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) $\sqrt{12-\sqrt{140}}$ = ...

(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) $\frac{2}{3}$ (B) $-\frac{2}{3}$ (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 = ...

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

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

(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 = ... 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 = ...

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

(14) If $S_n = 2n^2 + 3n$, then d = ...

(A) 13 (B) 4 (C) 9 (D) – 2

(15) For a given A.P., a = 2 and d = 3. Then S_{30} = ...

(A) 300 (B) 600 (C) 1365 (D) 900

(16) For the A.P. 4, 8, 12, 16 ...... $T_{40} - T_{30}$ = ...

(A) 10 (B) 20 (C) 30 (D) 40

(17) In ΔPQR, m ∠Q = 90 and $\overline{QS}$ is an altitude. If PS – SR = 10 and $PQ^2 - QR^2 = 260$, then PR = ...

(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 = ...

(A) 12 (B) 8 (C) 16 (D) 20

(19) In DABC, m Ð B = 90 and $\overline{BD}$ is and altitude. Then the correspondence ADB « .... between DBDA and DBDC is a similarity.

(A) BDC (B) CDB (C) BCD (D) CBD

(20) In DABC, if $\frac{AB}{1} = \frac{AC}{2} = \frac{BC}{\sqrt{3}}$ then m ÐC = ...

(A) 90 (B) 30 (C) 60 (D) 45

(21) In DABC, m Ð A = 90 and $\overline{AD}$ is an altitude. Then AD^2 = ...

(A) $AB^2 + BC^2$ (B) $BD^2 + DC^2$ (C) BD.DC (D) BD.BC

(22) The length of a median of an equilateral triangle is $\sqrt{3}$. Length of the side of the triangle is ....

(A) 1 (B) $2\sqrt{3}$ (C) 2 (D) $3\sqrt{3}$

(23) y – ax is divides the line segment joining A (– 3, – 4) and B (1, – 2) from A in ratio ....

(A) 2 : 1 (B) 1 : 2 (C) 3 : 1 (D) 3 : 2

(24) A (4, 7) and B (7, 3) then AB = ...

(A) 3 (B) 4 (C) 5 (D) 7

(25) If the vertices of DABC are A (x_1, y_1), B (x_2, y_2) and C (x_3, y_3) then the centroid of DABC is ....

(A) $\left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}\right)$ (B) $\left(\frac{\lambda x_2 + x_1}{\lambda + 1}, \frac{\lambda y_2 + y_1}{\lambda + 1}\right)$

(C) $\left(\frac{x_1 (y_2 - y_3)}{2}, \frac{y1 (x_2 - x_3)}{2}\right)$ (D) $\left(\frac{x_1 + y_2 + y_3}{2}, \frac{y_1 + x_2 + x_3}{2}\right)$

(26) The are a of triangle having vertices A (3, 0), B (0, 3) and C (3, 3) = ...

(A) 9 (B) 4.5 (C) 6 (D) 3

(27) In DABC m ÐC = 90 and $\cos B = \frac{1}{2}$ then cosecA = ...

(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 cotq = ...

(A) $\frac{3}{7}$ (B) $\frac{7}{3}$ (C) $\sqrt{3}$ (D) $\frac{1}{\sqrt{3}}$

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(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) $\sqrt{3}.x$ (C) $\frac{1}{\sqrt{3}}.x$ (D) $\frac{\sqrt{3}}{2}x$

(30) From the top of a building h meteres 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 sinq (B) h tanq (C) h cotq (D) h cosq

(31) A chord of ⊙ (0, 5) fouches ⊙ (0, 3), then the length of the chord = ...

(A) 8 (B) 10 (C) 7 (D) 6

(32) Ð B is right angle in DABC, 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 ⊙(0, 5) drawn from a point P outside a circle. If m Ð AOP = 40 then m ÐOPA = ...

(A) 20 (B) 50 (C) 90 (D) 45

(34) A circle touches the sides $\overline{AB}$, $\overline{BC}$ and $\overline{CA}$ of DABC 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) ⊙ (0, 41) and ⊙ (0, 9) are concentric circle. The chord $\overline{AB}$ of ⊙ (0, 41) touches ⊙ (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 ÐAOB is .... cm². (p = 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 .... Cm².

(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 ⊙ (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 circum ference. 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) 8 : 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) 300 (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 $\bar{x} - z = 8$ 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 my 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 A = 200, $Sf_i = 45$, $\Sigma f_i y_i = -216$ 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 simul taneously. 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) $\frac{4}{9}$