Saint Soldier's School

Term-2 Class – IX, Math (Set-B)

SECTION A

Each question carries one – mark: (MM: 80)

Q.1) On writing the equation $x - 4 = \sqrt{3}\,y$ in standard form the values of a, b and c are;

a) $1, -\sqrt{3}$ and -4 b) $-1, 4$ and $\sqrt{3}$ c) $1, 4$ and $-\sqrt{3}$ d) None of these

Q.2) If AB = QR, BC = PR and CA = PQ, then

a) Δ PQR ≅ Δ BCA b) Δ BAC ≅ Δ RPQ c) Δ CBA ≅ Δ PRQ d) Δ ABC ≅ Δ PQR

Q.3) The square root of a negative number is always _____.

a) positive b) negative c) zero d) undefined

Q.4) The figure obtained by joining the mid-points of the sides of a rhombus, taken in order, is

a) a square b) a rhombus c) a rectangle d) any parallelogram

Q.5) The graph of linear equation x + 2y = 2, cuts the y-axis at:

a) (2, 0) b) (0, 2) c) (0, 1) d) (1, 0)

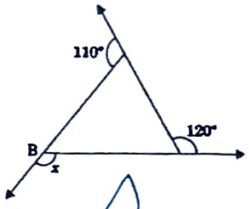
Q.6) Identify the polynomial

a) $x^{-2} + x^{-1} + 5$ b) $x^2 + 5\sqrt{x} + 7$ c) $\frac{1}{x} + 7$ d) $3x^2 + 7$

Q.7) What is the area of an equilateral triangle with side length 12 cm using Heron's formula?

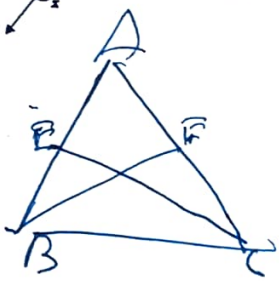
a) 36√3 sq. cm b) 72 sq. cm c) 144 sq. cm d) 216 sq. cm

Q.8) The value of x in the following figure is:



a) 120° b) 130° c) 110° d) 100°

Q.9) If E and F are the midpoints of equal sides AB and AC of a triangle ABC. Then:



a) BF = AC b). BF = AF c). CE = AB d) BF = CE

Q.10)The value of the polynomial $7x^4 + 3x^2 - 4$, when $x = -2$ is:

a) 100 b) 110 c) 120 d) 130

Q.11) On adding $2\sqrt{3}$ & $3\sqrt{2}$ we get

a) $5\sqrt{5}$ b) $5(\sqrt{3} + \sqrt{2})$ c) $2\sqrt{3} + 3\sqrt{2}$ d) None of these

Q.12) The angle subtended by the diameter of a semi-circle is:

a) 90° b) 45° c) 180° d) 60°

Q.13) The section formed by horizontal and vertical lines determining the position of the point in a Cartesian plane is called:

a) Origin b) X-axis c) Y-axis d) Quadrants

Q.14) : Which of the following statements are true?

a. Only one line can pass through a single point.

b. There is an infinite number of lines that pass through two distinct points.

c. A terminated line can be produced indefinitely on both sides

d. If two circles are equal, then their radii are unequal.

Q.15) What is the class mark of the class interval 90-120?

a) 90 b) 105 c) 115 d) 120

Q.16) If mass of 1 cm^3 of metal is 7.8 gm, then the mass of 493 cm^3 of metal is nearly:

a) 385 kg b) 38.5 kg c) 3.85 kg d) 0.385 kg

Q.17) Find the class width for the grouped frequency distribution of the class intervals 1-20, 21- 40, 41-60.

a) 10 b) 19 c) 17 d) 20

Q.18) The radius of a sphere is 2r and then its volume will be

(a) $(4/3)\pi r^3$ (b) $4\pi r^3$ (c) $(8/3)\pi r^3$ (d) $(32/3)\pi r^3$

Q19) **DIRECTION:** In Qs-19 and 20, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**.

Assertion: Rational number lying between two rational numbers x and y is $(x + y)/2$.
Reason: There is one rational number lying between any two rational numbers.

(a) Both (A) and (R) are true and reason (R) is the correct explanation of assertion (A)
(b) Both assertion (A) and reason(R) are true and reason(R) is not the correct explanation of assertion (A)
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

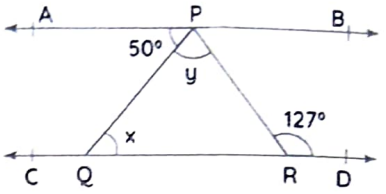
Q20) ***(Assertion):*** If angles 'a' and 'b' form a linear pair of angles and $a = 40°$, then $b = 150°$.
Reason: Sum of linear pair of angles is always 180°.

(a) Both (A) and (R) are true and reason (R) is the correct explanation of assertion (A)
(b) Both (A) and (R) are true and reason (R) is not the correct explanation of assertion (A)
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

SECTIONB

(Section B consists of 5 questions of 2 marks each)

Q21. In Fig, if AB || CD,
∠ APQ = 50° and ∠ PRD = 127°, find x and y.



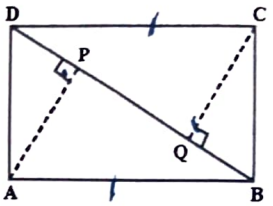
Q.22) Examine whether x + 2 is a factor of $x^3 + 3x^2 + 5x + 6$.

Q.23) Find the decimal expansion of $\frac{1}{7}$ upto 6 decimal places and write the kind of decimal expansion it has.

Q24) Simplify:

$$81^{-1/2}\,(64^{1/3} + 125^{1/3})$$

Q25) ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD. Show that



(i) Δ APB ≅ Δ CQD

(ii) AP = CQ

SECTIONC

(Section C consists of 6 questions of 3marks each)

Q26) Show that $0.\overline{001}$ can be expressed in the form $\frac{p}{q}$, where p and q are integers and q ≠ 0.

OR

Simplify by rationalizing the denominator: $\frac{7+3\sqrt{5}}{7-3\sqrt{5}}$

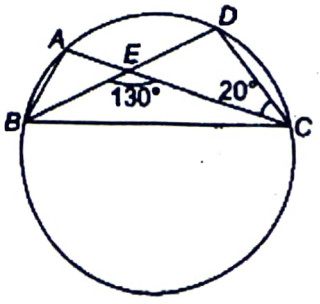
Q27) Find the area of a triangle, two sides of which are 8cm and 11cm and the perimeter is 32cm.

Q.28) **Factorise:** $x^3 - 3x^2 - 9x - 5$

Q29) If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.

OR

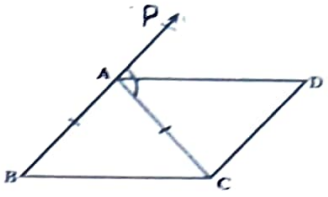
In figure, A, B and C are four points on a circle. AC and BD intersect at a point E such that ∠BEC = 130° and ∠ ECD = 20°. Find ∠BAC.



Q30) a)In which quadrant or on which axis do each of the points (-2,4), (3,-1), (-4,0), (2,3) lie?

b) What are the coordinates of a point lying on the y-axis at negative 3 units?

Q31) ABC is an isosceles triangle in which AB = AC. AD bisects exterior angle PAC and CD || AB (see Fig.). Show that



(i) ∠ DAC = ∠ BCA and

(ii) ABCD is a parallelogram.

SECTIOND

(Section D consists of 4 questions of 5 marks each)

Q32) Draw a **histogram** from the following data, giving the age of doctors working in a city Hospital.

Age(in years)	No. of doctors
20-25	21
25-30	22
30-35	50
35-40	110
40-45	87

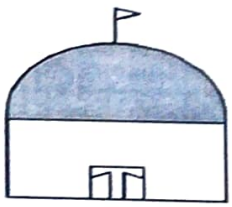
(i) How many doctors are there from 30 yrs age onwards?

Q33) The volume of a right circular cone is 9856 cm^3. If the diameter of the base is 28 cm, find

(i) height of the cone (ii) slant height of the cone (iii) curved surface area of the cone

OR

A hemispherical dome of a building needs to be painted (see Fig.).



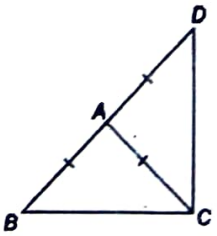
If the circumference of the base of the dome is 17.6 m,

Find the cost of painting it, given the cost of painting is Rs. 5 per 100 cm^2.

Q34) Expand each of the following, using suitable identities:

a) $(2x - y + z)^2$ b) $(5p - 3q)^3$

Q35) Δ ABC is an isosceles triangle in which AB = AC. Side BA is produced to D such that AD = AB (see figure). Show that ∠BCD is a right angle.



SECTION E (Case study based questions)

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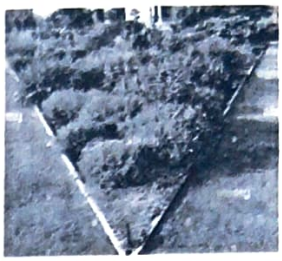
Q36) In a park, there are two triangular flower beds. Flower bed ABC has sides AB = 8 cm, BC = 6 cm, and CA = 10 cm. Flower bed PQR has sides PQ = 8 cm, QR = 6 cm, and RP = 10 cm.

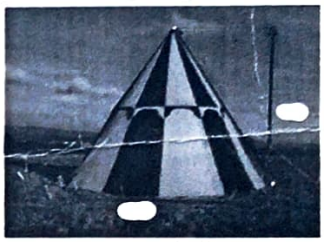


i) Using the given information, can we conclude that both the triangular flower beds are congruent to each other ? Why or why not? (1)

(ii) If angle A = 40° and angle B = 60° in flower bed ABC, what is the measure of angle C? (1)

iii) Find the area of triangle PQR using Heron's formula (2)

Q.37) Once four friends Rahul, Arun, Ajay and Vijay went for a picnic at a hill station. Due to peak season, they did not get a proper hotel in the city. The weather was fine so they decided to make a conical tent at a park. As shown in the figure they made the tent with height 24 m and diameter 14 m.



i) What was the area of the floor? (1)

ii) What was the volume of the tent? (1)

iii) What was the total surface area of the tent? (2)

Q.38 Mrs. Rakhi lives in an undeveloped area where there is no facility of proper education. But one thing is available in that area i.e., network. Since she was very keen to take education, so she decided to complete her education through e-learning. One day she was studying number system, where she learnt about rational numbers, irrational numbers and decimal numbers, etc.

i) Find one rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$

ii) Write one irrational number between 2.365 and 3.125

iii) If $x = 3-\sqrt{2}$, then find the value of $\frac{1}{x}$

iv) Find the product of two irrational numbers $(7+3\sqrt{2})$ and $(7-3\sqrt{2})$.

2 | 12
2 | 6
3 | 3
1