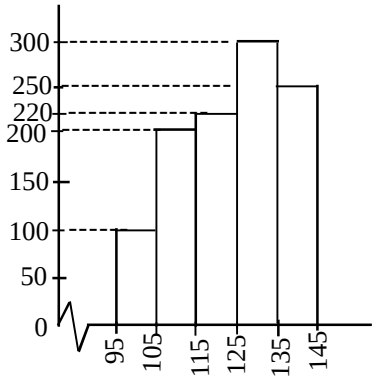
46. Study the histogram of weight distribution of different men and answer the question

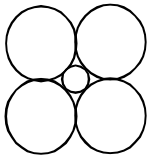


Average number of men per interval who participated in this survey is

(A) 200 (B) 180

(C) 214 (D) 194

47. In the given figure if each of the outer circles have radii 'R' then the radius of the inner circle will be :



(A) $\frac{2}{(\sqrt{2}+1)R}$ (B) $\frac{1}{\sqrt{2}}$

(C) $(\sqrt{2}-1)R$ (D) $\sqrt{2}R$

48. The volume of metal of a metallic cylinderical pipe is 748 cm^3. Its length is 14cm and external radius is 9cm. Its thickness is :

(A) 7cm (B) 17cm

(C) 11cm (D) 1cm

49. The common zero(s) of the polynomials $x^4 - x^3 - 12x^2$ and $x^3 - 9x$ is/ are :

(A) 3 (B) -3

(C) 0 and -3 (D) 0 and 3

50. The value of $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$ is equal to :

(A) $\sqrt{2}$ (B) 2

(C) 4 (D) 8

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SPACE FOR ROUGH WORK

26th MIX
(MATHEMATICS)

Time Allowed 1 hour Maximum Marks : 100

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.**
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.,** 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 answer and will be ignored for giving any credit.
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.

1. If $x=\frac{\sqrt{13}+\sqrt{11}}{\sqrt{13}-\sqrt{11}}$ and $y=\frac{1}{x}$, then the value of $3x^2-5xy+3y^2$ is :

   (A) 2424 (B)1818

   (C) 1717 (D) 1616

2. Find in degree the angle through which a pendulum swings if its length is 50cm and its tips describes an arc of length 10cm.

   (A) $11\frac{5}{11}^0$ (B) 11^0

   (C) $11\frac{5}{60}^0$ (D) 12^0

3. To factorise ax^2+bx+c by method of splitting the middle terms we are to seek two real numbers α and β such that :

   (A) $\alpha+\beta=a$ and $\alpha\beta=c$

   (B) $\alpha+\beta=b$ and $\alpha\beta=ac$

   (C) $\alpha+\beta=b$ and $\alpha\beta=c$

   (D) $\alpha+\beta=a$ and $\alpha\beta=bc$.

4. ΔABC is an isosceles triangle in which AB = AC. Side BA is extended to D such that AB = AD. The measure of $\angle BCD$ is :

   (A) 90^0 (B) 60^0

   (C) 30^0 (D) 45^0

5. ABC is a triangle $(\angle B>\angle C)$ in which AE is the bisector of $\angle BAC$ and $AD\perp BC$, then $\angle DAE$ =____

   (A) $\frac{1}{2}\angle B$ (B) $\frac{1}{2}\angle C$

   (C) $\frac{1}{2}(\angle B+\angle C)$ (D) $\frac{1}{2}(\angle B-\angle C)$

6. The difference of radii of the circular ends of a bucket is 20cm . If the height of the bucket is 15cm. Its slant height is :

   (A) 25cm (B) 28cm

   (C) 30cm (D) 36cm

7. Each interior angle of a regular octagon in radian is :

   (A) $\frac{\pi}{4}$ (B) $\frac{3\pi}{4}$

   (C) $\frac{2\pi}{3}$ (D) $\frac{1}{3}\pi$

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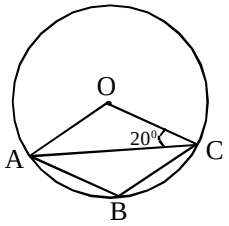
39. In figure $\angle OCA=20^0$, find the value of $\angle ABC$.



   (A) 110^0 (B) 70^0

   (C) 40^0 (D) 140^0

40. The value of $\left[8-\left(\frac{4^{\frac{9}{4}}\sqrt{2\times2^2}}{2\sqrt{2^{-2}}}\right)^{\frac{1}{2}}\right]$ is :

   (A) 0 (B) 8

   (C) 4 (D) -16

41. The bisectors of two adjacent supplementary angles include a/an :

   (A) right angle (B) straight angle

   (C) obtuse angle (D) acute angle

42. Which of the following is Karl Pearson's emperical formula?

   (A) Mean - Mode = 3(Mean - Median)

   (B) Median - Mode = 3(Median - Mean)

   (C) 3Median + Mode = 2 Mean

   (D) Mode = 2Mean + 3Median

43. The degree of 2×7^{10} is :

   (A) 10 (B) 2

   (C) 7 (D) 0

44. Two line segments AB and CD bisect each other at O. If OA = $2x-5$, OB = 19, AC = 16 and BD = $3y-8$, then the values of x and y are respectively :

   (A) 18 and 12 (B) 12 and 8

   (C) 10 and 14 (D) none of these

45. The value of x, if AB = 13 unit whose co-ordinates are (-4,8) and (x,3) respectively is :

   (A) 8 or 16 (B) 8 or -16

   (C) 4 or 8 (D) -4 or -16

SPACE FOR ROUGH WORK

32. The figure formed by joining the mid points of the sides of a quadrilateral ABCD, taken in order is a square only if :
(A) ABCD is a rhombus
(B) diagonals of ABCD are equal and perpendicular
(C) diagonals of ABCD are equal
(D) diagonals of ABCD are perpendicular

33. The area of the figure formed by joining the mid points of the adjacent sides of a rhombus with diagonals 12cm and 16cm is :
(A) 96 cm^2 (B) 192cm^2
(C) 64cm^2 (D) 48cm^2

34. AB is a chord of a circle with centre O such that AB=8cm and OA=5cm, $OD \perp AB$ intersecting AB at C and the circle at D then CD = ___
(A) 3cm (B) 2cm
(C) 4cm (D) 5cm

35. Two isosceles triangles ABC and DBC have common base BC and AD intersects BC at O, then $\angle AOC$ =__
(A) 30^0 (B) 45^0
(C) 90^0 (D) 120^0

36. In a survey of 364 children age 6 to 10 years, it was found that 91 liked to eat potato chips. If a child is selected at random the probability that he/she does not like to eat potato chips is :
(A) 0.25 (B) 0.50
(C) 0.75 (D) 0.80

37. Median fo the numbers 4, 4, 5, 7, 6, 7, 7, 12, 3 is :
(A) 4 (B) 5
(C) 6 (D) 7

38. What is $x(y-z)(y+z)+y(z-x)(z+x)+z(x-y)(x+z)$ equal to :
(A) $x(x-y)(z-y)$
(B) $(x-y)(y-z)(z-x)$
(C) $(x+y)(y-z)(z-x)$
(D) $(y-x)(z-y)(x-z)$

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8. "For every line 'l' and for every point 'p' not lying on 'l' there exists a unique line 'm' passing through p and parallel to l". This axiom is known as :
(A) Axiom of superposition
(B) Axion of addition
(C) Area monotone axiom
(D) Playfair axiom

9. The HCF of $(x^2-4)(x^2+5x+6)$ and $(x+3)(3x^2+3x-6)$ is :
(A) $(x+2)$ (B) $(x+3)$
(C) $(x+6)$ (D) $(x+2)(x+3)$

10. Each of the height and radius of the base of a right cirular cone is increased by 100%. The volume of the cone is increased by :
(A) 700% (B) 500%
(C) 300% (D) 100%

11. A point D is taken from the side BC of a right triangle ABC where AB is the hypotenuse. Then which of the following is true?
(A) $AB^2 + CD^2 = BC^2 + AD^2$
(B) $CD^2 + BD^2 = 2AD^2$
(C) $AB^2 + AC^2 = 2AD^2$
(D) $AB^2 = AD^2 + BD^2$

12. Which of the following is true?
(A) Every linear polynomial has one and only one zero.
(B) A polynomial can have more than one zero.
(C) A zero of a polynomial need not be 0
(D) All the above.

13. What is the area of the triangle whose side are 9cm, 10cm and 11cm are :
(A) 30cm^2 (B) 60cm^2
(C) $30\sqrt{2}$ cm^2 (D) $60\sqrt{2}$ cm^2

14. If the students of 9th class are arranged in rows of 6, 8, 12, or 16, no student is left behind. The possible number of students in the class is :
(A) 60 (B) 72
(C) 80 (D) 96

15. The base and corresponding height of a parallelogram ABCD are 8cm and 6cm. The diagonals intersect at O. A straight line through O meets AB at P and CD at Q. Then area of the qradrilateral APQD is :

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(A) 48cm^2 (B) 32cm^2

(C) 24cm^2 (D) 12cm^2

16. The distance of a point from the x-axis is called :

(A) abscissa (B) ordinate

(C) co-ordinate (D) all the above

17. In any ΔABC the internal bisector of $\angle ABC$ and the external bisector of other base angle meet at point E, then $\angle BEC$ = ?

(A) $\angle A$ (B) $2\angle A$

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

18. The volume and curved surface area of a right circular cylinder is 462m^3 and 264m^2 respectively then the total surface area is :

(A) 363m^2 (B) 336m^2

(C) 314m^2 (D) 341m^2

19. What is the probability that a number selected from numbers 1, 2, 3, 4, 5,.....,30 is a prime number, when each of the given number is equally likey to be selected? :

(A) 0.3 (B) 0.33

(C) 0.37 (D) 0.4

20. If we divide both sides of a linear equation in two variables by 2, then the solutions of the linear equation ___ :

(A) increased by 2

(B) decreased by 2

(C) unchange

(D) none of these

21. If the internal angle bisector of $\angle ABC$ and $\angle ACB$ of ΔABC intersect at point O, then $\angle BOC$ = ?

(A) $90^0 - \frac{\angle A}{2}$ (B) $90^0 + \frac{\angle A}{2}$

(C) $180^0 - \frac{\angle A}{2}$ (D) $90^0 - \angle A$

22. Which of the following is zero polynomial?

(A) 6 (B) $3x^0 + 2$

(C) Both (A)and(B) (D) none of these

23. Four circles having equal radii are drawn with centres at the four corners of a square. Each circle touches the other two adjacent circle. If remaining area of the square is 168cm^2. What is the length of the radius of each circle?

(A) 14cm (B) 84cm

(C) 56cm (D) 42cm

24. The area of an equilateral triangle is $9\sqrt{3}$ m^2 .The length (in m) of the median is :

(A) $2\sqrt{3}$ (B) $3\sqrt{3}$

(C) $3\sqrt{2}$ (D) $2\sqrt{2}$

25. On plotting the points A(0,0), B(3,0),C(3,4) and D(0,4) and joining AB, BC, CD and DC, then ABCD is a :

(A) square (B) rectangle

(C) trapezium (D) rhombus

26. Which of the following has no zero of the polynomial?

(A) $6x^3$ (B) $6x^2$

(C) $6x$ (D) 6

27. If I is the incentre of ΔABC and $\angle BIC = 135^0$ then ΔABC is __

(A) Acute angle triangle

(B) Right angle triangle

(C) Obtuse angle triangle

(D) Equilateral triangle

28. A rhombus of side 10cm has two angles of 60^0 each. Then the length of the diagonals (in cm) are :

(A) $10\sqrt{3}$,10 (B) $10\sqrt{2}$, 10

(C) 5, 10 (D) none of these

29. Euclid divided his famous treatist "The elements" into :

(A) 13 chapters (B) 12 chapters

(C) 11 chapters (D) 9 chapters

30. If (2k -1, k) is a solution of the equation 10x -9y = 12, then k =

(A) 1 (B) 2

(C) 3 (D) 4

31. ΔABC is an isosceles triangle in which $\angle B = \angle C$. AE is the bisector of exterior $\angle A$ formed by producing the side BA. Which of the following is true?

(A) $\angle CAE = 2\angle A$

(B) $\angle BAC = \angle CAE$

(C) $\angle BAC = \angle ABC$

(D) $BC \| AE$

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