Diagnostic Test for Std -9

Subject :- Mathematics   **Total Marks :- 80**

Medium :- English   **Time :- 3 Hours**

Q – 1   Choose the correct option.   **06**

(1) Which of the following is a like term of 7xy?(A) $8xy^2$ (B)-8xy(C) $16\ x^2y^2$ (D) $7\ x^2y$

(2) Which of the following is a binomial expression? (A) x   (B) zx+y+c   (C) x + y   (D) 0

(3) The sum of polynomials ab + ac and ab – ac is _____ (2ab, ac, 2ac, ab)

(4) Subtracting $x^2 - y^2 + z^2$ from $x^2 - y^2 - z^2$, the resultant expression is _____ ($2x^2$, $2y^2$, $-2z^2$, 0)

(5) The product of m^2, n^2 and $m^2n^2p^2$ is _____ .($m^4n^4p^2$, $m^2n^2p^2$, $m^2\ p^2$, n^2p^2)

(6) The product of $\frac{3}{4}xy$ and $\frac{4}{3}yx$ is _____. (1, 0, $x^2\ y^2$, xy)

Q - 2   Solve the following according to the given instructions   **(08)**
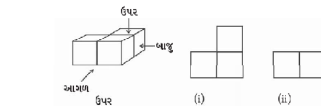
Evaluate using suitable Identities.

1.   (2a + 7) (2a – 7)   2. $(b – 7)^2$

Using Identities, Evaluate the following: 1. $51^2 - 49^2$ 2. 103 X 104
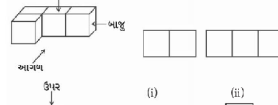
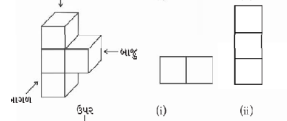**Q - 3   Identify Top view, Front view and Side view for each given solid shape.**   **(06)**

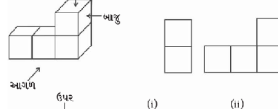**(Not to draw a figure)**   1

2
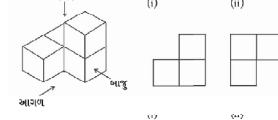
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6

Q – 4   Find the solution using Euler's formula.   **(06)**

(1) If the number of vertices (V) is 6 and Edges (E) is 12 in a polyhedron, then find its number of Faces(F).

(2) Can a polyhedron have 20 Faces, 30 Edges and 12 Vertices? Prove by Euler's formula.

Q - 5   Solve the following   **(10)**

(1) The area of a trapezium is 34 cm^2 and its height is 4cm. One of the parallel sides of the trapezium is 10 cm, find the other parallel side.

(2) Mr.Parag Bhai has a square plot with the measurement as shown in the figure. He wants to construct a house in the middle of the plot. A garden is developed around the house. Find the area of the garden.
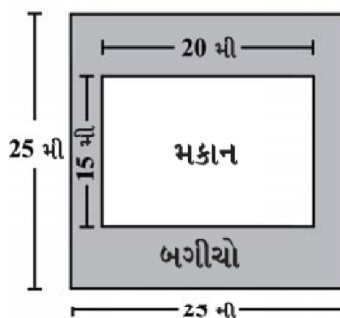
Q – 6 Solve the following (06)

(1) The diagonal AC of a quadrilateral ABCD is 6 cm and the perpendiculars, BM from the vertex B is 3 cm and DN from D is 5 cm, dropped on the same diagonal. Find the area of the quadrilateral ABCD.

(2) The side of a cube is 10m long, Find its surface area.

Q - 7 Solve the following (06)

(1) Find the height of a cuboid whose base area is 180 cm^2 and volume is 900 cm^3.

(2) Find the volume of the right circular cylinder which has the base radius of 21 m and height 14m.

Q - 8 Do as directed (12)

(1) Simplify : $(3^{10} \div 3^7) \times 3^{-5}$ (2) Evaluate: $\frac{2^3}{2^5} \times \frac{3^5}{3^3}$

(3) If $5^m \div 5^{-3} = 5^5$, then find m.

(4) The diameter of the corona virus is 0.000000120 m. Express the given number in standard form.

Q - 9 Do as directed (06)

(1) Factorize: ax + bx – ay – by.

(2) Factorize given perfect square algebraic expression : $25m^2 + 30m + 9$.

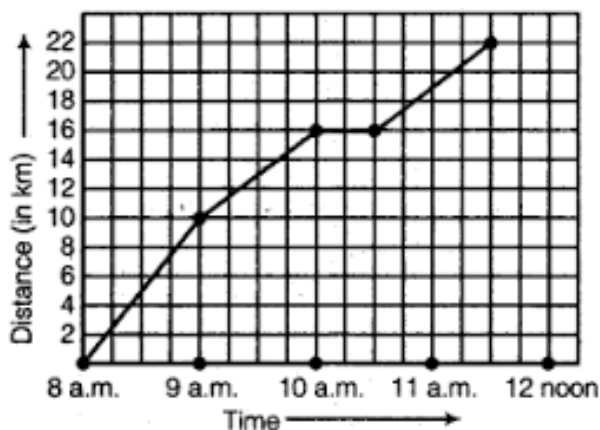(3) Factorize: $y^2 + 7y + 12$

Q-10 Do as directed (04)

1. Divide : $(5x^2 – 6x) \div 3x$ 2. Divide: $26xy (x + 5)(y – 4) \div 13x(y – 4)$

Q –11 Solve the following (10)

(1) A courier person cycles from a town to a neighboring suburban area to deliver a parcel to a merchant. His distance from the town at different times is shown by the following graph. Answer the following questions from the graph

Questions:-
(a) What is the scale taken for the time on x – 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) During which period did he ride fastest?
(e) Did the person stop on his way?

(2) Draw the graphs for the following tables of values, with suitable scales on the axes.

Number of Mangoes	1	2	3	4	5
Cost (in ₹)	5	10	15	20	25

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