1. The smallest number which when increased by 17 is exactly divisible by both 520 and 468 is:

a) 4697

b) 4663

c) 4656

d) 4680

2. What is the smallest number which when increased by 5 is completely divisible by 8, 11 and 24?

a) 355

b) 255

c) 259

d) None of these

3. Find the least number that when divided by 16, 18 and 20 leaves a remainder of 4 in each case, but is completely divisible by 7.

a) 2800

b) 2882

c) None of these

d) 2884

4. If the graph of a polynomial intersects the x-axis at exactly two points, then it

a) can be a cubic or a quadratic polynomial

b) cannot be a linear or a cubic polynomial

c) can be a quadratic polynomial only

d) can be a linear or a quadratic polynomial

5. The zeroes of the quadratic polynomial x2 +99x +127 are

a) both equal

b) both negative

c) both positive

d) one positive and one negative

6. If ‘a’ and ‘b’ are unequal and x2 + ax + b and x2 + bx + a have a common factor, then a + b is equal to

a) 1

b) 0

c) –1

d) –2

7. Find the zeros of x(x - 3)

a) 1,3

b) 0, 2

c) 2, 1

d) 0, 3

8. If the zeroes of the polynomials are 3x2 -5x + 2 are (a + b) and (a – b), then the value of a and b are

a) 1/2 , 3/4

b) 5/6 , 1/6

c) 5, 6

d) 3/2 , 5/6

9. The base of parallelogram is 2x2 +5x + 3 and area is 2x3 + x 2 -7x -6, then its height is

a) 2x + 4

b) 2x – 4

c) x – 2

d) 2x + 2

10. If x + 1 and x – 1 are factors of f(x) = x3 + 2ax + b, then the value of 2a + 3b is

a) 4

b) -6

c) 5

d) -1

11 \(\frac{1+tan^2 A}{1+cot^2 A}\) is equal to

a) $\tan^2 A$

b) $\sec^2 A$

c) -1

d) $\cot^2 A$

12. If cos A + $\cos^2$ A = 1, then $\sin^2$ A + sin4 A is equal to

a) -1

b) 1

c) 0

d) None of these

13. If $\sin \theta + \sin^2 \theta = 1$ then $\cos^2 \theta + \cos 4 \theta$ is equal

a) -1

b) 0

c) 1

d) None of these

14. AOBC is a rectangle whose three vertices are A(0, 3), O(0, 0) and B(5, 0). The length of its diagonal is

a) 5

b) 34––√

c) 3

d) 4

15. The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is

a) 12

b) 5

c) 11

d) 7 + √5

16. The area of a triangle with vertices A(3, 0), B(7, 0) and C(8, 4) is

a) 14

b) 28

c) 6

d) 8

17. The pair of equations 3x -2y = 5 and 6x - y = 3 have

a) a unique solution

b) infinitely many solutions

c) no solution

d) two solutions

18. The solutions of the equation 2x–y–5=0 are:

a) x = 2, y = 1

b) x = 1, y = -1

c) x = 2, y = -1

d) x = -2, y = 1

19. The system of equations kx –y =2 and 6x–2y =3 has a unique solution when:

a) k = 0

b) k ≠ 0

c) k = 3

d) k ≠ 3

20. Area of a triangle whose vertices are $$(a\cos \theta ,b\sin \theta),(-a\sin \theta ,b\cos \theta)$$ and $$(-a\cos \theta ,-b\sin \theta)$$ is-

a) $$ab\sin \theta \cos \theta $$

b) ab

c) $$a\cos \theta \sin \theta$$

d) $$\frac 12ab$$

21.Mid point of $$A(0,0)$$ and $$B(1024,2048)$$ is $${ A }_{ 1 }$$, midpoint of $${ A }_{ 1 }$$ and B is $${ A }_{ 2 }$$ and so on. Coordinates of $${ A }_{ 10 }$$ are

a) (1022, 2044)

b) (1025, 2050)

c) (1023, 2046)

d) (1, 2)

22. Let A(-4, 0) & B(4,0). Then the number of points C=(x,y) on the circle $${x^2} + {y^2} = 16$$ lying in first quadrant $$(x,y \geqslant 0)$$ such that the area of the triangle whose vertices are A,B,C is a integer is

a)14

b) None of these

c) 16

d) 15

23. If \sqrt{3} \cos A = \sin A , then the value of \cot A is:

a) √3

b) 1/√3

c) 1

d) 2

24. a \sec \theta+b\tan\theta=1, a^{2}\sec^{2}\theta-b^{2}\tan^{2}\theta=5 then a2 (b2+4)=

a) 3b2

b) b2

c) 9b2

d) 4b2

25. $$\displaystyle {x}=\frac{\sin^{3}{p}}{\cos^{2}{p}}, \displaystyle {y}=\frac{\cos^{3}{p}}{\sin^{2}{p}} and \sin p+\cos p = \dfrac 12 then{x}+{y}=

a) 75/18

b) 44/9

c) 48/9

d) 79/18

26. The angle of elevation of the top of a tower from point at a distance of $$100$$ metres from its foot on a horizontal plane is found to be $$\displaystyle 60^{\circ}$$. Find the height of the tower

a)173.2m

b) 196m

c) 144m

c) 123.2m

27. The length of a shadow of a pole is $$\displaystyle \sqrt{3} $$ times the length of the pole. The angle of elevation of the sun is

a) 90°

b) 60°

c) 30°

d) 45°

28. Two pillars are of equal height on either sides of a road which is 100 m wide. The angles of elevation of the top of the pillars are $$\displaystyle 60^{\circ}$$ and $$\displaystyle 30^{\circ}$$ at a point on the road between the pillars. Find the position of the point between the pillars and height of each pillar

a) 54m

b) 45.3m

c) 28m

d) 43.3m

29. From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR is

a) 65 cm2

b) 60 cm2

c) 30 cm2

d) 32.5 cm2

30. If two tangents inclined at an angle 60° are drawn to a circle of radius 3 cm, then length of each tangent is equal to

a) 2 cm

b) 6 cm

c) 3√3 cm

d) 3 cm

31. The number tangents that can be drawn to a circle from a point inside it is

a) none

b) one

c) two

d) infinite

32. Two distinct tangents can be constructed from a point P to a circle of radius 2r situated at a distance:

a) less than 2r from the centre

b) more than 2r from the centrer

c) from the centre

d) 2r from the centre

33. To divide a line segment AB in the ration 2 : 5, first a ray AX is drawn, so that ∠BAX is an acute angle and then at equal distances points are marked on the ray such that the minimum number of these points is :

a) 2

b) 4

c) 5

d) 7

34. If the area and circumference of a circle are numerically equal, then its radius is

a) 4 units

b) 2 units

c) 2π units

d) π units

35. The distance around the circle is called it's_____.

a) diameter

b) area

c) circumference

d) radius

36. We generally take π = 22/7 or 3.14 approximately, but π is

a) a natural number

b) an integer

c) an irrational number

d) a rational number

37. The surface areas of two spheres are in the ratio 1 : 2. The ratio of their volume is:

a) √2 : 1

b) 1 : 2√2

c) 1 : 8

d) 1 : 4

38. The radius of spherical balloon increases from 8 cm to 12 cm. The ratio of the surface areas of balloon in two cases is:

a) 4 : 9

b) 2 : 3

c) 3 : 2

d) 8 : 27

39. Two cubes each of volume 8 cm^3 are joined end to end, then the surface area of the resulting cuboid is:

a) 80 cm^2

b) 64 cm^2

c) 8 cm^2

d) 40 cm^2

40. The ratio of the volume of a cube to that of a sphere which will exactly fit inside the cube is

a) 8:π

b) π:6

c) π:8

d) 6:π

41. The first and last terms of an AP are 1 and 11. If the sum of all its terms is 36, then the number of terms will be

a) 6

b) 8

c) 7

d) 5

42. The ratio of the volume of a cube to that of a sphere which will exactly fit inside the cube is:

a) 8:π

b) 6:π

c) π:2

d) π:8

43. The length of the tangent drawn from a point 8cm away from the centre of a circle of radius 6cm is

a) √ 7cm

b) 2√ 7cm

c) 10 cm

d) 5 cm

44. If the angle of elevation of top of a tower from a point at a distance of 100m from its foot is 600 then the height of the tower is

a) 50√3 m

b) 200/√3 m

c) 100/√3 m

d) 100√3 m

45. One end of a diameter of a circle is at (2,3) and centre is(-2,5) what are the coordinates of the other end of this diameter

a) (-6,-7)

b) (6,7)

c) (6,-7)

d) (-6,7)

1. B, 2. C, 3. D, 4. A, 5. B, 6. C, 7. D, 8. B, 9. C, 10. D, 11. A, 12. B, 13. C, 14. B, 15. A, 16. D, 17. A, 18. C, 19.D, 20. B, 21. C, 22. A, 23. B, 24. C, 25. D, 26. A, 27. C, 28. D, 29. B, 30. C, 31. A, 32. B, 33. D, 34. B, 35. C, 36. D, 37. B, 38. A, 39. D, 40. D, 41. A, 42. B, 43. B, 44. C, 45. D