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

Sl.No. 0201135

12 (E)

(MARCH, 2018)
(NCERT OTHERS)

Question Paper Reading 15 Minutes
Part - A : Time : 1 Hour / Marks : 50
Part - B : Time : 2 Hours / Marks : 50

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.
02

(Part - A)

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

Instructions :

1) **There are 50 multiple choice type questions in Part - A and all of them 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) **Separate OMR sheet is given for answering these questions. The answer of each question is to be given by darkening the circle against options (A), (B), (C), (D) . Circle ● representing the most correct answer is to be darken with ball-pen.**
5) **Set No. of Question Paper printed on the upper-most right side of the Question Paper, the same is to be written in the space provided in the OMR sheet and circle depicting the correct set No. is to be darken with ball pen.**

Rough Work

1) If the value of discriminant of quadratic equation $x^2 - 10x + (2k-1) = 0$ is 40 then $k =$ _____.

(A) 7 (B) 8
(C) 15 (D) 10

2) A manufacturer of TV sets produced 700 sets in third year and 800 sets in seventh year. Assuming that the production increases uniformly by a fixed number every year find the production in the 1st year.

(A) 700 (B) 625
(C) 25 (D) 650

Rough Work

3) Find the sum of first 15 multiples of 8.

(A) 1080 (B) 960

(C) 840 (D) 780

4) Find the sum of first 1000 positive integers.

(A) 500501 (B) 500500

(C) 1001000 (D) 100500

5) Sides of two similar triangles are in the ratio 4:9. Areas of these triangles are in the ratio _____.

(A) 81 : 16 (B) 4 : 9

(C) 2 : 3 (D) 16 : 81

6) Which of the following triplets is not right triangle.

(A) 5, 12, 13 (B) 60, 80, 90

(C) 7, 24, 25 (D) 9, 40, 41

7) In ΔPQR $\angle Q : \angle R : \angle P = 1 : 2 : 1$. If $PQ = 2\sqrt{6}$ then $PR =$ _____.

(A) $2\sqrt{3}$ (B) $2\sqrt{6}$

(C) $\sqrt{6}$ (D) $2\sqrt{2}$

8) Formula to find the midvalue of the line segment joining the points $P(x_1, y_1)$ and $Q(x_2, y_2)$.

(A) $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$ (B) $\left(\frac{x_1 - x_2}{2}, \frac{y_1 - y_2}{2}\right)$

(C) $\left(\frac{x_1 + y_1}{2}, \frac{x_2 + y_2}{2}\right)$ (D) $\left(\frac{x_1 + y_2}{2}, \frac{x_2 + y_1}{2}\right)$

Rough Work

9) The area of a triangle formed by the points P(5, 2), Q(4, 7) and R(+7, –4).

(A) 2 (B) –2

(C) 4 (D) –4

10) If points A(1, 7), B(4, 2) and C(–1, 1) are the vertices of a parallelogram find fourth vertex D.

(A) (–4, –4) (B) (–4, 4)

(C) (–4, 6) (D) (4, –6)

11) Find K if points A(2, 3), B(4, K) and C(6, –3) are collinear.

(A) –4 (B) 0

(C) –2 (D) 2

12) If $\sin A = \frac{3}{4}$ then $\cos A =$ _____.

(A) $\sqrt{7}/4$ (B) 4/5

(C) 3/5 (D) $\sqrt{7}/3$

13) If $\tan A = \cot B$ then $A + B =$ _____.

(A) 0° (B) 90°

(C) 60° (D) 45°

14) $9 \sec^2 A - 9 \tan^2 A =$ _____.

(A) 0 (B) 8

(C) 1 (D) 9

Rough Work

15) $\frac{1+\tan^2 A}{1+\cot^2 A} =$ _____.

(A) $\sec^2 A$ (B) $\cot^2 A$

(C) $\tan^2 A$ (D) $\operatorname{cosec}^2 A$

16) The _____ of an object viewed is the angle formed by the line of sight with the horizontal line when it is above the horizontal level.

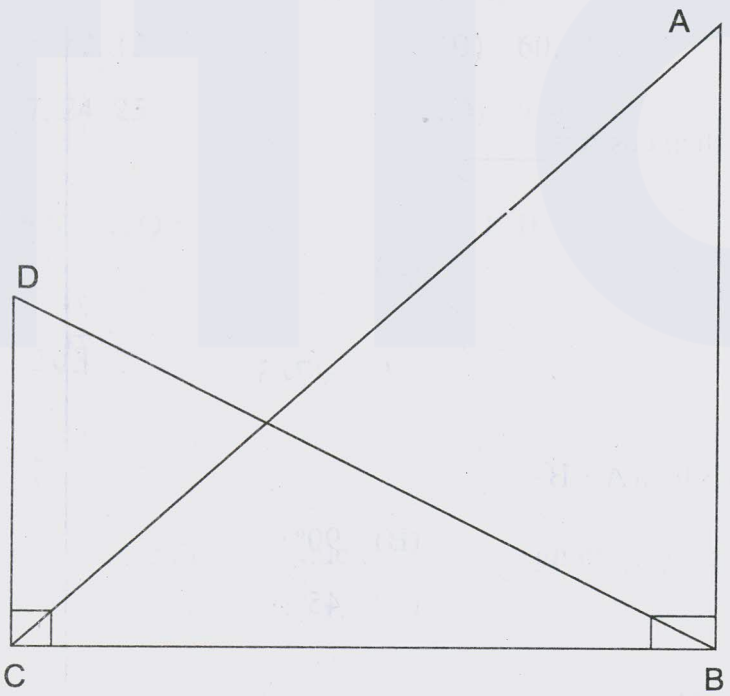
(A) Angle of elevation

(B) The ray of vision

(C) Line of sight

(D) Angle of depression

17) For the given figure, solve: If $\angle ACB = 45°$, $\angle DBC = 30°$ and BC = 40 m, then AB = _____.

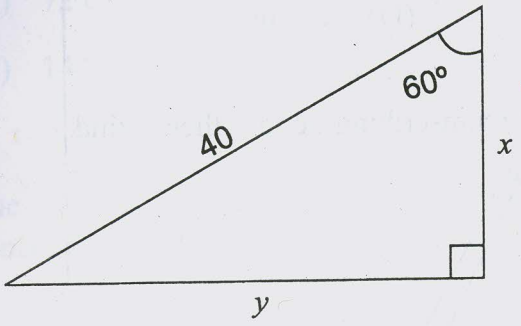


(A) $40\sqrt{3}$ m (B) $\frac{40}{\sqrt{3}}$ m

(C) 40 m (D) 45 m

Rough Work

18) The values of x and y for the following figure are _____ and _____.



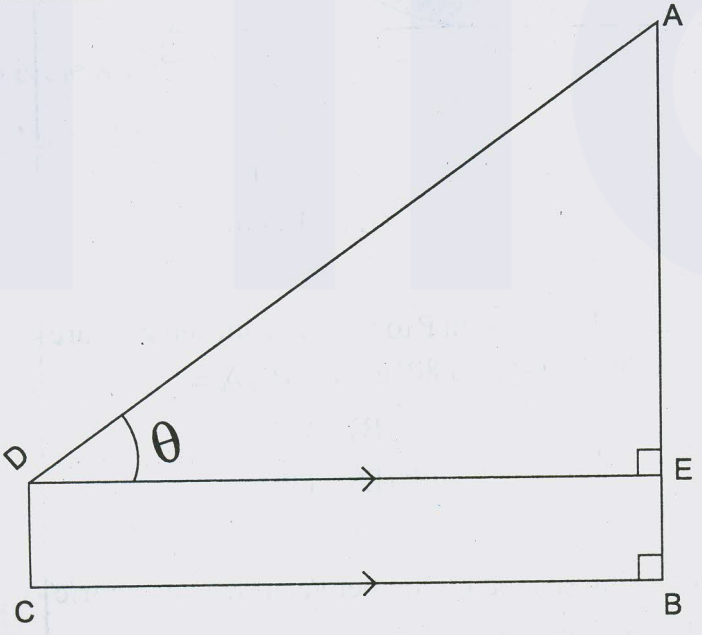
(A) $x = 20 \quad y = 10\sqrt{7}$

(B) $x = 40 \quad y = 40$

(C) $x = 30 \quad y = 10\sqrt{7}$

(D) $x = 20 \quad y = 20\sqrt{3}$

19) In the given figure AB = 30, BC = 25, CD = 5 then angle θ = _____.



(A) $\theta = 60$

(B) $\theta = 45$

(C) $\theta = 30$

(D) $\theta = \frac{25}{30}$

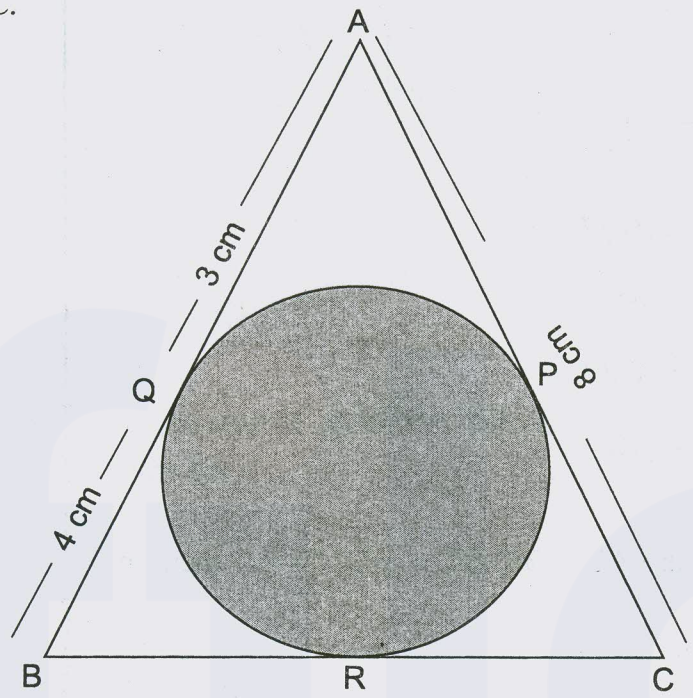
Rough Work

20) A line intersecting a circle in two points is called a _____.

(A) chord (B) normal

(C) tangent (D) secant

21) In the given figure ΔABC is circumscribing a circle, then find BC.



(A) 7 cm (B) 8 cm

(C) 9 cm (D) 15 cm

22) If tangents PA and PB from point P to a circle with centre O are inclined to each other at angle of 80° then $\angle POA$ = _____.

(A) 70 (B) 60

(C) 50 (D) 80

23) Find the area of a ring shaped region between two concentric circles of radii 20 cm and 15 cm.

(A) 550 cm^2 (B) 175 cm^2

(C) 35 cm^2 (D) 625 cm^2

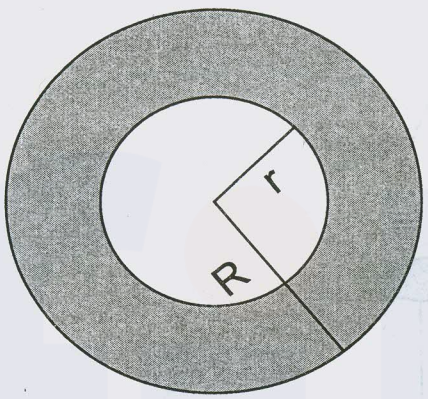
Rough Work

24) What is the area of a square that can be inscribed in a circle with diameter 12 cm.

(A) 72 cm^2 (B) 36 cm^2

(C) 144 cm^2 (D) 24 cm^2

25) The shaded portion of the figure given below, shows two concentric circles.



What is the width of shaded portion.

(A) $2\pi R - 2\pi r$

(B) $R - r$

(C) $R^2 - r^2$

(D) $2\pi (R^2 - r^2)$

26) In a circle of radius 21 cm an arc subtends an angle of 60^o at the centre. Find the length of minor arc.

(A) 1260 cm (B) 132 cm

(C) 22 cm (D) 21 cm

27) Formula to find the total surface area of given figure.

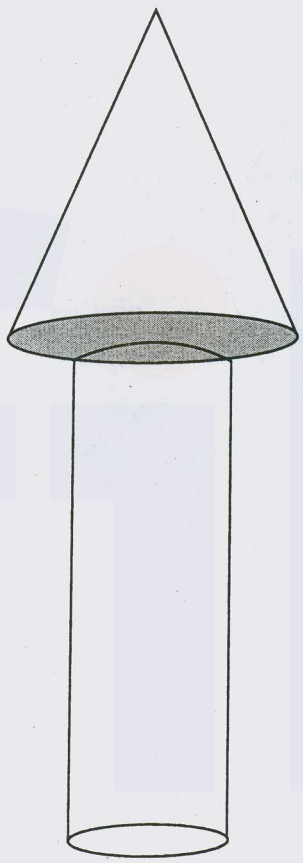
Rough Work

T.S. Area of cone = A

T.S.A of cylinder = B

Area of base of cone = C

Area of base of cylinder = D



(A) $A + B - 2C$

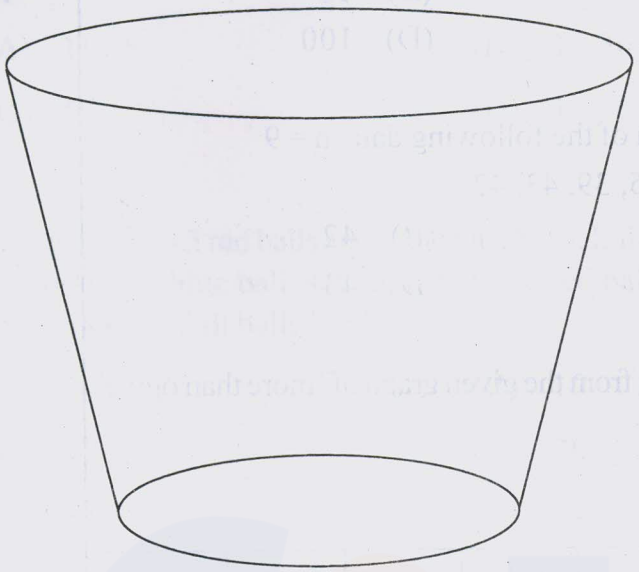
(B) $A + B - 2D$

(C) $A + B - C - D$

(D) $A + B + C - D$

28) Formula to find the volume of given figure.

Rough Work



(A) $V = \frac{1}{3}\pi r^2 h$

(B) $V = \frac{1}{3}\pi h (r_1^2 + r_2^2 + r_1 r_2)$

(C) $V = \pi r^2 h$

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

29) What is the capacity of a cone whose base area is 154 cm^2 and height is 12 cm.

(A) 616 cm^3 (B) 1848 cm^3

(C) 924 cm^3 (D) 154 cm^3

30) A cone and a hemisphere have equal base and equal volumes. Find the ratio of their heights.

(A) 1 : 3 (B) 2 : 3

(C) 1 : 2 (D) 3 : 4

Rough Work

31) Find mean of first ten odd natural numbers.

(A) 55 (B) 10

(C) 200 (D) 100

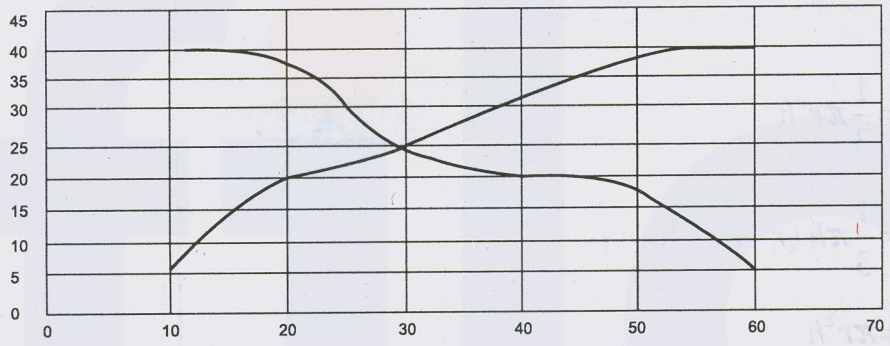
32) Calculate the median of the following data. n = 9

37, 31, 42, 43, 46, 25, 39, 43, 42

(A) 39 (B) 42

(C) 46 (D) 43

33) We can find following from the given graph of 'more than ogive' and 'less than ogive'



(A) median = 25 (B) median = 30

(C) median = 27.5 (D) median = 05

34) Class mark = _____.

(A) $\frac{\Sigma f_i x_i}{n}$ = class mark

(B) $\frac{\text{upper limit - lower limit}}{2}$

(C) An average of upper limit and lower limit

(D) 3M-2$\bar{x}$ = class mark

Rough Work

35) A die is thrown twice, what is the probability that, 5 will come up atleast once?

(A) 11/36 (B) 10/36

(C) 14/36 (D) 12/36

36) A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball, determine the numbers of all balls in a bag.

(A) 7 (B) 10

(C) 15 (D) 20

37) What is the probability that an ordinary year has 53 Sundays.

(A) 1/7 (B) 3/7

(C) 2/7 (D) 1

38) Data for ill persons in a hospital is given below.

Type	Cancer	Diabetic	B.P.	Heart	Total
No. of Patient	250	300	300	150	1000

Find the probability of a person suffer with cancer or heart diseases.

(A) 0.4 (B) 0.3

(C) 0.6 (D) 0.55

39) The product of three consecutive positive integers is always divisible by _____.

(A) 9 (B) 8

(C) 6 (D) 10

Rough Work

40) If G.C.D. $(a, b) = 1$ then GCD $(a - b, a + b) =$ _____.

(A) $a + b$ or $a - b$ (B) a and b

(C) 1 or 2 (D) 4

41) The decimal expansion of $\frac{2517}{6250}$ will terminate after _____ digits.

(A) 3 (B) 5

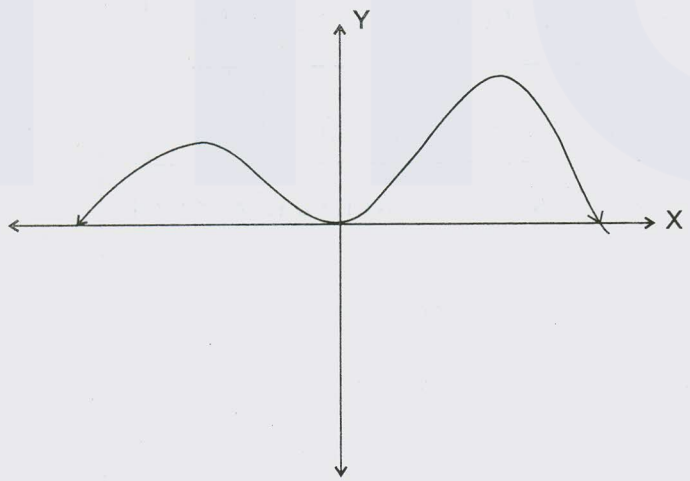
(C) 4 (D) 6

42) If α and β are zeroes of the polynomial $p(x) = x^2 - 3x + 2k$ and $\alpha + \beta = \alpha \cdot \beta$ then $k =$ _____.

(A) –3 (B) 3

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

43) From the figure find the number of zeroes of $y = p(x)$



(A) 2 (B) 4

(C) 3 (D) 1

Rough Work

44) Find the cubic polynomial in the standard form with the co-efficients $a = 3, b = -5, c = -11, d = -3$.

(A) $3x^3 - 5x^2 - 11x - 3$

(B) $3x^3 - 3x^2 + 11x - 5$

(C) $3x^3 - 11x^2 - 3x + 5$

(D) $3x^3 + 3x^2 - 11x + 3$

45) Write the zeroes of the polynomial $x^2 - x - 6$.

(A) $x = 3, 2$ (B) $x = -3, 2$

(C) $x = 3, -2$ (D) $x = -3, -2$

46) Match the pair having kind of lines

A	B
1) $x - 2y = 0, 3x + 4y - 20 = 0$	a) lines coincide
2) $2x + 3y - 9 = 0, 4x - 6y - 18 = 0$	b) lines are parallel
3) $x + 2y - 4 = 0, 2x + 4y = 12$	c) lines intersect

(A) $1 \rightarrow c; 2 \rightarrow a; 3 \rightarrow b$

(B) $1 \rightarrow a; 2 \rightarrow c; 3 \rightarrow b$

(C) $1 \rightarrow b; 2 \rightarrow a; 3 \rightarrow c$

(D) $1 \rightarrow c; 3 \rightarrow b; 2 \rightarrow a$

47) If $\frac{5}{x} + \frac{3}{y} = 4$ and $\frac{3}{x} + \frac{5}{y} = 2$ then $\frac{y - x}{xy} =$ _____.

(A) 3 (B) 5

(C) 6 (D) 1

Rough Work

48) Find the point of intersection of lines $x-2=0$ and $y+6=0$.

(A) $(-6, 2)$ (B) $(2, -6)$

(C) $(-2, 6)$ (D) $(6, -2)$

49) Find the nature of roots of $ax^2+bx+c=0$ if $a>0$, $b=0$, $c>0$.

(A) Roots are real but not equal

(B) Roots are opposite numbers

(C) Roots are real and equal

(D) No real roots

50) The roots of the quadrative equation $\sqrt{3}x^2+10x+7\sqrt{3}=0$ are

(A) $\left(\sqrt{3}, \frac{7}{\sqrt{3}}\right)$ (B) $\left(\frac{1}{\sqrt{3}}, \frac{\sqrt{3}}{7}\right)$

(C) $\left(-\sqrt{3}, -\frac{7}{\sqrt{3}}\right)$ (D) $\left(\sqrt{3}, -\frac{7}{\sqrt{3}}\right)$

12 (E)

(MARCH, 2018)
(NCERT OTHERS)

(Part - B)

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

Instructions :

1) **Write in a clear hand writing.**
2) **There are four sections in Part - B of the question paper and total 1 to 17 questions are there.**
3) **All questions are compulsory. Internal options are given.**
4) **The numbers at the right side represents the marks of the questions.**
5) **New section may be started on a new page of answer book.**
6) **It is advisable to maintain sequence.**

SECTION - A

■ **Solve the following briefly: [2 marks each].** **[16]**

1) The floor of a room has length 9.72 m and breadth 7.68 m. This floor is to be covered by square tiles of largest size. Find the length of the side of each of such tiles.

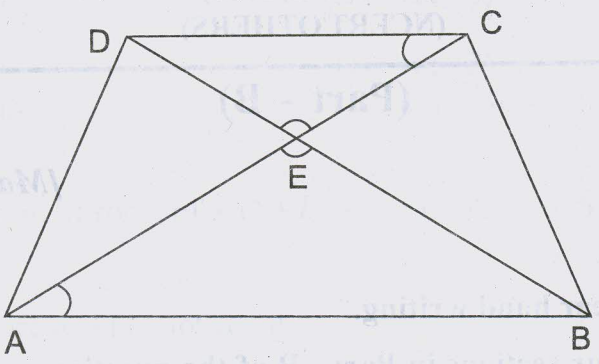
2) A trader Jethalal Ghada bought $(x-2)$ T.V. sets for Rs. $2x^4+5x^3-7x^2-15x-14$. Find the price of one T.V. set.

3) Solve by elimination method.

$4x + 5y = 7$

$3x + 4y = 5$

4) In trapezium $\overline{AB} \parallel \overline{CD}$, $\overline{AC}$ & $\overline{BD}$ are diagonals. The diagonals intersects each other in E. DE = 4, CE = $x + 1$, AE = $2x + 4$ and BE = $4x - 2$ then find x.



5) The mid point of the line segment joining $(2a, 4)$ and $(-2, 3b)$ is $(1, 2a + 1)$. Find the value of a and b.

OR

Determine if the points (1, –1), (5, 2) and (9, 5) are collinear.

6) Consider ΔACB, right angled at C in which AB = 29 units, BC = 21 units and $\angle ABC = \theta$ then determine the value of $\cos^2\theta - \sin^2\theta$.

7) Prove that

$\sec A (1 - \sin A) (\sec A + \tan A) = 1$.

OR

Evaluate:

$4 \sin^2 60 + 3 \tan^2 30 - 8 \sin 45 \cdot \cos 45$.

8) Find the probability that a number selected at random from the numbers 1, 2, 3, ---- 40 is a

a) Multiple of 7

b) A multiple of 3 or 5

SECTION - B

■ **Solve the following: [3 marks each].** [12]

9) A contract on construction job specifies a penalty for delay of completion beyond a certain date as follows, Rs. 200 for the first day, Rs. 300 for the second day, Rs. 400 for the third day, etc., the penalty for each succeeding day being Rs. 100 more than the preceding day.
How much money the contractor has to pay as penalty, if he has delayed the work by 15 days?

10) Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$.

OR

The tangent at any point of a circle is perpendicular to the radius through the point of contact.

11) The cost of fencing a circular field at the rate of Rs. 24 per metre is Rs. 5,280. The field is to be ploughed at the rate of Rs. 1.50 per m^2. Find the cost of ploughing the field. (Take $\pi = \frac{22}{7}$).

12) A solid sphere is melted and recast into a hollow cylinder of uniform thickness. If the external radius of the base of the cylinder is 4 cm, its height 24 cm and thickness 2 cm; find the radius of sphere.

SECTION - C

■ **Solve the following: [4 marks each].** [12]

13) Solve:

$$\frac{1}{x+1} + \frac{2}{x+2} = \frac{4}{x+4} \quad x \neq -1, -2, -4.$$

OR

Two water taps together can fill a tank $9\frac{3}{8}$ hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank.

14) As observed from the top of light house, 75 m high above sea level, the angle of depression of the ship sailing towards it, changes 30° to 45°. Determine the distance travelled by the ship during the period of observation.

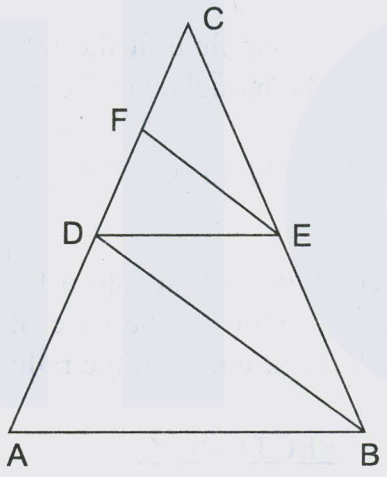
15) The median of the following data is 75. Find the values of x and y if the total frequency is 62.

Class	0-20	20-40	40-60	60-80	80-100	100-120	120-140
Freq.	6	8	x	12	y	5	3

SECTION - D

■ **Solve the following: [5 marks each].** **[10]**

16) In given figure $\overline{AB} \parallel \overline{DE}$ and $\overline{BD} \parallel \overline{EF}$. Prove that $CD^2 = CF \times AC$.



OR

Two isosceles triangle have equal vertical angles and their areas are in the ratio 9 : 16, find the ratio of their corresponding heights.

17) Draw a right triangle in which the perpendicular sides are of lengths 4 cm and 3 cm. Then construct another triangle whose sides are $\frac{5}{3}$ times the corresponding sides of the given triangle.

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