GHS, PATHUR

ONE MARK TEST - QUARTELY FORTION

X STD - MATHEMATICS

ANSWER ALL THE QUESTIONS:

1) The range of the relations $R = \{x, x^2 / x$ is a prime number less than $13\}$ is — (1) $\{2,3,5,7\}$ (2) $\{2,3,5,7,11\}$ (3) $\{4,9,25,49,121\}$ (4) $\{4,9,25,49,121\}$

2) $f(x) = 2x^2$ and $g(x) = \frac{1}{3x}$, then $f \circ g$ is

(1) $\frac{3}{2x^2}$ (2) $\frac{2}{3x^2}$ (3) $\frac{1}{9x^2}$ (4) $\frac{1}{6x^2}$

3) $f(x) = (x+1)^2 - (x-1)^2$ represents a function which is

(1) linear (2) cubic (3) reciprocal (4) quadratic

4) If $g = \{(1,1), (2,3), (3,5), (4,7)\}$ is function by $g(x) = ax+b$, then value of a and b — (1) $(-1,2)$ (2) $(2,-1)$ (3) $(-1,-2)$ (4) $(1,2)$

5) If there are 1024 relations form a set $A = \{1,2,3,4,5\}$ to set B, then the number of elements in B is — (1) 3 (2) 2 (3) 4 (4) 5

6) If $(a,8)$ $(6,b)$ represents an identity functions, then the value of a and b are respectively (1) $(8,6)$ (2) $(8,8)$ (3) $(6,8)$ (4) $(6,6)$

7) $A = \{a,b,p\}$, $B = \{2,3\}$, $C = \{p,q,r,s\}$ then $n[(A \cup C) \times B]$ is —

(1) 8 (2) 20 (3) 12 (4) 16

8) Given $F_1 = 1$, $F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$, then F_5 is ——

(1) 3 (2) 5 (3) 8 (4) 11

9) If $A = 2^{65}$ and $B = 2^{64} + 2^{63} + 2^{62} + \cdots + 2^0$ which of the following is true? (1) B is 2^{64} more than A (2) A and B are equal

(3) B is larger than A by 1. (4) A is larger than B by 1.

10) $7^{4k} \equiv$ —— $(\text{mod } 100)$ (1) 1 (2) 2 (3) 3 (4) 4

11) If the HCF of 65 and 117 is expressible in the form of $65m - 117$, then the value of m is — (1) 4 (2) 2 (3) 1 (4) 3

12) The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \ldots$ is

(1) $\frac{1}{24}$ (2) $\frac{1}{27}$ (3) $\frac{2}{3}$ (4) $\frac{1}{81}$

13) The first term of an arithmetic progression is unity and the common difference is 4. Which of the following will be a term of the AP

(1) 4551 (2) 10091 (3) 7881 (4) 13531

14) Given using Euclid's division lemma, if the cube of any positive integer is divided by 9. then the possible remainders are

(1) 0, 1, 8 (2) 1, 4, 8 (3) 0, 1, 3 (4) 1, 3, 5

15) The value of $(1^3 + 2^3 + 3^3 + \cdots + 15^3) - (1 + 2 + 3 + \cdots + 15)$ is —

(1) 14400 (2) 14200 (3) 14280 (4) 14520

16) $y^2 + \frac{1}{y^2}$ is not equal to — (1) $\frac{y^4+1}{y^2}$ (2) $\left(y + \frac{1}{y}\right)^2$ (3) $\left(y - \frac{1}{y}\right)^2 + 2$

(4) $\left(y + \frac{1}{y}\right)^2 - 2$

17) The values of a and b if $4x^4 - 24x^3 + 76x^2 + ax + b$ is a perfect square (1) 100, 200 (2) 10, 12 (3) $-120, 100$ (4) 12, 10

18) The solution of $(2x-1)^2 = 9$ is equal to — (1) -1 (2) 2 (3) $-1, 2$ (4) No solution

19) $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$ is — (1) $\frac{9y}{7}$ (2) $\frac{9y^2}{21y-21}$ (3) $\frac{21y^2-42y+21}{3y^2}$ (4) $\frac{7(y^2-2y+1)}{y^2}$

20) Graph of a linear polynomial is a —
(1) straight line (2) circle (3) Parabola (4) Hyperbola.

21) If $(x-6)$ is the HCF of $x^2-2x-24$ and x^2-kx-6, then the value of k is
(1) 3 (2) 5 (3) 6 (4) 8

22) The number of points of intersection of the quadratic polynomial x^2+4x+4 with the x-axis is — (1) 0 (2) 1 (3) 0 or 1 (4) 2

23) In $\triangle LMN$, $\angle L = 60°$, $LM = 50$, if $\triangle LMN \sim \triangle PQR$, then the value of $\angle P$ is
(1) 40° (2) 70° (3) 30° (4) 110°

24) In a $\triangle ABC$, AD is the bisector of $\angle BAC$. If $AB = 8cm$, $BD = 6cm$ and $DC = 3cm$. The length of the side AC is —
(1) 6cm (2) 4cm (3) 3cm (4) 8cm

25) If in triangle ABC and DEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar, when,
(1) $\angle B = \angle E$ (2) $\angle A = \angle D$ (3) $\angle B = \angle D$ (4) $\angle A = \angle F$

26) If in $\triangle ABC$, $DE \parallel BC$, $AB = 3.6cm$, $AC = 2.4cm$ and $AD = 2.1cm$ then the length of AE is — (1) 1.4cm (2) 1.8cm (3) 1.2cm (4) 1.05cm

27) A man walks near a wall, such that distance between him and the wall is 10 units. Consider the wall to be y-axis. The travelled by the man is — (1) $x=10$ (2) $y=10$ (3) $x=0$ (4) $y=0$

28) The slope of the line which is perpendicular to line joining the points (0,0) and (−8, 8) is — (1) −1 (2) 1 (3) $\frac{1}{3}$ (4) −8

29) The area of triangle formed by the point (−5,0), (0,−5) and (5,0) is — (1) 0 sq units (2) 25 sq. units (3) 5 sq. units (4) none of these.

30) The slope of the joining (12,3), (4,a) is $\frac{1}{8}$. The value of a is —
(1) 1 (2) 4 (3) −5 (4) 2.

31) The point of intersection of $3x-y=4$ and $x+y=8$ is
(1) (5,3) (2) (2,4) (3) (3,5) (4) (4,4)

32) The equation of a line passing through the origin and perpendicular to the line $7x-3y+4=0$
(1) $7x-3y+4=0$ (2) $3x-7y+4=0$ (3) $3x+7y=0$ (4) $7x-3y=0$

33) (2,1) is the point of intersection of two lines
(1) $x-y-3=0$, $3x-y-7=0$ (2) $x+y=3$, $3x+y=7$
(3) $3x+y=3$, $x+y=7$ (4) $x+3y-3=0$, $x-y-7=0$

34) If (5,7) (3,p) and (6,6) are collinear, then the value of p is —
(1) 3 (2) 6 (3) 9 (4) 12

35) If A is a point on the y-axis whose ordinate is 8 and B is a point on the x axis whose abscissa is 5, then the equation of the line AB is — (1) $8x+5y=40$ (2) $8x-5y=40$
(3) $x=8$ (4) $y=5$

36) $\sin\theta + \cos\theta = a$ and $\sec\theta + \operatorname{cosec}\theta = b$, then the value of $b(a^2-1)$ is equal to (1) $2a$ (2) $3a$ (3) 0 (4) $2ab$

37) $a\cot\theta + b\operatorname{cosec}\theta$ and $b\cot\theta + a\operatorname{cosec}\theta = q$, then p^2-q^2 is equal to
(1) a^2-b^2 (2) b^2-a^2 (3) a^2+b^2 (4) $b-a$

38) $\tan\theta \operatorname{cosec}^2\theta - \tan\theta$ is equal to
(1) $\sec\theta$ (2) $\cot^2\theta$ (3) $\sin\theta$ (4) $\cot\theta$

39) If $x = a\tan\theta$ and $y = b\sec\theta$, then
(1) $\frac{y^2}{b^2} - \frac{x^2}{a^2} = 1$ (2) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ (3) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ (4) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 0$

40) The value of $\sin^2\theta + \frac{1}{1+\tan^2\theta}$ is equal to
(1) $\tan^2\theta$ (2) 1 (3) $\cot^2\theta$ (4) 0

41) If $\sin\theta = \cos\theta$, then $2\tan^2\theta + \sin^2\theta - 1$ is equal to
(1) $-\frac{3}{2}$ (2) $\frac{1}{3}$ (3) $\frac{1}{2}$ (4) $-\frac{2}{3}$

42) If $5x = \sec\theta$ and $\frac{5}{x} = \tan\theta$, then $x^2 - \frac{1}{x^2}$ is equal to
(1) 25 (2) $\frac{1}{25}$ (3) 5 (4) 1

43) The perimeters of two similar triangles $\triangle ABC$ and $\triangle PQR$ are 36cm and 24cm respectively. If $PQ = 10$cm, then the length of AB is
(1) $6\frac{2}{3}$cm (2) $\frac{10\sqrt{6}}{2}$cm (3) $\frac{2}{3}$cm (4) 15cm

44) If $\triangle ABC$ is an isosceles triangles with $\angle C = 90^\circ$ and $AC = 5$cm, then AB is
(1) 2.5cm (2) 5cm (3) 10cm (4) $5\sqrt{2}$cm

45) If slope of the line PQ is $\frac{1}{\sqrt{3}}$, then the slope of the perpendicular bisector of PQ is (1) $\sqrt{3}$ (2) $-\sqrt{3}$ (3) $\frac{1}{\sqrt{3}}$ (4) 0

46) If there are 1024 relations from a set $A = \{1, 2, 3, 4, 5\}$ to set B, then the number of elements in B is (1) 3 (2) 2 (3) 4 (4) 8

47) Let $n(A) = m$ and $n(B) = n$, then the total number of non-empty relations that can be defined from A to B is
(1) m^n (2) n^m (3) $2^{mn} - 1$ (4) 2^{mn}

48) The solution of the system $x + y - 3z = -6$, $-7y + 7z = 7$, $3z = 9$ is
(1) $x = -1$, $y = 2$, $z = 3$ (2) $x = -1$, $y = 2$, $z = 3$ (3) $x = -1$, $y = -2$, $z = 3$ (4) $x = 1$, $y = -2$, $z = 3$

49) The square root of $\frac{256x^8y^4z^{10}}{25x^6y^6z^6}$ is equal to —
(1) $\frac{16}{5}\left|\frac{x^2z^4}{y^2}\right|$ (2) $16\left|\frac{y^2}{x^2z^4}\right|$ (3) $\frac{16}{5}\left|\frac{y}{xz^2}\right|$ (4) $\frac{16}{5}\left|\frac{xz^2}{y}\right|$

50) If $f: A \to B$ is a bijective function and if $n(B) = 7$, then $n(A)$ is equal to —
(1) 7 (2) 49 (3) 3 (4) 14