પ્રશ્નપત્ર □□□□ ક્રમાંક ઉમેદવાર
OMR SHEET □□ ઘટ □□□□□□ □□
Set No. of Question Paper which is to be darken in OMR sheet
01

This Question Paper contains 16 Printed Pages.

N-12(E

New Course

MARCH, 2013)

S1. No.

With corrected translation

PART-A

Time: 60 *minutes]* ***[Maximum Marks : 50]***

Instructions :

1 There are **50** objective type questions in this part and **all** are **compulsory.**

2 The questions are serially numbered from **1** to **50** and each carries **1** mark.

3 You are supplied with separate OMR sheet with the alternatives A) O, B O, C O, D) O against each question number. For each question, select the correct alternative and darken the circle ○ as ● completely with the pen against the alphabet corresponding to that alternative in the given OMR sheet.

- From the following 1 to **50** questions, select the correct alternative from the given four answers and darken the circle with pen against the alphabet, against the number in OMR sheet.
- Each question carries 1 mark.

[Space for Rough Work]

1. If H.C.F. of $x, y = 1$, then H.C.F. of $x - y$; $x + y$ =.......

A) 1 or 2 B x or y

C $x + y$ or $x - y$ D) 4

2. In Euclid's division Lemma, for positive integers a and b the unique integers q and r are obtained such that $a = bq + r$ is

A) $0 < r < b$ B $0 \leq r \leq b$

C $0 < r \leq b$ D) $0 \leq r < b$

3. The cubic polynomial $p(a) = a^3 - a$ has..........zeros.

A) 0 B 1

C 2 D) 3

4. If one root of equation $x^2 + ax - 8 = 0$ is 4, then a=.........

A) 2 B 4

C -2 D) -4

5. The product of zeros of cubic polynomial $p(x$ is.........

A $\dfrac{\text{Coefficient of} - x2}{\text{Coefficient of } x3}$

B $\dfrac{\text{Coefficient of } x}{\text{Coefficient of } x3}$

C $\dfrac{\text{- The constant Term}}{\text{Coefficient of } x2}$

D) None of these.

6. The diagram below shows two sticks - one BLACK and the other WHITE. Based on the measurements shown, what is the length of the while stick?

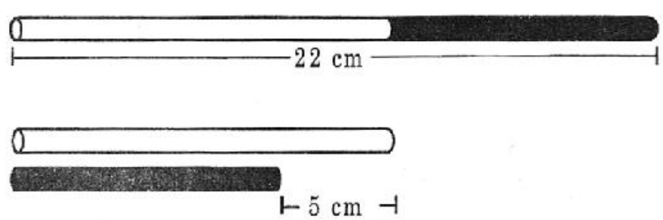


Figure is not to scale

A) 5 cm B 8.5 cm
C 13.5 cm D) 17 cm

7. x = ... is identified as GOLDEN NUMBER

A) $\frac{1+\sqrt{5}}{2}$ B 0

C $\frac{1+\sqrt{2}}{2}$ D) 1

8. The Discriminant value of equation $5x^2 - 6x + 1 = 0$ is........

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

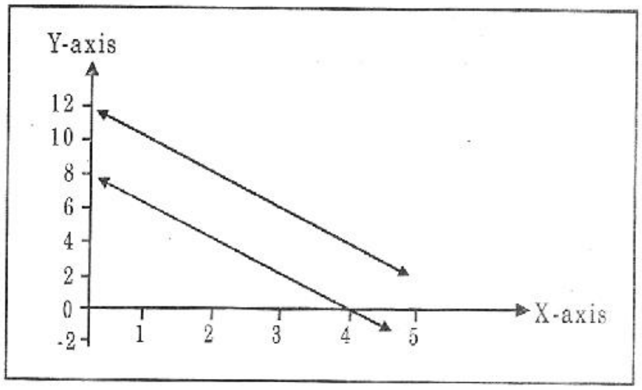
9. If ....is there, then the quadratic equation does not have real solution.

A) D = 0 B D > 0
C D < 0 D) D ≥ 0

[Space for Rough Work]

[Space for Rough Work]

10. Given below is a graph showing two lines.



Which of following statements is ***true*** about the solution s of the pair of equations represented by these lines?

A) They have a unique solution.

B They do not have any solution.

C They have infinite solutions.

D) We cannot predict the number of solutions without knowing the algebraic form of these equations.

11. 2 years ago, the addition of ages of father - mother and their two daughters was 40 years. After 3 years the addition of their ages will be……..

A) 40 B 46

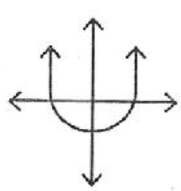
C 50 D) 60

12. In two digit number, the digit at tens place is 4 and the product of two numbers is 4 times greater than the tens place, then that number is……..

A) 42 B 48

C 44 D) 84

13. As per the given figure, y=p(x) graphs has ………..real zeros.



A) 0 B 1

C 2 D) 3

14. If 2k + 1, 13, 5k-3 are three consecutive terms of A.P., then k =……..

A) 17 B 13
C 4 D) 9

15. If the sequence is 1,1,2,3,5,8,13,21,34,………. then it is called……….

A Arithmetic Progression.
B Finite Sequence.
C Fibonacci Sequence.
D None of the given three.

16. $S_n - 2n^2 + 3n$; then d = ……..

A) 13 B 4
C 9 D) -2

17. In ΔABC, the bisector of $\angle A$ intersects $\overline{BC}$ at a point D, then ……..

A) BD x AC = BC x AB
B BD x AB = DC x AC
C AC x AB = DC x BC
D) BD x AC = DC x AB

18. In ΔABC, the measures of $\overline{BC}$, $\overline{CA}$ an $\overline{AB}$ are in 3:4:5 proportion, Correspondence ABC↔PQR is congruence. If PR=12, then perimeter of PQR is ……..

A) 12 B 24
C 27 D) 36

19. Out of following triplets...….is not a Pythagorean triplet.

A) 7,24,25 B 20,21,29
C 11,60,61 D) 13, 35,37

[Space for Rough Work]

[Space for Rough Work]

20. In ΔABC, $\overline{AD}$ is a median, then according to Apollonius theorem,…….. is true

A) $AB^2 + AC^2 = 2\ AD^2 + BC^2$
B $AB^2 + AC^2 = 2\ BD^2 + DC^2$
C $AB^2 + AC^2 = 2\ AD^2 + DC^2$
D) $AB^2 + AC^2 = 2\ BD^2 + BC^2$

21. In Mathematics Exam, the probability of Aayushi to score 100 out of 100 is…………..

A) 1 B 0

C $\frac{1}{100}$ D) $\frac{1}{101}$

22. The probability in an event k is…………

A) $0 \geq P\ k\ \geq 1$
B $0 \leq P\ k\ \leq 1$
C $0 > P\ k\ > 1$
D) $0 < P\ k\ < 1$

23. If the dice is tossed once, then the probability of having prime number on the dice is…………

A) $1/3$ B $1/6$
C $1/2$ D) 1

24. $\bar{x} - Z = 3$, $\bar{x} + Z = 45$, then M=………….

A) 22 B 23
C 24 D) 26

25. Rachna had an average score of 45 from 6 tests. Her teacher dropped her lowest score, which is 30 and calculated the average of the remaining scores to decide her grade. Which of these gives her new average score ?

A) $\frac{45\times5-30)}{5}$ B $\frac{45\times5-30)}{6}$

C $\frac{45\times6-30)}{5}$ D) $\frac{45\times6-30)}{6}$

26. In a Maths test taken by 35 students, the average score of 15 girls is 10 and that of 20 boys is also 10. Which of the following can be calculated based on the data we have?

A) The highest score in the class.
B The lowest score among the boys in the class.
C The sum of the scores of the 35 students of the whole class.
D) All of the above can be calculated.

27. $\tan^2 \Theta = \sin^2 \Theta + \cos^2 \Theta$, then Θ = ...

A) 30 B 45
C 60 D) 90

28. Which of the following pair is correct for trigonometric inter-relationship ?

1)	$\cos\Theta$	a	$\frac{\cos\Theta}{\sin\Theta}$
2)	$\tan\Theta$	b)	$\frac{1}{cosec\,\Theta}$
3)	$\cot\Theta$	c	$\frac{1}{\sec\Theta}$
4)	$\sin\Theta$	d	$\frac{1}{\cot\Theta}$
		e	$\sin\Theta \,.\, \cos\Theta$

A) 1-*d*, 2-*e*, 3-*b*, 4-*a*
B 1-*b*, 2-a, 3-e, 4-*d*
C 1-*c*, 2-*d*, 3-*a*, 4-*b*
D) 1-*e*, 2-*b*, 3-*c*, 4-*d*

[Space for Rough Work]

29. $\tan 7\theta \cdot \tan 3\theta = 1$; $\theta =$ ………..

A) 0 B 9
C 10 D) 18

30. When observed from top of tower, the angle of depression of two houses A and B in Eastern and Western direction is 30º and 60º respectively, then …………..

A) House A is nearer to tower than House B.
B House B is nearer to tower than House A.
C House A and House B are equidistant from tower.
D) None of the given three.

31. On walking x meters making an angle of 30º with the ground to find a ball fallen in a valley, one can reach the height of 'y' meters below the ground, then….

A) $x = y$ B $x = 2y$
C $2x = \sqrt{3}$ y D) $2x = y$

32. The length of minor are $\overset{\frown}{AB}$ of circle is $^1/_4$ of its circumference, then the angle subtended by the minor arc $\overset{\frown}{AB}$ at the centre will be……

A) 30 B 45
C 90 D) 60

33. The Length of minute hand of a Clock is 14 cm. If minute hand moves from 1 to 10 on the dial, then………cm^2 area will be covered.

A) 462 B 154
C 308 D) 616

[Space for Rough Work]

34. If the radius of Circle is increased by 10%, then the corresponding area of new circle will be……….. $\pi = 3.14$)

A) $121\ \pi r^2$ B $12.1\ \pi r^2$
C $1.21\ \pi^2$ D) None of the given three.

35. The maximum area of inscribed triangle in a semi-circle having radius 10 cm is……….cm^2

A) 10 B 50
C 100 D) 200

36. If the area of a circle is 38.5 m^2,
Then its circumference will be……….

A) 22 B 2.2
C 38.5 D) 3.85

37. ▢ABCD is a Rhombus. If it is inscribed in ⊙ O, r, then ▢ABCD is………….

A) Square
B Rectangle
C Trapezium
D) None of these

38. In ΔABC, $m\angle B = 90^\circ$, AB = 4 and BC = 3, then the radius of circle touching all three sides of triangle will be ……..

A) 1 B 2
C 3 D) 4

39. One circle touches all sides of ▢ABCD
If AB = 5, BC = 8, CD = 6; then AD = ………….

A) 3 B 7
C 4 D) 9

40. Point P is on the outer side of Circle ⊙ O,15). The tangent drawn from point P touches the circle at T. If PT = 8; then OP = ……….

A) 7 B 13
C 17 D) 23

41. The cubic (cubical) volume of Hemisphere having 1 cm diameter will be ………..cm^3.

A) $\pi/6$ B $\pi/12$

C $2\pi/3$ D) $4\pi/3$

42. If the frustum of a Cone is having 6 cm height and radius 5 cm and 9 cm respectively; then its cubical volume will be………..cm^3.

A) 320 π B 151 π

C 302 π D) 98 π

[Space for Rough Work]

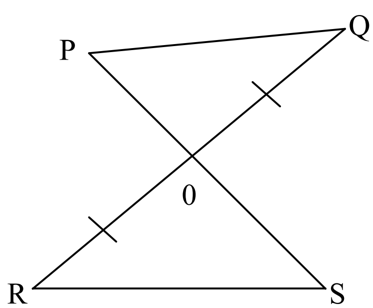
43. The formula for finding the total surface area of a Cylinder having cone shaped lid at both the ends, will be…………..

A) $\pi r \;\; l + 2r$
B $\pi r \, 2 \;\; h + r$
C $2\pi r \;\; h + l$
D) $2\pi r \;\; h + 2r$

44. 1 meter^3 = …………..cm^3

A) 1
B 10^2
C 10^3
D) 10^6

45. The two triangles in the figure are congruent using congruence theorem. Here, it is given OQ = OR. Which of these conditions alongwith the given condition is sufficient to prove that the two triangles are congruent to each other?



A) $\angle$P = $\angle$S
B $\angle$Q = $\angle$R
C OP = OS
D) PQ = SR

[Space for Rough Work]

46. In $\Delta PQR, \frac{PQ}{1} = \frac{PR}{2} = \frac{QR}{\sqrt{3}}$, then $m\angle R =$ ……….

A) 90^{o}

B 60^{o}

C 45^{o}

D) 30^{o}

47. From P -3,2) the feet of perpendicular drawn on Y-axis is M. Then the co-ordinate of M is……….

A) 3, 0)

B 0, 2)

C $^{3}/_{2}$, -1)

D) -3, 2)

48. The distance of P a,b from point of origin is……….

A) $a^2 + b^2$

B $|a - b|$

C $|a + b|$

D) $\sqrt{a^2 + b^2}$

49. Which of the following group is true for ▭ABCD ?

A)	▭ABCD is Rhombus	a	$\overline{AC}$ and $\overline{BD}$ bisects
B	▱ABCD is Parallelogram	b	$\overline{AC}$ and $\overline{BD}$ bisects at right angle.
C	▭ABCD is Rectangle	c	$\overline{AC}$ and $\overline{BD}$ are congruent and bisects at right angle.
D)	□ABCD is Square.	d	$\overline{AC}$ and $\overline{BD}$ are congruent and bisects.

A) 1-*d*, 2-*a*, 3-*d*, 4-*c*
B 1-*c*, 2-*d*, 3-*a*, 4-*b*
C 1-*b*, 2-*a*, 3-*d*, 4-*c*
D) 1-*b*, 2-*c*, 3-*d*, 4-*a*

50. When point A x_1, y_1 and point B x_2, y_2 joined to form $\overline{AB}$ and dividing $\overline{AB}$ in the proportion of $\lambda : 1$; the co-ordinate of points will be.........

A) $\frac{\lambda x2+x\ 1}{\lambda+1}, \frac{\lambda y2+y1}{\lambda+1}$

B $\frac{\lambda x2+x\ 1}{\lambda-1}, \frac{\lambda y2+y1}{\lambda-1}$

C $\frac{\lambda x1+x\ 2}{\lambda+1}, \frac{\lambda y2+y2}{\lambda+1}$

D) $\frac{\lambda x2+x1}{\lambda-1}, \frac{\lambda y2+y1}{\lambda-1}$

[Space for Rough Work]

N-12(E

MARCH, 2013

PART - B

Time : 2 Hours] ***[Maximum Marks : 50***

Instructions :-

1) There are **four** sections in this part of the question paper and total **1** to **17** questions are there.
2) **All** the questions are **compulsory**. Internal options are given.
3) Draw figures wherever required. Retain all the lines of construction.
4) The numbers at right side represent the marks of the question.

SECTION - A

Answer the following questions by doing the calculations in brief.
Each question carries 2 marks. **16**

1. Find the square root:
   $14+6\sqrt{5}$
2. Find the Quadratic equation, whose addition of zeros is and multiplication is - $^7/_3$.
3. In an Arithmetic Progression $T_7 = 18$ and $T_{18} = 7$, obtain T_{25} .

OR

3. In an arithmetic progression 2, 7, 12,17...summation of how many terms will be 990 ?
4. In ΔPQR, $m\angle Q = 90$ and $\overline{QM}$ is an altitude; $M \in \overline{PR}$. If QM = 12, PR = 26; then find PM and RM. If PM < RM; then find PQ and QR.
5. Two concentric circles having radii 73 and 55 are given. The chord of circle having greater larger radius touches the small circle. Then find t he length of this chord.

6. Find the area of triangle ΔABC having vertices A4, 2), B3, 9) and C10, 10).

OR

Find the co-ordinates of points which divide the line segment joining A(- 7, 5) and B5, -1) into three congruent segments Such points are called the points of trisection of segment.

7. In a Hostel, one day reading hours of 20 students was observed, whose result is mentioned in the table below. From the table, find the Mode.

No. of Reading Hours	1-3	3-5	5-7	7-9	9-11
Student's strength in Hostel	7	2	8	2	1

8. A card is selected at random from well-shuffled pack of 52 cards. Find the probability that the selected card is

1) black coloured queen.

2) not a king.

SECTION - B

Answer the following questions from No. ***9 to 12*** *with calculations.*

Each question is of ***3*** *marks.* **12**

9. Prove sin 0 + cosec Q) ^{2} + cos 0 + sec 0) ^{2} = 7 + tan^2 0 + cot^2 0.

OR

9. Find the value of

$\frac{cosec\ 38}{sec52} + \frac{2}{\sqrt{3}}$ tan38 • tan60 • tan52-3 sin ^{2} 32 + sin^2 58)

10 The chord of Circle of 84 cm diameter subtends an angle of 60° at the centre of a Circle. Find the area of minor segment corresponding to the chord.

Take $\sqrt{3} = 1.73$

11. Find the solution of pair of equation

$\frac{5}{2x} + \frac{2}{3y} = 7 ; \frac{3}{x} + \frac{2}{y} = 12 \quad x\,0 \ ; \quad y \ \ 0$

12. Find the median of the following Frequency Distribution.

Class	4-8	8-12	12-16	16-20	20-24	24-28
Frequency	9	16	12	7	15	1

SECTION - C

Answer the following questions from No. ***13 to 15****, as directed with the calculations. Each question is of* ***4*** *marks.* **12**

13. On Hemisphere, frustum of a Cone shaped shuttle-cock is used for playing Badminton. The outer radius of frustum of cone is 5 cm and inner radius is 2 cm. The height of entire shuttle-cock is 7 cm. Then find the outer surface area of shuttle-cock.

14. A jet plane is at a vertical height of *h.* The angles of depression of two tanks on the horizontal ground are found to have measures *a* and 3 *a* > 3). Prove that

the distance between the tanks is $\dfrac{h \tan \alpha - \tan \beta}{\tan \alpha \cdot \tan \beta}$ assuming both the tanks are on

the same side of the jet plane.

15. The petrol rate is increased by Rs. 5/- per liter. Now in Rs.1320/-, 2 liters less petrol is obtained as compared to previous rate. Find the increased price of petrol per liter.

OR

15. Kailash's age at present is 2 years less than 6 times the age of his daughter Prema. The product of their ages 5 years later will be 330. What was the age of Kailash when his daughter Prerna was born?

SECTION -D

Answer the following questions from No. ***16 to 17****.*

Each question carries ***5*** *marks.* **10**

16. Draw $\overline{PQ}$, where PQ = 10 cm. Draw circle ⊙ FJ 4) and ⊙ Q, 3). Draw tangent to each circle from centre of other circle. Write points of construction.

OR

16. Draw ΔABC, where m∠ABC = 90; BC = 4 cm and AC = 5 cm and then construct ΔBXY with $^4/_3$ scale factor. Write points of construction.

17. Write converse of Pythagoras Theorem and prove it.