1. The value of $\frac{3}{3-\sqrt{8}}-\frac{3}{\sqrt{8}-\sqrt{7}}+\frac{3}{\sqrt{7}-\sqrt{6}}-\frac{3}{\sqrt{6}-\sqrt{5}}+\frac{3}{\sqrt{5}-2}$ is

A) 0 B) 15

C) $\sqrt{5}$ D) 3

2. The graph of the equation $ax+by+c=0$ where $a,b\neq 0$ and $c=0$ is a straight line passing through

A) x-axis

B) y-axis

C) both axes

D) cannot make a straight line

3. The measure of each interior angle of a regular tetradecagon is

A) $\left(154\frac{2}{7}\right)^0$ B) $\left(152\frac{2}{7}\right)^0$

C) 135^0 D) 156^0

4. If the external bisector of the vertically angle $\angle A$ of ΔABC is parallel to the base BC, then ΔABC is a/an

A) equilateral triangle

B) isosceles triangle

C) right triangle

D) scalene triangle

5. The three successive angles of a cyclic quadrilateral are in the ratio 1:3:4 , then the measure of the fourth angle is

A) 36^0 B) 30^0

C) 108^0 D) 72^0

6. E is the mid point of the median AD of ΔABC. BE is joined and produced to meet AC at F. F divides AC in the ratio

A) 2:3 B) 2:1

C) 1:3 D) 3:2

7. AB is a chord of a circle with centre O. AB is produced to C, such that BC=OB, CO is joined and produced to meet the circle in D. If $\angle ACD=10^0$, then $\angle AOD=$

A) 30^0 B) 40^0

C) 45^0 D) 60^0

8. The co-ordinates of the mid point of the sides AB and AC of ΔABC are (3,5) and (-3,-3) respectively, then the length of the side BC is

A) 10 units B) 15 units

C) 20 units D) 30 units

SPACE FOR ROUGH WORK

41. If the radius of the sphere is increased by 2cm, then its surface area is increased by 352cm. The radius of the initial sphere was

A) 4cm B) 5cm

C) 12cm D) 6cm

42. The sides of a triangle are in the ratio 7:9:12. The difference between the length of the longest and shortest side is 15cm. The area of the triangle is

A) $120\sqrt{3}$ cm^2 B) $63\sqrt{5}$ cm^2

C) $42\sqrt{3}$ cm^2 D) $126\sqrt{5}$ cm^2

43. The three vertices of a rectangle ABCD are A(2,2), B(-3,2) and C(-3,5). Then the co-ordinates of the point D is

A) (3,2) B) (5,2)

C) (2,3) D) (2,5)

44. In triangle ABC, the exterior bisectors of $\angle B$ and $\angle C$ meet at the point O. If $\angle A=70^0$, then the measure of $\angle BOC=$

A) 55^0 B) 75^0

C) 60^0 D) 50^0

45. (2,2), (-2,-2), $\left(2\sqrt{3},-2\sqrt{3}\right)$ are the vertices of a triangle then the area of the triangle so formed is

A) $64\sqrt{3}$ sq. units B) $32\sqrt{3}$ sq. units

C) $16\sqrt{3}$ sq. units D) $8\sqrt{3}$ sq. units

46. If $x=\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y=\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, the value of x^2-y^2 is

A) 100 B) $98\sqrt{6}$

C) 56 D) $40\sqrt{6}$

47. Pythagoras was a student of

A) Thales B) Euclid

C) Archemedis D) both A and B

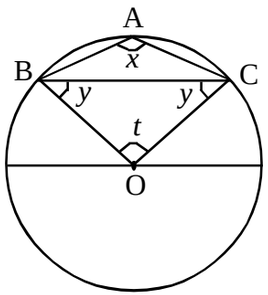
48. If v_1, v_2 and v_3 be the volumes of a right circular cone, a sphere and a right circular cylinder having same radius and same height then which of the following is true?

A) $v_1=\frac{v_2}{4}=\frac{v_3}{3}$ B) $\frac{v_1}{2}=\frac{v_2}{3}=v_3$

C) $\frac{v_1}{3}=\frac{v_2}{3}=v_3$ D) $\frac{v_1}{3}=v_2=\frac{v_3}{2}$

SPACE FOR ROUGH WORK

49. O is the centre of the circle. A, B and C are points on the circle. If $\angle BAC = x$, $\angle CBO = \angle BCO = y$ $\angle BCO = t$ then which of the following is true?



A) $x + y = 90^0$ B) $x - y = 90^0$

C) $t + 2y = 90^0$ D) none of these

50. ABCD is an isosceles trapezium in which $AB \| CD$. AB=8cm, DC=10cm and AD=BC=6cm. P and Q are the mid points of AD and BC respectively. Then PQ=

A) 7 cm B) 8 cm

C) 9 cm D) 12 cm

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SPACE FOR ROUGH WORK

27th MIX
(MATHEMATICS)

Time Allowed 1 hour Maximum Marks : 100

CODE A

Read the following instructions carefully before you begin to answer the questions.

1. This booklet contains 50 questions in all.
2. All questions are compulsory and each question carries 2 marks.
3. Before you start to answer the questions you must check up this booklet and ensure that it contains all the pages 7 (Seven) and see that no page is missing or repeated. If you find any defect in this Booklet, you must replace it immediately.
4. There will **NOT** be any negative marking for wrong answers.
5. You are required to fill the information on the answer sheet which you will get in the examination hall by **H.B. pencil or BALL point pen(Blue or Black).**
6. **Answer Sheet** and **Question Paper** will be supplied in examination hall. After the test is over, you should hand over the answer sheet to the invigilator before leaving the room.
7. You should write your **Name, Roll No., School name** carefully on the space provided in the answer sheet. Otherwise you will be awarded **ZERO** mark.
8. If you wish to change your answer, **ERASE** completely the darkened circle by using an **ERASER** and then blacken the new circle. If not erased completely, smudges will be left on the erased circle and the question will be read as having two answers and will be ignored for giving any credit. (only for pencil users)
9. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any question.
10. You are not allowed to leave the examination hall until you are advised to do so by the invigilator.

18. The lines representing $2x + y = 5$ and $x + 2y = 4$ intersect at the point

A) (1,0) B) (2,1)

C) $\left(\frac{5}{2}, 0\right)$ D) (0,2)

19. The mean of first 175 natural number is

A) 85 B) 86

C) 87 D) 88

20. Kaiku and Gokul play in a marigold round. The circular distance of Gokul and Kaiku is 132m. The angle formed by them at the centre is 108^0. The diameter of marigold round is

A) 56 m B) 84 m

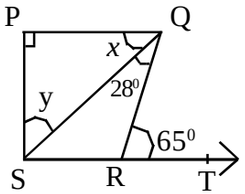
C) 140 m D) 168 m

21. The area bounded by the line $2x + 3y = 6$ with the axes in the first quadrant is

A) 6 square units B) 4 square units

C) 3 square units D) 1 square unit

22. In the given figure $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28^0$ and $\angle QRT = 65^0$, then $y =$



A) 65^0 B) 28^0

C) 45^0 D) 53^0

23. In triangle ABC, O is the orthocentre and $\angle BOC = 80^0$, the measure of $\angle BAC =$

A) 90^0 B) 80^0

C) 100^0 D) 120^0

24. The sum of the probabilities of getting an even number and a prime number in throwing a fair die is

A) 1 B) 0.5

C) 0.33 D) 0

25. The volume of the largest sphere that can be dropped into a cylindrical vessel of diameter 42cm is

A) 38808 cm^3 B) 38008 cm^3

C) 30088 cm^3 D) 30808 cm^3

26. Which of the following is a factor of both polynomials $x^{10} - 1$ and $x^{11} - 1$?

A) $x + 1$ B) $x - 1$

C) $x + 2$ D) $x - 2$

SPACE FOR ROUGH WORK

27. The great Greek Mathematician Pythagoras lived

A) 640 BC-540 BC

B) 569 BC-479 BC

C) 325 BC-265 BC

D) 246 BC-194 BC

28. The frequency table of a data is given below

class	frequency
15-19	11
20-24	6
25-29	15
30-34	30
35-39	0
40-44	2
45-49	2

N=66

The width of the fourth class is

A) 5 B) 4

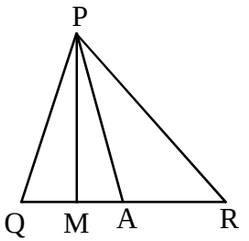
C) 30 D) 35

29. The area of a rhombus of side 30 cm and one of its diagonals 48 cm is

A) 432 cm^2 B) 684 cm^2

C) 756 cm^2 D) 864 cm^2

30. In figure $\angle Q > \angle R$, PA is the bisector of $\angle QPR$ and $PM \perp QR$ then $\angle APM =$



A) $\frac{1}{2}(\angle Q + \angle R)$

B) $\frac{1}{2}(\angle Q - \angle R)$

C) $\frac{1}{2}(\angle Q + \angle P)$

D) $\frac{1}{2}(\angle Q - \angle P)$

31. The sum of two positive integers is 80 and difference is 20. The difference of square of those number is

A) 6000 B) 400

C) 120 D) 1600

32. The volume of the metal of a metallic cylindrical pipe of length 14 cm and external radius 9 cm having the thickness 1 cm is

A) 748 cm^3 B) 3564 cm^3

C) 2816 cm^3 D) 6380 cm^3

SPACE FOR ROUGH WORK

33. In a right angled triangle the product of two sides is equal to half the square of the hypotenuse, then one of the acute angle of the triangle is
A) 30^0 B) 45^0
C) 60^0 D) cannot say

34. The HCF of two polynomials p(x) and q(x) is 8. Then the common zero of the two polynomials is
A) 0 B) 1
C) 2 D) none of these

35. If $x+\frac{1}{x}=5$, then the value of $\frac{x}{1+x+x^2}$ is
A) 0 B) 1
C) 6 D) $\frac{1}{6}$

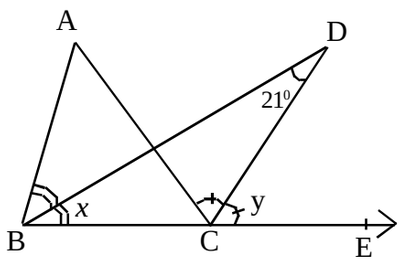
36. If x^3+3x^2+3x+1 is divided by $x+1$, then the remainder is
A) 0 B) 1
C) 2 D) 3

37. The graph of the linear equation $3x+4y=24$ intersects x-axis and y-axis at the point A and B respectively. P(2 ,0) and Q$\left(0,\frac{3}{2}\right)$ are two points then area of the quadrilateral APQB is
A) 10 cm^2 B) 18.4 cm^2
C) 22.5 cm^2 D) 28.6 cm^2

38. The degree of a zero polynomial is
A) 0 B) 1
C) 2 D) not define

39. If $\frac{1}{\sqrt{a}}-\frac{1}{\sqrt{b}}=0$, then the value of $\frac{1}{a}+\frac{1}{b}$ is
A) 0 B) 1
C) $\sqrt{ab}$ D) $\frac{2\sqrt{ab}}{ab}$

40. In figure BD is the bisector of $\angle ABC$ and CD is the bisector of $\angle ACE$ and $\angle BDC = 21^0$. Then $\angle BAC =$



A) 10.5^0 B) 21^0
C) 42^0 D) 50^0

SPACE FOR ROUGH WORK

9. The exponential form of $\sqrt{\sqrt{3}\times\sqrt{2}}$ is
A) 6 B) $6^{\frac{1}{2}}$
C) $6^{-\frac{1}{2}}$ D) $6^{\frac{1}{4}}$

10. Two distict lines cannot have more than ------ point in common.
A) 1 B) 2
C) 3 D) infinite

11. AB is a diameter of a circle having centre O. PQ is a chord which does not intersect AB. AP and BQ are joined. If $\angle BAP = \angle ABQ$ then ABQP is
A) cyclic square
B) cyclic trapezium
C) cyclic rhombus
D) cyclic rectangle

12. The simplest rationalising factor of $\sqrt[p]{n^{p-5a}}$ is
A) $\sqrt{n^{p-5a}}$ B) $\sqrt[p]{n^{p-5a}}$
C) $\sqrt[p]{n^{5a}}$ D) $\sqrt{n^{5a}}$

13. The area of a triangle whose two sides are 18cm and 10cm and the perimeter 42cm is
A) 18 cm^2 B) $18\sqrt{11}$ cm^2
C) 21 cm^2 D) $21\sqrt{11}$ cm^2

14. The side BC of a triangle ABC is produced to D. If $\angle ACD = 112^0$ and $\angle B = \frac{3}{4}\angle A$, then the measure of $\angle B$ is
A) 30^0 B) 48^0
C) 45^0 D) 64^0

15. The value of $\frac{3\sqrt{12}}{6\sqrt{27}}$ is equal to
(A) $\frac{1}{2}$ (B) $\sqrt{2}$
(C) $\sqrt{3}$ (D) $\frac{1}{3}$

16. The measure of an angle of a regular quadrilateral in grade is
A) 90^g B) 100^g
C) π^g D) $\left(\frac{\pi}{2}\right)^g$

17. In ΔABC the internal bisector of $\angle B$ and $\angle C$ meet at point O. If $\angle A = 80^0$ then $\angle BOC =$
A) 100^0 B) 120^0
C) 130^0 D) 140^0

SPACE FOR ROUGH WORK