

SA : II : 2019

STD : 10

DATE : 29.01.2019

SUB. : MATHS

TIME : 3 HOURS

MARKS : 100

PART : A

Select correct option from the following questions.

(50)

- (1) The product of three consecutive positive integers is always divisible by

.....

(A) 6 (B) 8 (C) 9 (D) 10

- (2)
- $\sqrt{12} - \sqrt{140} = \dots\dots\dots$

(A) $\sqrt{7} + \sqrt{5}$ (B) $\sqrt{8} + 2$ (C) $\sqrt{7} - \sqrt{5}$ (D) $\sqrt{14} - \sqrt{2}$

- (3) If
- $p(-7) = 0$
- , then a factor of
- $p(x)$
- is

(A) $x + 7$ (B) $x + 1$ (C) $x - 7$ (D) $x - 1$

- (4) What are the zeros of
- $p(x) = 5 - x^2$
- ?

(A) 5 and -5 (B) $\frac{1}{5}$ and $-\frac{1}{5}$ (C) $\sqrt{5}$ and $-\sqrt{5}$ (D) $\sqrt{5}$ and -5

- (5) Two zeros of
- $x^3 + x^2 - 5x - 5$
- are
- $\sqrt{5}$
- and
- $-\sqrt{5}$
- , then the third zero is

(A) 2 (B) -1 (C) 1 (D) -2

- (6) The sum of the zeros of
- $p(x) = 3x^2 + 5x - 2$
- is

(A) $\frac{3}{5}$ (B) $-\frac{3}{5}$ (C) $\frac{5}{3}$ (D) $-\frac{5}{3}$

- (7) In two digit number, the digit at units place is
- $(2x - 1)$
- and the digit at ten's place is
- $(2x + 1)$
- , then that number is

(A) $22x + 9$ (B) $19 + 22x$ (C) $22x - 9$ (D) $9x - 22$

- (8) If
- $\frac{x-y}{xy} = 2$
- and
- $\frac{x+y}{xy} = 6$
- then
- $x = \dots\dots\dots$

(A) 4 (B) $\frac{1}{4}$ (C) 2 (D) $-\frac{1}{2}$

- (9) If
- $x + 2y = 5$
- and
- $2x + y = 7$
- then
- $x - y = \dots\dots\dots$

(A) -2 (B) 2 (C) 12 (D) -12

- (10) The golden number
- $\frac{1+\sqrt{5}}{2}$
- is one of the solutions of

(A) $x^2 - x = 0$ (B) $x^2 + \sqrt{5}x - 1 = 0$ (C) $x^2 - x - 1 = 0$ (D) $x^2 - x + \sqrt{5} = 0$

- (11) The solution set of the quadratic equation
- $x^2 - 30x + 221 = 0$
- is

(A) $\{-13, 17\}$ (B) $\{13, 17\}$ (C) $\{-13, -17\}$ (D) $\{13, -17\}$

- (12) Discriminant
- $D = \dots\dots\dots$
- for the quadratic equation
- $5x^2 - 6x + 1 = 0$

(A) 16 (B) $\sqrt{56}$ (C) 4 (D) 56

- (13) If -3 is a root of a quadratic equation
- $x^2 + 3(K+2)x - 9 = 0$
- , then
- $K = \dots\dots\dots$

(A) 2 (B) -2 (C) 3 (D) -3

- (14) If $S_n = 2n^2 + 3n$, then $d = \dots\dots\dots$
 (A) 13 (B) 4 (C) 9 (D) -2
- (15) For a given A.P., $a = 2$ and $d = 3$. Then $S_{30} = \dots\dots\dots$
 (A) 300 (B) 600 (C) 1365 (D) 900
- (16) For the A.P. 4, 8, 12, 16 $T_{40} - T_{30} = \dots\dots\dots$
 (A) 10 (B) 20 (C) 30 (D) 40
- (17) In ΔPQR , $m \angle Q = 90$ and QS is an altitude. If $PS - SR = 10$ and $PQ^2 - QR^2 = 260$, then $PR = \dots\dots\dots$
 (A) $\sqrt{360}$ (B) $\sqrt{160}$ (C) 24 (D) 26
- (18) In E^m ABCD, $AB^2 + AD^2 = 200$ and $BD = 12$, then $AC = \dots\dots\dots$
 (A) 12 (B) 8 (C) 16 (D) 20
- (19) In ΔABC , $m \angle B = 90$ and BD is an altitude. Then the correspondence $ADB \sim \dots\dots\dots$ between ΔBDA and ΔBDC is a similarity.
 (A) BDC (B) CDB (C) BCD (D) CBD
- (20) In ΔABC , if $\frac{AB}{1} = \frac{AC}{2} = \frac{BC}{\sqrt{3}}$ then $m \angle C = \dots\dots\dots$
 (A) 90 (B) 30 (C) 60 (D) 45
- (21) In ΔABC , $m \angle A = 90$ and AD is an altitude. Then $AD^2 = \dots\dots\dots$
 (A) $AB^2 + BC^2$ (B) $BD^2 + DC^2$ (C) $BD \cdot DC$ (D) $BD \cdot BC$
- (22) The length of a median of an equilateral triangle is $\sqrt{3}$. Length of the side of the triangle is $\dots\dots\dots$
 (A) 1 (B) $2\sqrt{3}$ (C) 2 (D) $3\sqrt{3}$
- (23) $y - ax$ divides the line segment joining A (-3, -4) and B (1, -2) from A in ratio $\dots\dots\dots$
 (A) 2 : 1 (B) 1 : 2 (C) 3 : 1 (D) 3 : 2
- (24) A (4, 7) and B (7, 3) then $AB = \dots\dots\dots$
 (A) 3 (B) 4 (C) 5 (D) 7
- (25) If the vertices of ΔABC are A (x_1, y_1), B (x_2, y_2) and C (x_3, y_3) then the centroid of ΔABC is $\dots\dots\dots$
 (A) $\left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3} \right)$ (B) $\left(\frac{\lambda x_1 + x_1}{\lambda + 1}, \frac{\lambda y_1 + y_1}{\lambda + 1} \right)$
 (C) $\left(\frac{x_1(y_2 - y_3)}{2}, \frac{y_1(x_2 - x_3)}{2} \right)$ (D) $\left(\frac{x_1 + y_2 + y_3}{2}, \frac{y_1 + x_2 + x_3}{2} \right)$
- (26) The area of triangle having vertices A (3, 0), B (0, 3) and C (3, 3) = $\dots\dots\dots$
 (A) 9 (B) 4.5 (C) 6 (D) 3
- (27) In ΔABC $m \angle C = 90$ and $\cos B = \frac{1}{2}$ then $\operatorname{cosec} A = \dots\dots\dots$
 (A) $\frac{1}{2}$ (B) $\sqrt{3}$ (C) $\frac{2}{\sqrt{3}}$ (D) 2
- (28) $7 \cos^2 q + 3 \sin^2 q = 4$, then $\cot q = \dots\dots\dots$
 (A) $\frac{3}{7}$ (B) $\frac{7}{3}$ (C) $\sqrt{3}$ (D) $\frac{1}{\sqrt{3}}$

- (29) The angle of elevation of the top of the pole from a point x m away from, the pole is 60° , then the height of the pole is m.
 (A) x (B) $\sqrt{3} \cdot x$ (C) $\frac{1}{\sqrt{3}} \cdot x$ (D) $\frac{\sqrt{3}}{2} x$
- (30) From the top of a building h metres high, the angle of depression of an object on the ground has measure q . The distance (in meters) of the object from the foot of the building is
 (A) $h \sin q$ (B) $h \tan q$ (C) $h \cot q$ (D) $h \cos q$
- (31) A chord of $\odot (0, 5)$ touches $\odot (0, 3)$, then the length of the chord =
 (A) 8 (B) 10 (C) 7 (D) 6
- (32) $\angle B$ is right angle in $\triangle ABC$, then the radius of a circle touching all the three sides of the triangle is
 (A) $\frac{AB + BC + AC}{2}$ (B) $\frac{AB + BC - AC}{2}$
 (C) $\frac{AC + AB - BC}{2}$ (D) $\frac{AC + BC - AB}{2}$
- (33) $\overline{PA}$ is a tangent to $\odot(0, 5)$ drawn from a point P outside a circle. If $m \angle AOP = 40^\circ$ then $m \angle OPA =$
 (A) 20° (B) 50° (C) 90° (D) 45°
- (34) A circle touches the sides $\overline{AB}$, $\overline{BC}$ and $\overline{CA}$ of $\triangle ABC$ at the points D , E , F respectively. If $AB = 13$, $BC = 12$ and $CA = 5$ then $AD =$
 (A) 2 (B) 5 (C) 3 (D) 10
- (35) $\odot (0, 41)$ and $\odot (0, 9)$ are concentric circle. The chord $\overline{AB}$ of $\odot (0, 41)$ touches $\odot (0, 9)$, then $AB =$
 (A) 20 (B) 40 (C) 60 (D) 80
- (36) $\overline{OA}$ and $\overline{OB}$ are the two mutually perpendicular radii of a circle having radius 9 cm. The area of the minor sector corresponding to $\angle AOB$ is cm^2 . ($\pi = 3.14$)
 (A) 63.575 (B) 63.585 (C) 63.595 (D) 63.60
- (37) In a circle with radius 7 cm, the perimeter of a minor sector is $\frac{86}{3}$ cm. Then the area of that minor sector is cm^2 .
 (A) 154 (B) 77 (C) 38.5 (D) $\frac{154}{3}$
- (38) If the radius of a circle is increased by 10 %, then corresponding increase in the area of the circle is
 (A) 19 % (B) 10 % (C) 21 % (D) 20 %
- (39) In $\odot (0, r)$ $\overline{OA}$ and $\overline{OB}$ are two radii perpendicular to each other. If the perimeter of the minor sector formed by those radii is 20 Cm, then $r =$ Cm.
 (A) 7 (B) 3.5 (C) 2.8 (D) 5.6

- (40) The area of a circle is numerically double than its circumference. Then the radius of the circle is units.
 (A) 4 (B) 2 (C) 1 (D) π
- (41) CSA of a hemisphere with diameter 20 Cm is Cm^2 .
 (A) 20 p (B) 200 p (C) 100 p (D) 40 p
- (42) The ratio radii of two cylinders is 3 : 4 and the ratio of their heights is 4 : 5. Then the ratio of their volumes is
 (A) 3 : 5 (B) 9 : 20 (C) 12 : 5 (D) 5 : 12
- (43) The area of the base of a cone is 60 cm^2 and its height is 15 cm. Then the volume of the cone is Cm^3 .
 (A) 900 (B) 800 (C) 450 (D) 150
- (44) The volume of a sphere is 4.5 p Cm^3 . Then its diameter is Cm.
 (A) 1.5 (B) 4.5 (C) 3 (D) 6
- (45) If $\bar{x} - z = 3$ and $\bar{x} + z = 45$, then $M =$
 (A) 24 (B) 22 (C) 26 (D) 23
- (46) The mean of 15 observations is 25. Later on, it was found that one observation was taken by mistake as 20 instead of 50. Then the correct mean is
 (A) 20 (B) 27 (C) 28 (D) 30
- (47) For a given frequency distribution $N = 200$, $\sum f_i = 45$, $\sum f_i y_i = -216$ and $C = 10$. Then mean $\bar{x} =$
 (A) 224 (B) 152 (C) 176 (D) 191
- (48) There are 6 green, 5 red and 4 blue identical balls in a bag. One ball is drawn at random from the bag. The probability that the ball drawn is not red is
 (A) $\frac{1}{3}$ (B) $\frac{2}{3}$ (C) $\frac{11}{15}$ (D) $\frac{3}{5}$
- (49) The probability of a non-leap year having 53 Saturdays is
 (A) 1 (B) $\frac{1}{2}$ (C) $\frac{1}{7}$ (D) $\frac{2}{7}$
- (50) Two balanced dice are rolled simultaneously. Then the probability that the sum of the numbers on two dice is a prime number is
 (A) $\frac{5}{12}$ (B) $\frac{1}{3}$ (C) $\frac{7}{18}$ (D) $\frac{4}{9}$