This Question Paper contains 20 printed pages.
(Part - A & Part - B)

Sl.No. 0106505

12 (E)

(MARCH, 2017)

પ્રશ્ન પેપરનો સેટ નંબર જેની સામેનું વર્તુળ OMR શીટમાં ઘટ્ટ કરવાનું રહે છે.
Set No. of Question Paper, circle against which is to be darken in OMR sheet.
01

Part - A : Time : 1Hour/ Marks : 50

Part - B : Time : 2 Hours / Marks : 50

(Part - A)

Time : 1 Hour] ***[Maximum Marks : 50***

Instructions :

1) **There are 50 objective type (M.C.Q) questions in Part - A and all questions are compulsory.**
2) **The questions are serially numbered from 1 to 50 and each carries 1 mark.**
3) **Read each question carefully, select proper alternative and answer in the O.M.R. sheet.**
4) **The OMR sheet is given for answering the questions. The answer of each question is represented by (A) O, (B) O, (C) O, (D) O. Darken the circle ● of the correct answer with ball-pen.**
5) **Rough work is to be done in the space provided for this purpose in the Test Booklet only.**
6) **Set No. of Question Paper printed on the upper-most right side of the Question Paper is to be written in the column provided in the OMR sheet.**

Rough Work

1) The L.C.M. of the least prime number and the least composite number is _____.

(A) 1

(B) 2

(C) 3

(D) 4

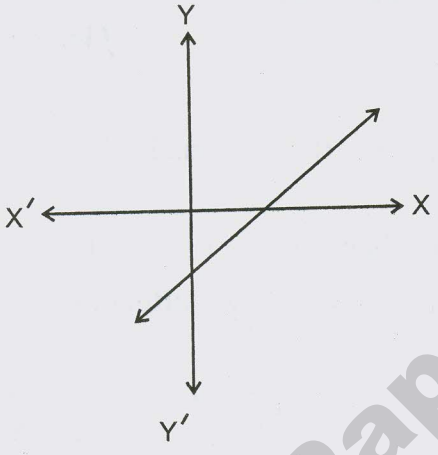
Rough Work

2) $\sqrt{7+\sqrt{40}}$ = _____.

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

(C) $\sqrt{5}+\sqrt{2}$ (D) $\sqrt{3}-1$

3) The number of zeros of $y = P(x)$ from the graph is _____.



(A) 0 (B) 1

(C) 2 (D) 3

4) Two zeros of x^3+x^2-5x-5 are $\sqrt{5}$ and $-\sqrt{5}$ then the third zero is _____.

(A) 1 (B) –1

(C) 2 (D) –2

5) If P (–7) = 0 then a factor of P (x) is _____.

(A) $x-7$ (B) $x+1$

(C) $x+7$ (D) $x-1$

Rough Work

6) What are the zeros of P $(x) = 5-x^2$?

(A) $\sqrt{5}$ and $-\sqrt{5}$ (B) $\frac{1}{5}$ and $-\frac{1}{5}$

(C) 5 and –5 (D) $\sqrt{5}$ and –5

7) The two digit number having the unit digit $x+5$ and ten's digit $x-5$ is _____.

(A) $2x+10$ (B) $11x-45$

(C) $9x-55$ (D) $11x+55$

8) If $\frac{x}{3}=\frac{16}{y}=4$ then $x+y=$ _____.

(A) 10 (B) 16

(C) 18 (D) 19

9) If the sum of two integers is 12 and their difference is 4 then the greater number is _____.

(A) 9 (B) 6

(C) 8 (D) 7

10) The age of Sachin before y years was x years then his age after 4 years will be _____ years.

(A) $x-y+4$ (B) $x-y-4$

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

Rough Work

11) For a quadratic equation if $D < 0$ then which of the following is true?

(A) Roots are real and distinct

(B) Roots are real and equal

(C) Roots are rational and distinct

(D) Real roots do not exist

12) The discriminant of quadratic equation $3x^2 - 4x - 1 = 0$ is _____.

(A) 28 (B) 4

(C) 12 (D) 0

13) If the roots of the quadratic equation $5x^2 - 2kx + 20 = 0$ are real and equal then the value of k is _____.

(A) 10

(B) –10

(C) 10 or –10

(D) 20

14) The cost of a pen is ₹15. If its cost decreases by ₹x then the number of pens purchased of ₹600 is _____.

(A) $\frac{15+x}{600}$ (B) $\frac{600}{15-x}$

(C) $\frac{15-x}{600}$ (D) $\frac{600}{15+x}$

Rough Work

15) Which of the following equations, is not a quadratic equation?

(A) $4x^2 - 3 = 0$

(B) $3x^2 - 4x + 1 = 0$

(C) $2x - 7 = 0$

(D) $4x^2 - 7x + 3 = 0$

16) If the n^{th} term of an arithmetic progression is $15n + 10$ then its fifth term is _____.

(A) 85

(B) 75

(C) 55

(D) 25

17) For an arithmetic progression : $5, \frac{11}{2}, 6, \frac{13}{2}, \ldots\ldots$ then $T_{40} - T_{20} =$ _____.

(A) 20

(B) 15

(C) 5

(D) 10

18) The Tenth term of an A.P. : $\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, 7\sqrt{2}, \ldots\ldots$ is ____.

(A) $11\sqrt{2}$

(B) 12

(C) $19\sqrt{2}$

(D) $10\sqrt{2}$

Rough Work

19) Which of the following is true for a line l lying in the same plane and intersecting ΔABC but not perpendicular to $\overline{BC}$?

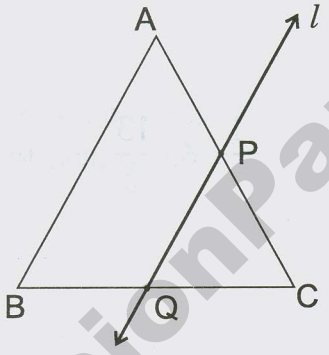
(A) l intersects $\overline{AB}$

(B) l intersects $\overline{AC}$

(C) l does not intersect $\overline{AB}$ or $\overline{AC}$

(D) l intersects $\overline{AB}$ or $\overline{AC}$

20) In the given figure $l \parallel \overleftrightarrow{AB}$ and l intersects $\overline{AC}$ and $\overline{BC}$ at P and Q respectively. If CP = 3, PA =4, QB = 6 then BC = ___.



(A) 4.5 (B) 10.5

(C) 7.5 (D) 12.5

21) The mid-points of the sides of any quadrilateral are the vertices of _____.

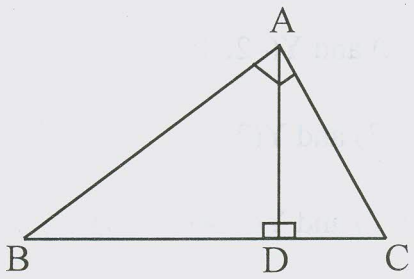
(A) Rhombus (B) Trapezium

(C) Rectangle (D) Parallelogram

Rough Work

22) In ΔABC, $\angle A$ is a right angle. If $\overline{AD} \perp \overline{BC}$ and $D \in \overline{BC}$ then which of the following statements are true?

1. $AD^2 = BD \cdot DC$
2. $BC^2 = AD \cdot DC$
3. $AB^2 = BD \cdot BC$
4. $AC^2 = CD \cdot DB$



(A) Statements 1 and 3 are true

(B) Statements 1 and 2 are true

(C) Statements 1,3 and 4 are true

(D) Statements 1 and 4 are true

23) In ΔABC if $m\angle B = 90^\circ$ and $AB = BC$ then $AC : BC =$ ____.

(A) 1 : 3

(B) 1: 2

(C) $1 : \sqrt{2}$

(D) $\sqrt{2} : 1$

24) If the length of the median of an equilateral triangle is $3\sqrt{3}$ then the length of a side of the triangle is _____.

(A) 3 (B) 6

(C) 7.5 (D) 9

Rough Work

25) Which of the following is true for the points X and Y if the co-ordinates of the mid - point P of $\overline{XY}$ are (–2,3)?

(A) X(0, 2) and Y(–2, 4)

(B) X(–4, 3) and Y(2, 2)

(C) X(–6, 2) and Y(2, 4)

(D) X(–4, –2) and Y(0, 4)

26) If (1, 4) is the centroid of the triangle having the vertices (a, 3), (4, b) and (–3, 2) then a = _____ and b = _____.

(A) –4, 2

(B) 2, 7

(C) –2, –7

(D) –7, –2

27) _____ lies on X - axis.

(A) (5, 0)

(B) (0, 5)

(C) (0, –5)

(D) (5, 5)

28) If M is the foot of the perpendicular drawn from P(–5, 2) on X-axis then the co-ordinates of M are _____.

(A) (5, 0)

(B) (0, –5)

(C) (2, 0)

(D) (–5, 0)

Rough Work

29) For ΔABC, $\cos\left(\frac{B+C}{2}\right)=$ _____.

(A) $\sin A$ (B) $\cos A$

(C) $\sin\frac{A}{2}$ (D) $\cos\frac{A}{2}$

30) If $\left(\cos^2\theta+\frac{1}{\text{cosec}^2\theta}\right)+4=x$ then what is the value of x?

(A) 4 (B) 5

(C) 6 (D) 3

31) $\tan5^\circ\cdot\tan25^\circ\cdot\tan45^\circ\cdot\tan65^\circ\cdot\tan85^\circ=$_____.

(A) 0 (B) 5

(C) 2 (D) 1

32) If θ is the measure of an acute angle and $\sqrt{3}\sin\theta=\cos\theta$ then $\theta=$_____.

(A) 30° (B) 45°

(C) 60° (D) 90°

Rough Work

33) The angle of elevation of the top of the tower from the point a meter away from the base of the tower is 60°. The height of the tower is ———— meter.

(A) a

(B) $2a$

(C) $\sqrt{3}\,a$

(D) $\frac{1}{\sqrt{3}}a$

34) The angle of elevation of the sun, when the height of a building and the length of its shadow are equal is _____.

(A) 30° (B) 45°

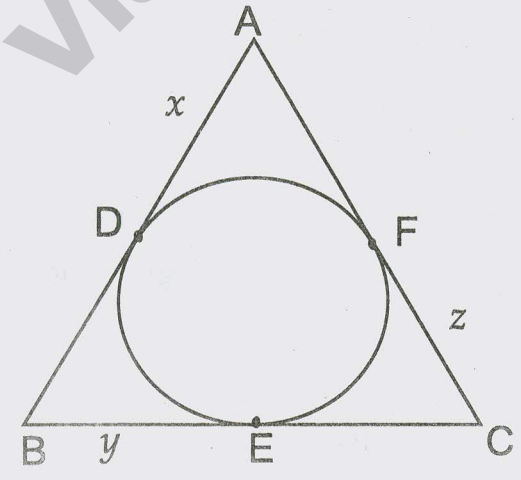
(C) 60° (D) 90°

35) If the angle of elevation of the sun at 8:00 O'clock is α and at 10:00 O'clock is β then _____holds.

(A) $\alpha = \beta$ (B) $\alpha < \beta$

(C) $\alpha \geq \beta$ (D) $\alpha > \beta$

36) As shown in the diagram if AB =11, BC =13 and AC =15 then $x + y + z =$ _____.



(A) 39 (B) 17

(C) 17.5 (D) 19.5

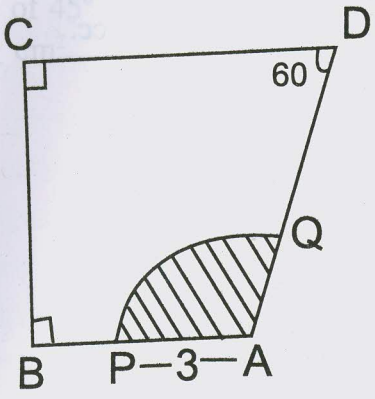
Rough Work

37) If a tangent l of $\odot$(P, 10) touches the circle at A then PA = _____.

(A) 20 (B) 5

(C) 8 (D) 10

38) The area of the shaded region in the figure is _____.



(A) 3π (B) 6π

(C) 9π (D) 4π

39) The radius of a semi - circular garden is 35m. One has to walk _____m to make a trip along its boundary.

(A) 110 (B) 165

(C) 180 (D) 175

40) The length of the minor arc of $\odot$(0, 6) is_____.

(A) more than 6π (B) 6π

(C) 10π (D) less than 6π

Rough Work

41) A minute hand subtends angle of measure _____at the centre in 10 minutes duration.

(A) 30°

(B) 15°

(C) 60°

(D) 45°

42) The volume of a sphere of radius π cm is _____cc.

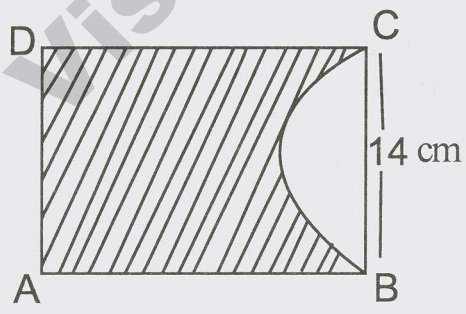
(A) $\frac{4}{3}\pi r^2$

(B) $\frac{4}{3}\pi r^3$

(C) $4\pi r^2$

(D) $\frac{4\pi^4}{3}$

43) In the diagram $\square ABCD$ is the rectangular paper. If AB = 20 cm and BC = 14 cm then _____ is the area of the shaded region if the semicircle with diameter BC is cut from the paper.



(A) 208

(B) 203

(C) 213

(D) 200

Rough Work

44) The ratio of the radii of two cones of equal height is 3:5. The ratio of their volume is _____.

(A) 9:25 (B) 27:125

(C) 3:5 (D) 5:3

45) The area of $\odot(O, r)$ is 240 cm^2. If the minor $\overset{\frown}{ACB}$ subtends an angle of 45° then the area of the minor sector OACB is _____ cm^2.

(A) 30

(B) 40

(C) 60

(D) 80

46) In the frequency distribution, Ogive is the graphical representation of _____.

(A) row data

(B) frequency

(C) class limits

(D) cumulative frequency curve

47) The median of 0.05, 0.50, 0.055, 0.505 and 0.55 is _____.

(A) 0.055 (B) 0.505

(C) 0.50 (D) 0.05

Rough Work

48) If the mode of five observations, in order, 0, 2, 3, m, 5 is 3 then m = _____.

(A) 0 (B) 2

(C) 3 (D) 5

49) The probability of an event : 'One dies who takes the birth' is _____.

(A) $\frac{1}{2}$

(B) 0

(C) $\frac{1}{3}$

(D) 1

50) From the forecast given by whether forecasting office, 20 days forecast be true out of 100 days. The probability in which forecast not be true is _____.

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

(B) $\frac{4}{5}$

(C) $\frac{1}{3}$

(D) $\frac{1}{4}$

12 (E)

(MARCH, 2017)

(Part - B)

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

Instructions :

1) Write in a clear handwriting.
2) There are four sections in Part - B of the question paper and total 1 to 17 questions are there.
3) All the questions are compulsory. Internal options are given.
4) The numbers at the right side represent the marks of the questions.
5) Draw figure wherever required. Retain all the lines of construction.
6) Start new section on new page.
7) Maintain Sequence.

SECTION - A

■ **Answer the following Q.1 to Q.8 with calculation in brief. [2 marks each].**

1) Dhavalbhai, his wife Reenaben and their son Rahul start morning walk. The length of their feet are 90 cm, 80 cm and 60 cm respectively. How much distance should be covered to meet each other if each of them take definite whole number of steps? **[2]**

2) Find the value of polynomial $P(x) = x^2 - 2x+5$ for $x = -1$ and $x = 5$. **[2]**

3) Form a pair of linear equations in two variables for the following information: **[2]**

"There are some 50 paisa and 25 paisa coins in a bag. The total number of coins are 140 and the value of all coins is ₹50".

4) For an A.P. if $T_n = 6n + 5$ then find S_n. **[2]**

OR

The sum of how many terms of an A.P.: 7, 11, 15, 19, 23, ... will be 900?

5) In ΔABC, $m\angle A = 90°$ and $\overline{AD}$ is its median. If AD = 6, AB = 10 then find AC. [2]

6) If A(5, 2), B(3, 4), C(x, y) are collinear and AB = BC then find (x, y). [2]

7) Prove that [2]

$$\frac{\cos(90-A)\cdot\sin(90-A)}{\tan(90-A)} = \sin^2 A$$

OR

Prove that

$$\frac{1}{1+\cos\theta} + \frac{1}{1-\cos\theta} = 2\,\text{cosec}^2\,\theta$$

8) Find the mode for the following frequency distribution. [2]

Class	0-100	100-200	200-300	300-400	400-500	500-600
Frequency	64	62	77	62	66	54

SECTION - B

Answer the following Q.9 to Q.12 with calculation. [3 marks each].

9) A plane took off 1 hour late from Vadodara. To reach in time at a distance of 1200km, its speed is increased by 100km/h. Find its usual speed. [3]

10) The statue of height 1.46 m is placed on a table of certain height. The angle of elevation of the top of the statue from the point on the ground is 60° and that of the top of the table is 45°. Find the height of the table. [3]

11) There are 100 boards in a box on which the numbers 1 to 100 are written. If one board is selected randomly from a box then find the probability of: [3]

1) The number on the board is two digit.

2) The number on the board is a multiple of 7.

3) The number on the board is four digit.

12) The marks obtained by 50 students of class 10 out of 80 marks are given in the following frequency distribution. [3]

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	2	5	8	16	9	5	3	2

Find the median.

OR

The median of 125 observations for the given frequency distribution is 22.12. Find missing frequencies f_1 and f_2.

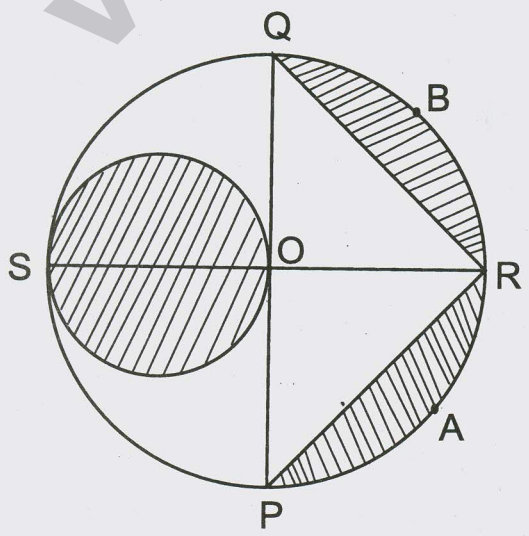
Class	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44
Frequency	3	8	12	f_1	35	21	f_2	6	2

SECTION - C

■ **Answer the following Q.13 to Q.15 with calculation. [4 marks each].**

13) Prove that the tangents drawn to a circle from a point in the exterior of the circle are congruent. [4]

14) In the diagram, $\overline{PQ}$ and $\overline{RS}$ are mutually perpendicular diameters of circle with centre O. $\overline{OS}$ is a diameter of smaller circle. If OP =14 cm then find the area of the shaded region. [4]



15) Find the capacity of a water container (in litres) having the height 15cm and the radii of circles at its two ends are 5cm and 3cm. [4]

OR

$\frac{3}{4}$th part of hemi-spherical tank is filled up of water. It is emptied by a pipe at $14\frac{2}{7}$ litre/sec. If the diameter of the tank is 4m then how long will it take to empty?

SECTION - D

■ **Answer the following Q.16 to Q.17 as directed. [5 marks each].**

16) Prove that in a ΔPQR if $QR^2 = PQ^2 + PR^2$ then $\angle P$ is a right angle. [5]

OR

For two acute angled ΔABC and ΔPQR if $\Delta ABC \sim \Delta PQR$ then prove that

$$\frac{ABC}{PQR} = \frac{AB^2}{PQ^2} = \frac{BC^2}{QR^2} = \frac{AC^2}{PR^2}$$

17) Construct $\overline{AB}$ of 8.5 cm and divide it in the ratio 5:7. Write the steps of constructions. [5]