RAMAGYA SCHOOL, NOIDA
CLASS-X/ SUB- MATHEMATICS/2017-2018
OLYMPIAD PRACTICE WORKSHEET -2

Section-1 - Logical Reasoning (Application based questions)

Directions(Q.1-4): Study the following information and answer the questions given below:
M, N, P, R, T, W, F and H are sitting around a circle facing at the centre. P is third to the left of M and second to the right of T. N is second to the right of P. R is second to the right of W who is second to the right of M. F is not an immediate neighbor of P.

1. Who is to the immediate right of P ?
(a) H (b) F (c) R (d) Data inadequate

2. Who is to the immediate right of H ?
(a) R (b) F (c) M (d) N

3. Who is to the immediate left of R ?
(a) P (b) H (c) W (d) T

4. In which of the following is the first person sitting in between the second and the third person ?
(a) NHM (b) PHN (c) TRP (d) TWF

Section-2 : Mathematical Reasoning

Concept based questions:

5. The number of zeroes that the polynomial$f(x) = (x-2)^2 + 4$ can have is:

(a) 1 (b) 2 (c) 0 (d) 3

6. The degree of a biquadratic polynomial is:

(a) 1 (b) 2 (c) 3 (d) 4

7. Which of the following is not a zero of the polynomial $(x^3 - 6x^2 + 11x - 6)$?

(a) 1 (b) 2 (c) 3 (d) 0

8. If the sum of the zeroes of the quadratic polynomial $(ax^2 + bx + c)$ is 0 ,then

(a) a=0 (b) b=0 (c) c=0 (d) b ≠ 0

9. If α , $\beta and\ \gamma$ are the zeroes of the polynomial $p(x) = ax^3 + bx^2 + cx + d$, then the value of $\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma}$ is

(a)$\frac{c}{d}$ (b) $\frac{-c}{d}$ (c) $\frac{b}{d}$ (d) $\frac{-b}{d}$

10. If If α , $\beta and\ \gamma$ are the zeroes of the polynomial $p(x) = x^3 + px^2 + qx + r$, then the value of $\frac{1}{\alpha\beta} + \frac{1}{\beta\gamma} + \frac{1}{\gamma\alpha}$ is

(a)$\frac{p}{r}$ (b) $\frac{-p}{r}$ (c) $\frac{q}{r}$ (d) $\frac{-q}{r}$

11. If $\alpha \; and \; \beta$ are the zeroes of the polynomial $p(x) = ax^2 + bx + c$, then $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$ =

(a) $\frac{b^2-2ac}{a^2}$ (b) $\frac{b^2-2ac}{c^2}$ (c) $\frac{b^2+2ac}{a^2}$ (d) $\frac{b^2+2ac}{c^2}$

Value based questions:

12. If $\alpha \; and \; \beta$ are the zeroes of the polynomial $(x^2 - p(x+1) - c)$, then $(\alpha + 1)(\beta + 1)$ =

(a) c - 1 (b) 1 – c (c) c (d) 1 + c

13. If $\alpha \; and \; \beta$ are the zeroes of the polynomial $(2x^2 + 5x + 1)$, then the value of $(\alpha + \beta + \alpha\beta)$ =

(a) -2 (b) -1 (c) 1 (d) 3

14. If two zeroes of polynomial $(x^3 + x^2 - 5x - 5)$ are $\sqrt{5}$ and $-\sqrt{5}$; then its third zero is

(a) 1 (b) -1 (c) 2 (d) -2

15. What is the coefficient of first term of the quotient when $(2x^2 + 3x + 1)$ is divided by $(x + 2)$

(a) 1 (b) 2 (c) 3 (d) -2

HOTS:

16. The number to be added to the polynomial $(x^2 - 5x + 4)$, so that 3 is the zero of the polynomial is

(a) 2 (b) -2 (c) 0 (d) 3

17. The number $3^{13} - 3^{10}$ is divisible by

(a) 3,13,5 (b) 3,10 (c) 2,3,13 (d) 2,3,10

18. The degree of a non-zero constant polynomial is

(a) 0 (b) 1 (c) 2 (d) 3

19. If the product of two zeroes of the polynomial$f(x) = 2x^3 + 6x^2 - 4x + 9$, is 3 then its third zero is

(a)$\frac{3}{2}$ (b) $\frac{-3}{2}$ (c) $\frac{9}{2}$ (d) $\frac{-9}{2}$

20. If $\alpha \; and \; \beta$ are the zeroes of quadratic polynomial$(9x^2 - 1)$, find the value of $\alpha^2 + \beta^2$

(a)$\frac{1}{9}$ (b) $\frac{2}{9}$ (c) $\frac{1}{3}$ (d) $\frac{2}{3}$