 \times 5 = 50$

Score for incorrect answers = $30 - 50 = -20$

Therefore, questions has he attempted incorrectly = $\frac{-20}{-2} = 10\ questions.$

(ii) Score for 4 correct answers = $4 \times 5 = 20$

Score for 8 incorrect answers = $8\times (-2) = -16$

Total score of Mohit = $20 - 16 = 4$ marks

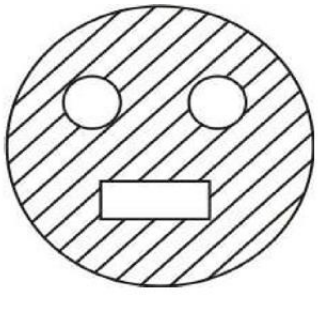
SECTION E

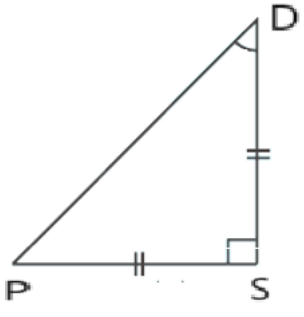
14

CASE STUDY 1

On the occasion of International Clown Day, the children of a society were encouraged to prepare a face for the clown by cutting a circular card sheet of radius 14 cm .

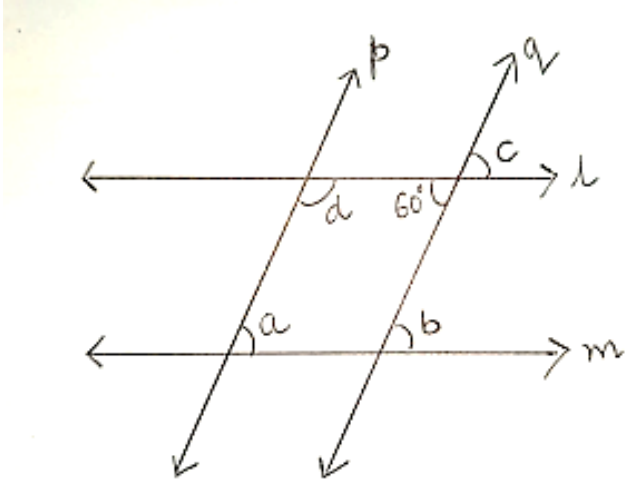
On this circle, two circles of radius 3.5 cm each and a rectangle of dimension $3\ cm \times 1\ cm$ is cut to make the eyes and mouth for the face of clown. Based on this given information answer the following question: $\left(Take\ \pi = \frac{22}{7}\right)$



		i) Find the area of the circular card sheet . ii) Find the perimeter of the rectangular mouth. iii)(a) Find the remaining area of circular sheet . OR iii)(b) If the clown is to be decorated with coloured tape along its boundary. Find the length of ribbon needed for the circular card sheet.Also,find the cost of ribbon at the rate of Rs 3.50 per metre . Ans : i) area of the circular card sheet = $\pi r^2 = \frac{22}{7} \times 14 \times 14 = 616 cm^2$. ii) perimeter of the rectangular mouth = $2(l + b) = 2 \times 4 = 8cm$. iii)(a) remaining area of circular sheet = 616 – (area of sheet removed) $= 616 - (38.5 + 38.5 + 3) = 616 - 80 = 536\ cm^2$ OR iii)(b)circumference of circle = $2\pi r = 88$ cost @ 3.50 = Rs 308	1 1 2
15		In a school , during a PT drill , a group of three students where asked to stand in an arrangement making DPS in form of a triangle as shown below  i) Name the type of triangle formed on basis of its sides . ii) Name the altitude/(s) in the given triangle. iii)(a)Find the measure of $\angle D$. OR iii)(b) If 2.5cm and 6cm are the sides of any triangle then between which two numbers can length of the third side fall? Ans : i) Isosceles triangle ii) DS and PS iii)(a) $\angle D = \frac{180-90}{2} = 45$ (stating the properties of triangle) OR iii)(b)The third side fall between $3.5\ cm < third\ side < 8.5\ cm$	1 1 2
16		A Railway Crossing is Located in Nagpur, Maharastra. It is called 'Diamond Crossing' because it is the Point where Indian Railway meets from North to South & from East to West.	

A student sees the railway crossing and thinks of angles made in between

Observe the given figure below , here $l \parallel m$ and $p \parallel q$.



On basis of above figure , answer the following

i) Find the measure of $\angle c$. 1

ii) Find the measure of $\angle b$. 1

iii)(a)Find the measure of $\angle a$ and $\angle d$. Also find their ratio. 2

OR

iii)(b) If measure of $\angle a = x$ and $\angle d = x + 20$, find the measure of x .

Ans : i) , $\angle c = 60°$ $(vertically\ opposite\ angles)$

ii) $l \parallel m$, $\angle b = \angle c = 60°$($alternate\ interior\ angles$)

iii)(a) here $l \parallel m$ and $p \parallel q$.

$60 + d = 180$($co\ interior\ angles$) $\Rightarrow d = 180 - 60 = 120°$

Also $a + d = 180$($co\ interior\ angles$) $\Rightarrow a = 180 - 120 = 60°$

Ratio of $a : d = 60 : 120 = 1 : 2$

iii)(b) $\angle a + \angle d = x + x + 20 = 180 \Rightarrow 2x = 160 \Rightarrow x = 80°$