CBSE EXAMINATION PAPER-2026

MATHEMATICS

(Solved)

Time allowed : 3 hours | Maximum Marks : 87

General Instructions :

Read the following instructions carefully and follow them :

i. This question paper contains **48 questions.** All questions are **compulsory.**

ii. This question paper is divided into **5 sections.**

iii. **Section A** – questions number **1 to 7** are case based questions

iv. **Section B** – questions number **8 to 27** are multiple choice questions

v. **Section C** – questions number **28 to 34** are very short answer

vi. **Section D** – questions number **35 to 42** are short answer

vii. **Section E** – questions number **43 to 48** are long answer

viii. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions.

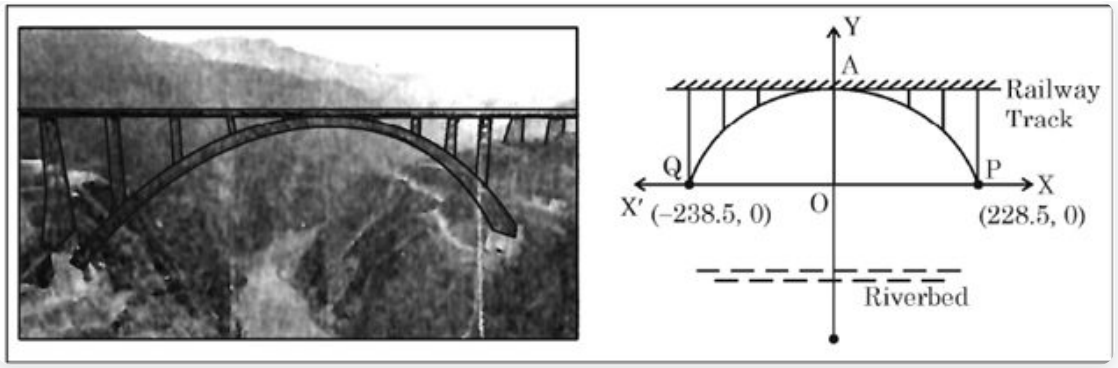
ix. Use of calculator is NOT allowed.

Section A

Question 1.

An arch of a railway bridge, built on Chenab riverbed, is shown in the above diagram. It is a parabolic arch connecting two hills at P and Q. If the parabolic curve is represented by the polynomial $p(x)=-0.0025x^2-0.025x+136$.

Observe the diagram and based on the above information, answer the following questions:



(1)

Write the co-ordinates of point A.

[1 Marks]

(2) Find the span of the arch.

[1 Marks]

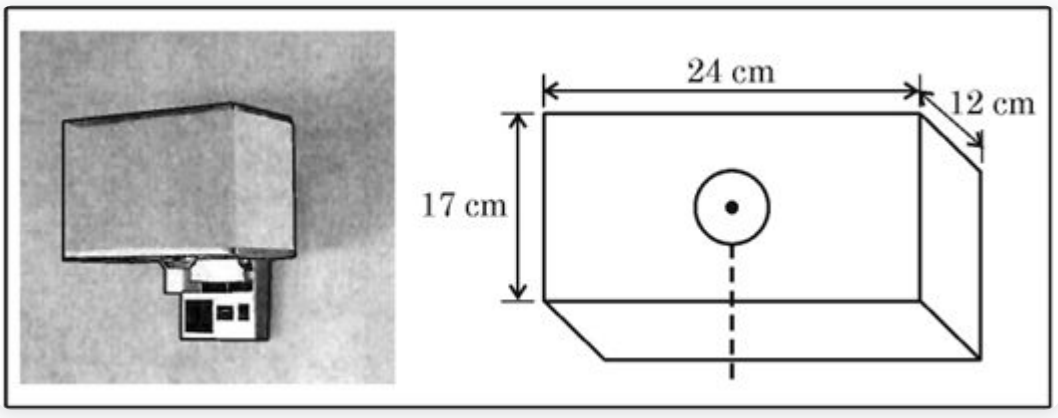
(3) Find the values of p(x) at x=100 and x=−100 . Are they same?

[1 Marks]

(4) Write the zeroes of the polynomial using the diagram and verify the relationship between sum of zeroes and polynomial.

[1 Marks]

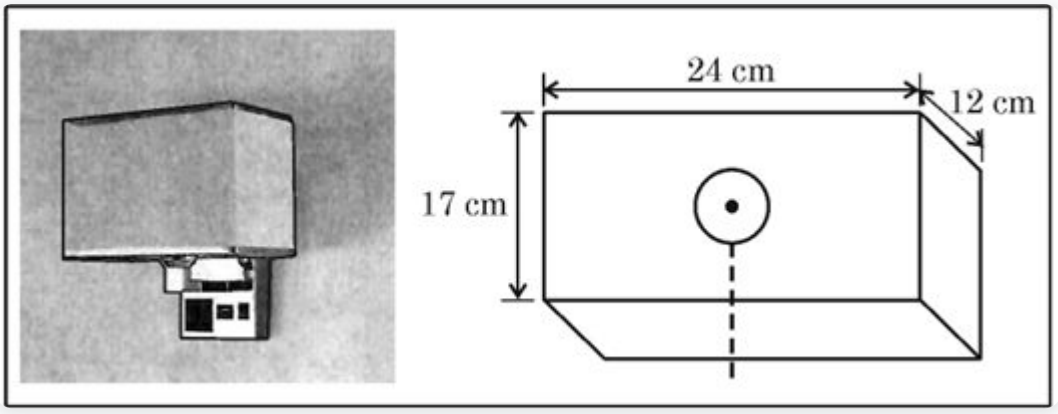
Question 2. A wall-mounted lamp, made of fabric, is shown below. The lamp has a cuboidal shape, open from the top and bottom. A spherical bulb of diameter 7 cm is latched with a very thin rod. (Ignore the rod while making calculations.) The dimensions of the cuboid are:24 cm×12 cm×17 cm



Question 3.

Question 4.

Question 5. A wall-mounted lamp, made of fabric, is shown below. The lamp has a cuboidal shape, open from the top and bottom. A spherical bulb of diameter 7 cm is latched with a very thin rod. (Ignore the rod while making calculations.) The dimensions of the cuboid are:24 cm×12 cm×17 cm



(1) Find the space available inside the lamp.

[1 Marks]

(2) Find the area of the fabric used if there is a fold of 2 cm on top and bottom edges.

[1 Marks]

(3) What could be the maximum diameter of the bulb if at least 1 cm space is left from each side?

[1 Marks]

(4) Find the surface area of the bulb.

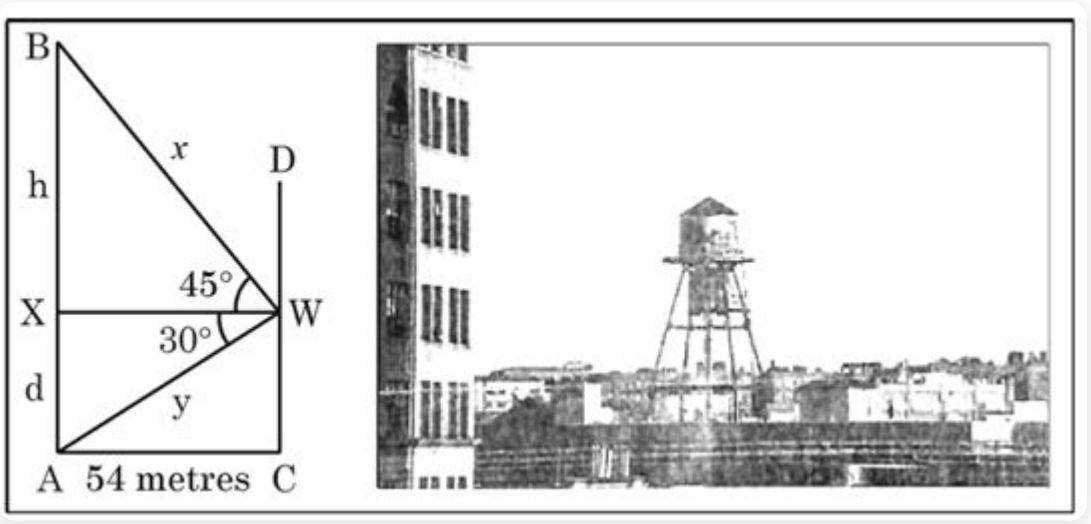
[1 Marks]

Question 6. levated water storage tanks are built to store and supply water to nearby colonies. In the diagram given above, AB is an elevated water tank and CD is a nearby multistorey building. The building is 54 metres away from the water tank. From a window (W) of the building, the angle of elevation of the top of the tank is 45° and the angle of depression of its foot is 30°.

Question 7.

Elevated water storage tanks are built to store and supply water to nearby colonies. In the diagram given above, AB is an elevated water tank and CD is a nearby multistorey building. The building is 54 metres away from the water tank.

From a window (W) of the building, the angle of elevation of the top of the tank is 45° and the angle of depression of its foot is 30°.



(1)

Write a relation between d (the height of window) and y

[1 Marks]

(2) Determine the height of the water tank.

[1 Marks]

(3) Determine the value of h

[1 Marks]

(4)

Find the value of x and height of the window above ground level.

[1 Marks]

Section B

Question 8.

The value of k for which the equation kx^2 — 6x — 4 = 0 has real and equal roots, is

[1 Marks]

(A) -2

(B) -9/4

(C) -4

(D) 9/4

Question 9.

The line segment joining the points P(—4, —2) and Q(10, 4) is divided by y-axis in the ratio

[1 Marks]

(A) 1:2

(B) 2:1

(C) 2:5

(D) 5:2

Question 10.

If the zeroes of a polynomial p(x) are —3 and 8, then p(x) equals

[1 Marks]

(A) $a(x^2+ 5x—24)$

(B) (x+3)(-x+8)

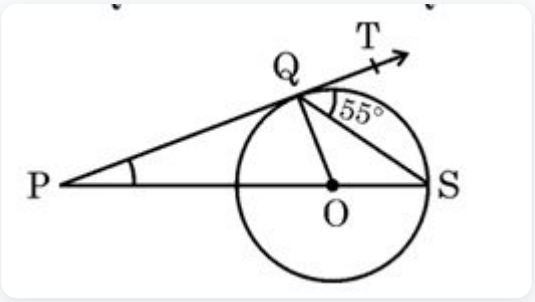
(C) $x^2+5x—4$

(D) x^2-24

Question 11.

n the given figure, PQ is tangent to the circle with centre O. S is a point on the circle such that ∠SQT = 55°. The measure of ∠QPS is

[1 Marks]



(A) 20°

(B) 35°

(C) 70°

(D) 55°

Question 12.

Devansh proved that ΔABC ~ ΔPQR using SAS similarity criteria. If he found ∠C = ∠R, then which of the following was proved true?

[1 Marks]

(A) BC/AC=PR/QR

(B) AC/BC=PR/QR

(C) AC/BC=PR/PQ

(D) AC/AB = PR/PQ

Question 13.

While calculating mean of a grouped frequency distribution, step deviation method was used)x-a/h=u). It was found that $\overline{x}$ = 64, h =5 and a = 62.5. The value of $\overline{u}$ is

[1 Marks]

(A) 0.5

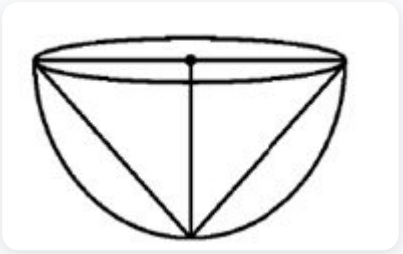
(B) 0.3

(C) 7.5

(D) 1.5

Question 14. A conical cavity of maximum volume is carved out from a wooden solid hemisphere of radius 10 cm. Curved surface area of the cavity carved out is (use π=3.14)

[1 Marks]



(A) $314\sqrt{2}$ cm^2

(B) 3140/3 cm^2

(C) 314 cm^2

(D) $3140\sqrt{2}$ cm^2

Question 15.

If a_n represents the n^{th} term of the A.P. -15/4,-10/4,-5/4,.... then the value of $a_{16}-a_{12}$ is

[1 Marks]

(A) 4

(B) 5/4

(C) 5

(D) 25/4

Question 16.

The value of p for which roots of the quadratic equation x^2 — px + 6 = 0 are rational, is

[1 Marks]

(A) -5

(B) 1

(C) $\sqrt{5}$

(D) 25

Question 17.

Which of the following can not be the probability of an event ?

[1 Marks]

(A) 39/100

(B) 0.001/20

(C) 10/0.2

(D) 10%

Question 18.

A card is drawn at random from a well shuffled deck of 52 playing cards.

The probability that it is either a ten or a king is

[1 Marks]

(A) 2/13

(B) 1/13

(C) 1/26

(D) 8/26

Question 19. A camping tent in hemispherical shape of radius 1.4 m, has a door opening of area 0.50 m^2. Outer surface area of the tent is

[1 Marks]

(A) 12.86 m^2.

(B) 11.78 m^2.

(C) 12.32 m^2.

(D) 11.82 m^2.

Question 20.

An arc of length 2.2 cm subtends an angle θ at the centre of the circle with radius 2.8 cm. The value of θ is

[1 Marks]

(A) 30°

(B) 60°

(C) 50°

(D) 45°

Question 21.

For an acute angle θ , if sin θ = 1/9 then value of 9 cosec θ+1 / 9cosec θ-1 is

[1 Marks]

(A) 0

(B) 80/81

(C) 1

(D) 82/80

Question 22. Meena calculates that the probability of her winning the first prize in a lottery is 0.08. If total 800 tickets were sold, the number of tickets bought by her, is

[1 Marks]

(A) 64

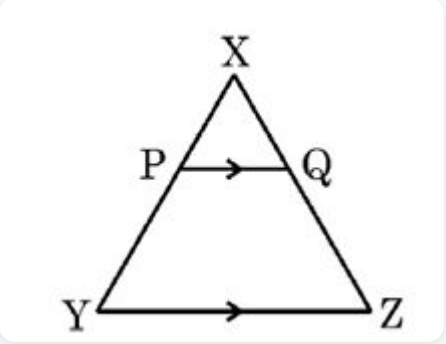
(B) 640

(C) 100

(D) 10

Question 23. In the given figure, PQ || YZ such that XP : PY = 2: 3. If PQ = 5 cm, then YZ equals

[1 Marks]



(A) 12.5cm

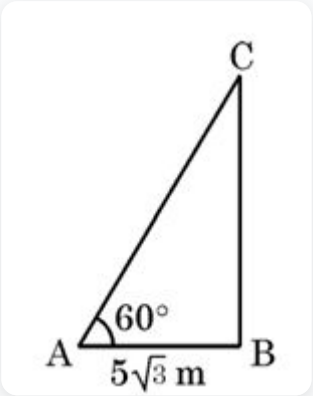
(B) 7.5cm

(C) 10cm

(D) 15cm

Question 24. A wire is attached from a point A on the ground to the top of a pole BC, making an angle of elevation as 60°. If AB = 5√3 m, then length of the

[1 Marks]



(A) 10m

(B) 5/2 √3 m

(C) 15m

(D) 10√3 m

Question 25.

Simplest form of : sec A /√sec² A -1 is

[1 Marks]

(A) cos A

(B) cosec A

(C) sin A

(D) tan A

Question 26.

Assertion (A) : The system of linear equations 3x — 5y + 7 = 0 and —6 x+ 10 y + 14 = 0 is inconsistent. Reason (R) : When two linear equations don't have unique solution, they always represent parallel lines.

[1 Marks]

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

(C) Assertion (A) is false, but Reason (R) is true.

(D) Assertion (A) is true, but Reason (R) is false.

Question 27.

Assertion (A) : H.C.F. (36 m^2, 18 m) =18 m, where m is a prime number.

Reason (R) :H.C.F. of two numbers is always less than or equal to the smaller number.

[1 Marks]

(A) Assertion (A) is true, but Reason (R) is false.

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

(C) Assertion (A) is false, but Reason (R) is true.

(D) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

Section C

Question 28.

Prove that 2 —5√ 3 is an irrational number given that√3 is irrational.

[2 Marks]

Question 29.

Vertices of a right triangle ABC with ∠B = 90° are A(3, 4), B(1, 1) and C(-8, 7). Find the value of tan A.

[2 Marks]

Question 30.

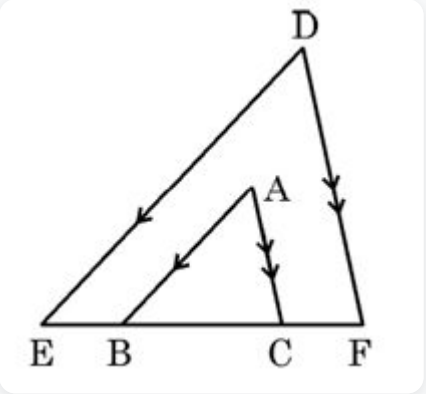
Using distance formula, prove that the points A(2, 3), B(-7, 0) and C(-1, 2) are collinear.

[2 Marks]

Question 31.

In the given figure, AB || DE and AC || DF. Show that ΔABC ~ ΔDEF. If BC =10 cm, EB=CF =5 cm and AB = 7 cm, then find the length DE.

[2 Marks]



Question 32.

For acute angles A and B and A + 2B and 2A + B are acute if tan (A + 2B) = √3 and sin (2A + B) = 1/ √2, then find the measures of angles A and B.

[2 Marks]

Question 33.

Evaluate: $\sin^3 60° — \tan 30°/\cos^2 45°$

[2 Marks]

Question 34.

A bag contains 25 balls. Some them are yellow and others are green. One ball is drawn at random. If probability of getting a green ball is 3/5, then find the number of yellow balls.

[2 Marks]

Section D

Question 35.

A circle of diameter **20 cm** is equally divided into **five sectors**. Find the **area** and **perimeter** of one of the sectors.

[3 Marks]

Question 36.

In an A.P., the **15^{th} term** exceeds the **8^{th} term** by **21**. If the **sum of the first 10 terms** is **55**, then form the A.P.

[3 Marks]

Question 37.

The sum of the first **n** terms of an A.P. is $2n^2+13n$. Find its n^{th} term and hence 10^{th} term.

[3 Marks]

Question 38.

A circle centered at (2, 1) passes through the points A(5, 6) and B(-3, K). Find the value(s) of K. Hence find length of chord AB.

[3 Marks]

Question 39.

Prove that the point P dividing the line segment joining the points A(-1, 7) and B(4, -3) in the ratio 3 : 2, lies on the line x - 3y = -1. Also find length of PA and PB.

[3 Marks]

Question 40.

Prove that :

$\tan\theta /1-\cot\theta+ \cot \theta /1-\tan \theta =1=\tan \theta +\cot \theta$.

[3 Marks]

Question 41.

Solve the system of linear equations : x = 4 and 3x — 2y = 6 graphically.

[3 Marks]

Question 42.

The dimensions of a window are 156 cm x 216 cm. Arjun wants to put grill on the window creating complete squares of maximum size. Determine the side length of the square and hence find the number of squares formed.

[3 Marks]

Section E

Question 43.

Venkat can row a boat in still water at the speed of 12 km/h. He ferries tourists 15 km upstream and 18 km downstream in 3 hours. Find the speed of the stream.

[5 Marks]

Question 44.

D is the mid-point of side BC of Δ ABC. CE and BF intersect at O, a point on AD. AD is produced to G such that OD = DG.

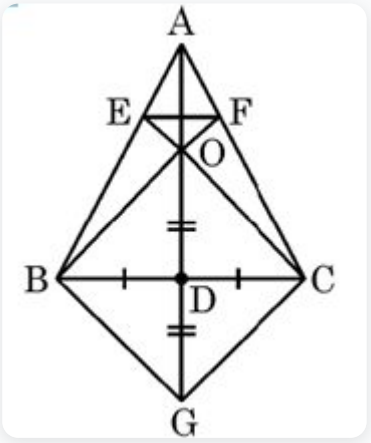
Prove that

(i) OBGC is a parallelogram.

(ii) EF∥ BC

(iii) ΔAEF ~ ΔABC

[5 Marks]



Question 45.

Through the mid-point Q of side CD of a parallelogram ABCD, the line AR is drawn which intersects BD at P and produced BC at R.

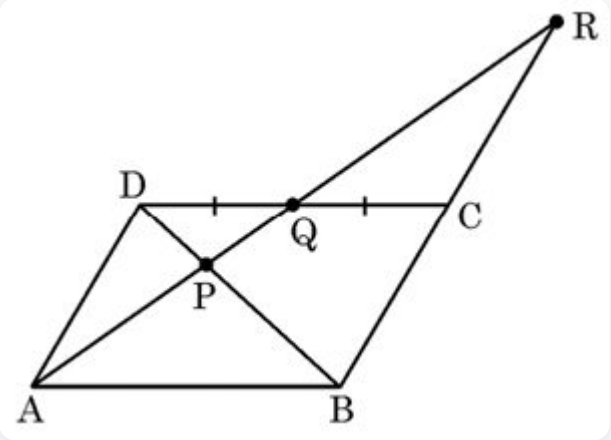
Prove that

(i) AQ=QR

(ii) AP=2PQ

(iii) PR =2AP

[4 Marks]



Question 46.

The mean of the following frequency distribution is 28. If sum of all frequencies is 100, then find the values of p and q :

[5 Marks]

Class Interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Frequency	12	p	27	20	q	6

Question 47.

Find median and mode of the following distribution :

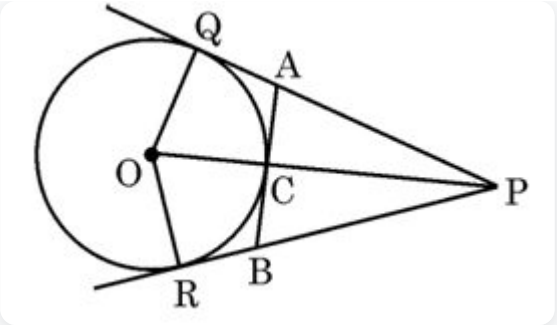
[5 Marks]

Class Interval	0 – 15	15 – 30	30 – 45	45 – 60	60 – 75	75 – 90	90 – 105
Frequency	15	10	12	9	8	10	6

Question 48.

PQ and PR are two tangents to a circle with centre O and radius 5 cm. AB is another tangent to the circle at C which lies on OP. If OP = 13 cm, then find the length AB and PA.

[5 Marks]


Q
A
O
C
P
B
R