Periodic Test – I, 2017–18

Sub. : Mathematics

Time : 1:30 Hrs.]   Class – X   [M. M. : 40

Instructions :

   (1) All questions are compulsory.

   (2) Question paper consists of four sections.

   (3) Section – (A) contains 3 questions of 1 mark each.

        Section – (B) contains 3 questions of 2 marks each.

        Section – (C) contains 5 questions of 3 marks each.

        Section – (D) contains 4 questions of 4 marks each.

Section – (A)

1. If n is any natural number, then show if $(3 \times 2)^n$ can end with the digit 0.

2. Is $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \ldots$ an AP ?

3. Check whether $(x - 2)(x + 1) = (x - 1)(x + 3)$ is a quadratic equation.

Section – (B)

4. Prove that $5 + \sqrt{3}$ is irrational.

5. Find a quadratic polynomial, the sum and product of whose zeroes are –3 and 2, respectively.

6. Which term of the AP : 3, 8, 13, 18, ... , is 78 ?

Section – (C)

7. Use Euclid's division algorithm to find the HCF of 10224 and 9648.

8. Solve the pair of equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$ graphically.

9. Find the zeroes of the quadratic polynomial $x^2 + 5x + 6$, and verify the relationship between the zeroes and the coefficients.

10. Find the value of P for which the equation $px^2 - 5x + p = 0$ has equal roots.

11. Which term of the A.P. 3, 15, 27, 39, ... will be 132 more than its 54th term?

Section – (D)

12. In an A.P., if the 6th and 13th terms are 35 and 70 respectively, find the sum of its first 20 terms.

13. Find the real roots of the following equation, if possible (by using quadratic formula) :

$$\frac{1}{x+1} + \frac{2}{x+2} = \frac{4}{x+4}; \quad x \neq -1, -2, -4$$

14. Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, given that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.

15. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream, determine the speed of the stream and that of the boat in still water.