Time Allowed: 90 minutes Maximum Marks: 40

General Instructions:

1. The question paper contains three parts A, B and C.
2. Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
3. Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
4. Section C consists of 10 questions based on two Case Studies. Attempt any 8 questions.
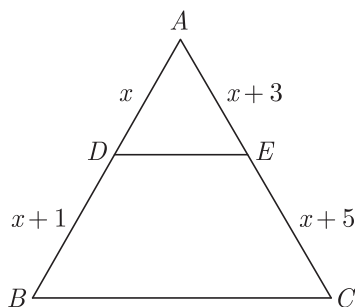5. There is no negative marking.

SECTION A

Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

1. The decimal representation of $\frac{21}{16 \times 15}$ will

(a) terminate after 2 decimal place

(b) terminate after 3 decimal place

(c) terminate after 4 decimal places

(d) terminate after 5 decimal places

2. For what value of k, do the equations $3x - y + 8 = 0$ and $6x - ky = -16$ represent coincident lines ?

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

(b) $-\frac{1}{2}$

(c) 2

(d) -2

3. In $\triangle ABC, DE \,||\, BC$, the value of x will be

(a) 1

(b) 2

(c) 3

(d) 4

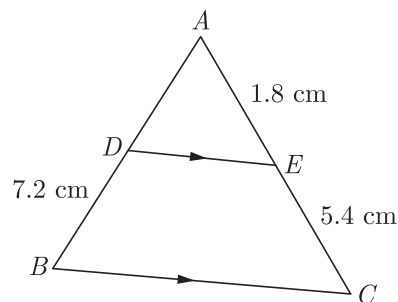**4.** In the given figure, if $OA \times OB = OC \times OD$, which of the option is correct ?

(a) $\angle A = \angle C$ and $\angle B = \angle D$

(b) $\angle A = \angle B$ and $\angle C = \angle D$

(c) $\angle A = \angle D$ and $\angle B = \angle C$

(d) Above all

5. A fair die is thrown once. The probability of getting a composite number less than 5 is

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

(b) $\frac{1}{6}$

(c) $\frac{2}{3}$

(d) 0

6. In Figure, $DE \,||\, BC$ and given that $AE = 1.8\,\text{cm}$, $BD = 7.2\,\text{cm}$ and $CE = 5.4\,\text{cm}$. The length of side AD will be


(a) 1.6 cm

(b) 1.9 cm

(c) 2.1 cm

(d) 2.4 cm
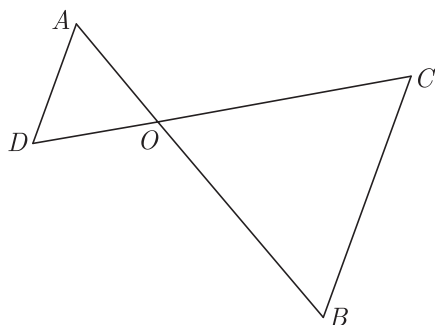
7. In the adjoining figure, the length of BC is
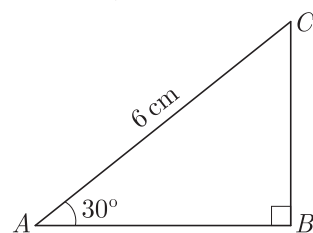
(a) $2\sqrt{3}$ cm

(b) $3\sqrt{3}$ cm

(c) $4\sqrt{3}$ cm

(d) 3 cm

8. The HCF and the LCM of 12, 21, 15 are respectively
   (a) 3, 140
   (b) 12, 420
   (c) 3, 420
   (d) 420, 3

9. Which of the following value of k should be selected so that the pair of equations $x + 2y = 5$ and $3x + ky + 15 = 0$ has a unique solution ?
   (a) $k \neq 5$
   (b) $k \neq 6$
   (c) $k = 5$
   (d) $k = 6$

10. The distance between the points $(0, 5)$ and $(-5, 0)$ is
    (a) 5
    (b) $5\sqrt{2}$
    (c) $2\sqrt{5}$
    (d) 10

11. In given figure, the graph of a polynomial $p(x)$ is shown. The number of zeroes of $p(x)$ will be
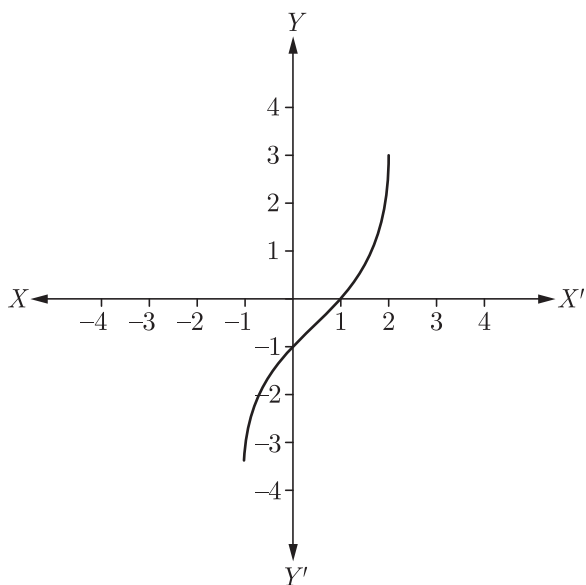
    (a) 1
    (b) 2
    (c) 3
    (d) 4

12. HCF of the numbers given below will be $k, 2k, 3k, 4k$ and $5k,$, where k is a positive integer.
    (a) $20k$
    (b) k
    (c) $3k$
    (d) $60k$

13. If $\sin\phi = \dfrac{1}{2}$, then $3\cos\phi - 4\cos^3\phi = ?$
    (a) 0
    (b) –1
    (c) 1
    (d) –2

14. If $\tan A + \cot A = 2$, then the value of $\tan^2 A + \cot^2 A$ will be
    (a) 1
    (b) 2
    (c) 4
    (d) 6

15. The area of a circular path of uniform width d surrounding a circular region of radius r is
    (a) $\pi d(2r + d)$
    (b) $\pi(2r + d)r$
    (c) $\pi(d + r)r$
    (d) $\pi(d + r)d$

16. In given figure $DE \parallel BC$. If $AD = 3c, DB = 4c$ cm and $AE = 6$ cm then EC will be
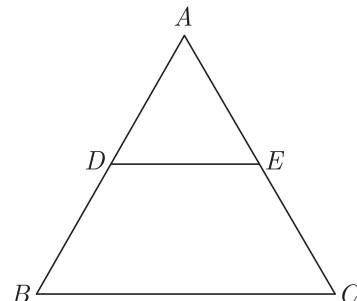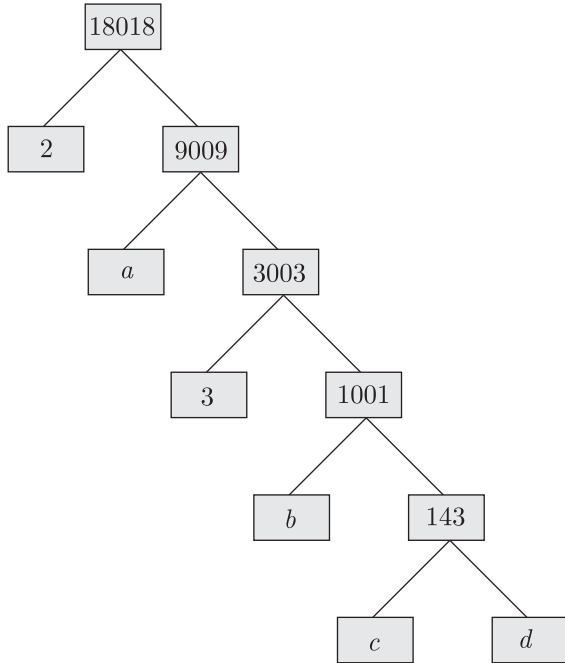

    (a) 12 cm
    (b) 6 cm
    (c) 8 cm
    (d) 10 cm

17. Diagonals of a trapezium $PQRS$ intersect each other at the point $O, PQ \parallel RS$ and $PQ = 3RS$. What is the ratio of the areas of triangles POQ and ROS?
    (a) 9 : 1
    (b) 8 : 1
    (c) 3 : 1
    (d) 16 : 1

18. $\dfrac{3\tan^2 30° + \tan^2 60° + \operatorname{cosec} 30° - \tan 45°}{\cot^2 45°} = ?$
    (a) 2
    (b) 3
    (c) 4
    (d) 5

19. What are the values of x and y for the following pair of linear equations ?
    $$x + 2y = 2$$
    $$x - 3y = 7$$
    (a) 1 and 1
    (b) 4 and –1
    (c) –4 and 1
    (d) 2 and 2

20. Ramesh buys a fish from a shop for his aquarium. The shopkeeper takes out one fish at random a tank containing 5 male fish and 9 female fish. Then, the probability that the fish taken out is a male fish, is
    (a) $\frac{5}{13}$
    (b) $\frac{5}{14}$
    (c) $\frac{6}{13}$
    (d) $\frac{7}{13}$

SECTION B

Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

21. What are the missing numbers c and d in the given factor tree:

```
        18018
        /    \
       2    9009
            /   \
           a    3003
                /   \
               3    1001
                    /   \
                   b    143
                        /   \
                       c     d
```

(a) 3 and 7   (b) 13 and 11

(c) 6 and 9   (d) 5 and 4

22. If the distance between the points $A(4, p)$ and $B(1,0)$ is 5 units then the value(s) of p is(are)

(a) 4 only   (b) -4 only

(c) ± 4 (d) 0

23. $\dfrac{\sin\theta - 2\sin^3\theta}{2\cos^3 - \cos\theta} = ?$

(a) $\tan\theta$ (b) $\sin\theta$

(c) $\cos\theta$ (d) $\sec\theta$

24. What are the values of x and y for the following pair of linear equations ?

$$3x + 2y - 7 = 0$$
$$4x + y - 6 = 0$$

(a) 1 and 2   (b) 2 and 2

(c) 1 and 1   (d) –1 and –1

25. If α and β are the zeroes the polynomial $2x^2 - 4x + 5$, the value of $\dfrac{1}{\alpha^2} + \dfrac{1}{\beta^2}$ is

(a) $\frac{4}{25}$ (b) $-\frac{4}{25}$

(c) $\frac{4}{5}$ (d) $-\frac{4}{5}$

26. In a family of two children What is the probability of having at least one girl?

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$

(c) $\frac{3}{4}$ (d) 1

27. In a family of three children, what is the probability of having at least two boys.

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$
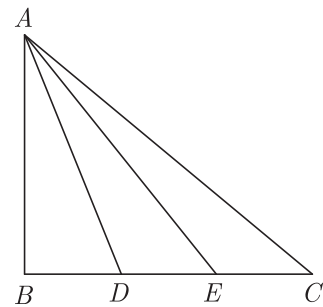
(c) $\frac{3}{4}$ (d) $\frac{1}{4}$

28. $\dfrac{\sin\theta}{\cot\theta + \cosec\theta} = ?$

(a) $1 - \cos\theta$ (b) $1 + \cos\theta$

(c) $1 + \sin\theta$ (d) $1 - \sin\theta$

29. If $P(2, -1)$, $Q(3,4)$, $R(-2,3)$ and $S(-3, -2)$ be four points in a plane, then $PQRS$ is a ____

(a) rhombus   (b) square

(c) parallelogram   (d) rectangle

30. In the given figure, D and E trisect BC. The term $3AC^2 + 5AD^2$

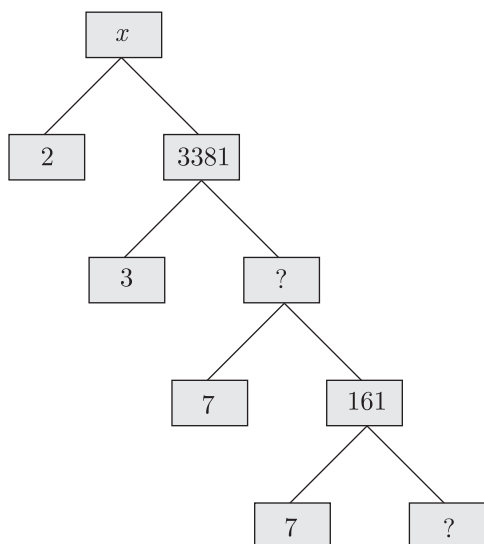(a) $2AE^2$ (b) $4AE^2$

(c) $6AE^2$ (d) $8AE^2$

31. If $A(-2,1)$, $B(a,0)$, $C(4,b)$ and $D(1,2)$ are the vertices of a parallelogram $ABCD$, the values of a and b are

(a) 1, 1   (b) 1, 3

(c) 3, 2   (d) 2, 4

32. If $\sqrt{3}\cot^2\theta - 4\cot\theta + \sqrt{3} = 0$, then the value of $\cot^2\theta + \tan^2\theta$ will be

(a) $\frac{15}{7}$ (b) $\frac{10}{3}$

(c) $\frac{15}{8}$ (d) $\frac{10}{7}$

33. In the given factor tree what is the composite number x?


(a) 6762

(b) 23

(c) 1432

(d) None of the above

34. If in $\Delta ABC, AD$ is median and $AE \perp BC$, then $AB^2 + AC^2$ equal to

(a) $2AD^2 + BC^2$

(b) $\frac{1}{2}AD^2 + 2BC^2$

(c) $AD^2 + 2BC^2$

(d) $2AD^2 + \frac{1}{2}BC^2$

35. A line intersects the y-axis and x-axis at the points P and Q respectively. If $(2, -5)$ is the mid-point of PQ, then the coordinates of P and Q will be

(a) $(0, -10)$ and $(4,0)$

(b) $(4,0)$ and $(10,0)$

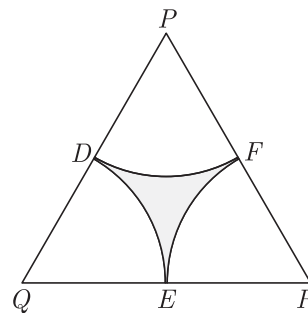(c) $(12,0)$ and $(-4,0)$

(d) $(0,12)$ and $(-4,0)$

36. What is the perimeter of the shaded region if $ABCD$ is a square of side 21 cm and APB and CPD are semicircle. Use $\pi = \frac{22}{7}$?
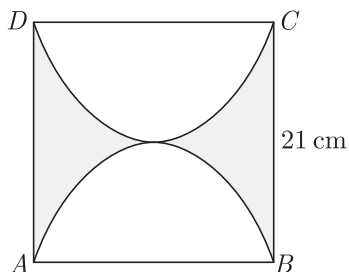
(a) 108 cm

(b) 216 cm

(c) 432 cm

(d) 96 cm

37. In the given figure, ΔPQR is an equilateral triangle of side 8 cm and D, E, F are centres of circular arcs, each of radius 4 cm. What is the area of shaded region.

(Use $\pi = 3.14$) and $\sqrt{3} = 1.732$

(a) 6.8 cm^2

(b) 8.4 cm^2

(c) 4.8 cm^2

(d) 2.6 cm^2

38. If α and β are the zeroes of the polynomial $f(x) = x^2 - 6x + k$, such that $\alpha^2 + \beta^2 = 40$. The value of k will be

(a) 0

(b) -4

(c) -2

(d) -3

39. Given figure depicts a racing track whose left and right ends are semi-circular. The distance between the two inner parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide everywhere, what is the area of the track?
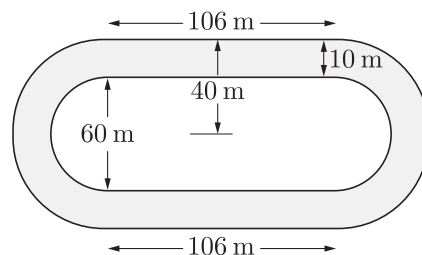
(a) 3260 m^2

(b) 1630 m^2

(c) 3390 m^2

(d) 2490 m^2

40. In the figure below $ABCDE$ is a pentagon with $BE \parallel CD$ and $BC \parallel DE$. BC is perpendicular to DC. If the perimeter of $ABCDE$ is 21 cm, what is the value of x ?
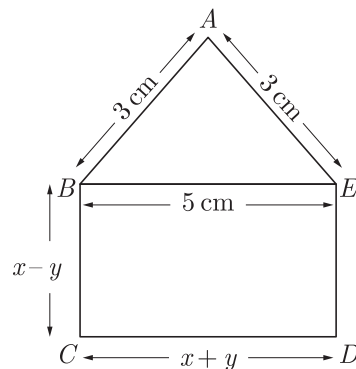
(a) 5

(b) 0

(c) 3

(d) 2

SECTION C

Case study based questions:
Section C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.

Case Based Questions: (41-45)

Lavanya wants to organize her birthday party. She is very happy on her birthday. She is very health conscious, thus she decided to serve fruits only in her birthday party.


She has 36 apples and 60 bananas at home and decided to serve them. She wants to distribute fruits among guests. She does not want to discriminate among guests, so she decided to distribute fruits equally among all.

41. How many maximum guests Shalvi can invite?

(a) 12   (b) 120

(c) 6   (d) 180

42. How many apples and bananas will each guest get?

(a) 3 apple 5 banana   (b) 5 apple 3 banana

(c) 2 apple 4 banana   (d) 4 apple 2 banana

43. Lavanya decide to add 42 mangoes also. In this case how many maximum guests Lavanya can invite ?

(a) 12   (b) 120

(c) 6   (d) 180

44. How many total fruits will each guest get?

(a) 6 apple 5 banana and 6 mangoes

(b) 6 apple 10 banana and 7 mangoes

(c) 3 apple 5 banana and 7 mangoes

(d) 3 apple 10 banana and 6 mangoes

45. If Lavanya decide to add 3 more mangoes and remove 6 apple in total fruits, in this case how many maximum guests Lavanya can invite ?

(a) 12   (b) 30

(c) 15   (d) 24

Case Based Questions: (46-50)

Tania is very intelligent in maths. She always try to relate the concept of maths in daily life. One day she plans to cross a river and want to know how far it is to the other side. She takes measurements on her side of the river and make the drawing as shown below.
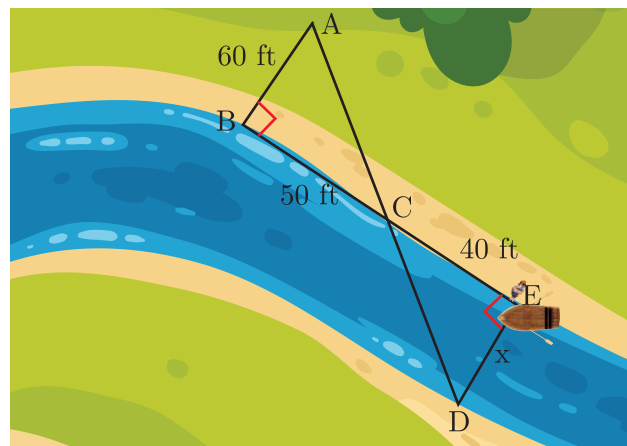
46. Which similarity criterion is used in solving the above problem ?

(a) SAS similarity criterion

(b) AA similarity criterion

(c) SSS similarity criterion

(d) None of these

47. Consider the following statement :

$$S_1 : \angle ACB = \angle DCE$$

$$S_2 : \angle BAC = \angle CDE$$

Which of the above statement is/are correct.

(a) S_1 and S_2 both   (b) S_1

(c) S_2 (d) None

48. Consider the following statement :

$$S_3 : \frac{AB}{DE} = \frac{CA}{CD}$$

$$S_4 : \frac{BC}{CE} = \frac{AB}{DE}$$

$$S_5 : \frac{CA}{CD} = \frac{DE}{AB}$$

Which of the above statements are correct ?

(a) S_3 and S_5 (b) S_4 and S_5

(c) S_3 and S_4 (d) All three

49. What is the distance x across the river?

(a) 96 ft   (b) 48 ft

(c) 24 ft   (d) 16 ft

50. What is the approximate length of AD shown in the figure?

(a) 120 ft   (b) 160 ft

(c) 140 ft   (d) 100 ft

SAMPLE PAPER - 8 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(c)	Ch-1	32
2	(c)	Ch-3	15
3	(c)	Ch-4	29
4	(a)	Ch-4	55
5	(b)	Ch-8	20
6	(d)	Ch-4	31
7	(d)	Ch-6	13
8	(c)	Ch-1	3
9	(b)	Ch-3	29
10	(b)	Ch-5	28
11	(a)	Ch-2	30
12	(b)	Ch-1	S-16
13	(a)	Ch-6	54
14	(b)	Ch-6	S-10
15	(a)	Ch-7	13
16	(c)	Ch-4	34
17	(a)	Ch-4	S-150
18	(d)	Ch-6	53
19	(b)	Ch-3	S-2
20	(b)	Ch-8	28
21	(b)	Ch-1	39
22	(c)	Ch-5	15
23	(a)	Ch-6	76
24	(a)	Ch-3	38
25	(b)	Ch-2	S-1

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
26	(c)	Ch-8	66
27	(a)	Ch-8	84
28	(a)	Ch-6	93
29	(a)	Ch-5	51
30	(d)	Ch-4	83
31	(a)	Ch-5	94
32	(b)	Ch-6	102
33	(a)	Ch-1	S-3
34	(d)	Ch-4	62
35	(a)	Ch-5	57
36	(a)	Ch-7	54
37	(d)	Ch-7	66
38	(c)	Ch-2	S-33
39	(a)	Ch-7	77
40	(a)	Ch-3	55
41	(a)	Ch-1	81
42	(a)	Ch-1	82
43	(c)	Ch-1	83
44	(b)	Ch-1	84
45	(c)	Ch-1	85
46	(b)	Ch-4	105
47	(a)	Ch-4	106
48	(c)	Ch-4	107
49	(b)	Ch-4	108
50	(c)	Ch-4	109

* S- = Self Test Question