

11

The Competition in

Advanced Mathematics Skills

Advanced Maths Test I & II

MODEL PAPERS

Class : VIII



Eduranet

Intellectual Olympiad Foundation

(Promoted by Eduranet Educational Society (Regd. 309/09))

Hyderabad | India

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SYLLABUS**I) ALGEBRA**

1. Number System
2. Square and Square Roots, Cube and Cube Roots
3. Exponents and Powers
4. Algebraic Expressions and Identities
5. Factorisation
6. Linear Equations in one variable
7. Direct and Inverse Proporties
8. Comparing Quantities

II) GEOMETRY

1. Data Handling and Probability
2. Visualising solid Shapes
3. Mensuration
4. Inroduction to Graphs and Co-ordinate Geometry
5. Understanding Quadrilaterals
6. Practical Geometry

TABLE OF CONTENTS

- 1) Advanced Maths Test - I 5 - 20
- 2) Advanced Maths Test - II 21 - 32

ADVANCED MATHS TEST-I

Code : 1181

PRELIMS

Max. Marks : 75

Duration : 75 Mins.

General Instructions :

1. Please find the Answer Sheets (OMR) with in the envelop given to you.
2. Mention your Test Code, Student ID, Name, Class, Section and School Name on the OMR Sheet as per Question Paper and Hall Ticket.
3. This question paper contains 75 Questions, duration is 75 minutes.
4. Do rough work in the empty sheet provided along with this question paper.
5. Answer questions in OMR sheet only.
6. Don't write or tick anything on the question paper.
7. Use only Black or Blue Ball Point Pen or Dark Percil to answer the question in OMR sheet.
8. Indicate the correct answer by darkening one of the 4 or 5 responses provided.
9. Submit only OMR sheet to the invigilator

-
-
1. **In an office, the ratio of the percentage of employees who like only tea, percentage of employees who like only coffee, percentage of employees who like both the drinks and percentage of employees who like neither of the drinks is 8 : 7 : 6 : 4. Find the percentage of employees who like neither of the drinks.**

a) 12 %

b) 8%

c) 20%

d) 16%

2. Which of the following is/ are true ?

- a) If $M = N$, the $M' = N'$ b) If $M' = N'$, then $M = N$.
 c) Both (a) and (b) d) Neither (a) nor (b)

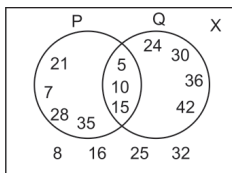
3. $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

$$B = \{2, 4, 6, 8\} \quad C = \{1, 3, 5, 7, 9\}$$

$$(A \cap B) \cup (A \cap C) = \underline{\hspace{2cm}}.$$

- a) A b) $A \cup B$
 c) $A \cup C$ d) All of these
4. If $P = \{\text{Factors of } 36\}$ and $Q = \{\text{Factors of } 48\}$, then find $n(P \cap Q)$
- a) 6 b) 5 c) 7 d) 8
5. If A and B are two disjoint sets; $n(A) + n(B) = 24$, then find $n(A \cup B)$
- a) 16 b) 18 c) 24 d) Cannot say

6.



From the above venn diagram, find

$$n(P - Q) + n(Q - P) = \underline{\hspace{2cm}}.$$

- a) 10 b) 4 c) 6 d) 8
7. A class has 50 students, each student likes either cricket or football or both. Sixteen students like both the games. Find the number of students who like exactly one game
- a) 34 b) 32 c) 38 d) 36

- 8. If $n(A) = 10$, $n(A \cap B) = 5$ and $n(A \cup B) = 35$ then $n(B) =$ ____.**
- a) 30 b) 10
c) 40 d) None of these
- 9. If $n(\mu) = 40$, $n(A' \cap B') = 6$, $n(A \cap B') = 10$ and $n(B \cap A') = 16$ then find $n(A \cap B)$.**
- a) 6 b) 8 c) 3 d) 10
- 10. X and Y are disjoint sets. If $n(X) = 40$ and $n(Y) = 28$, then find $n(X - Y) + n(Y - X)$.**
- a) 66 b) 68 c) 70 d) 72
- 11. The sum of three consecutive odd numbers is always divisible by**
- a) 2 b) 3 c) 5 d) 6
- 12. Three numbers are in the ratio 3:4:5 and their L.C.M. is 2400. Their H.C.F is**
- a) 40 b) 80 c) 120 d) 200
- 13. HCF of $\frac{4}{9}, \frac{2}{3}, \frac{6}{8}, \frac{2}{5}$ is**
- a) $\frac{1}{142}$ b) $\frac{2}{250}$ c) $\frac{1}{180}$ d) $\frac{2}{480}$
- 14. What is the digit in the hundred place in the product of first 45 even natural numbers.**
- a) 6 b) 5 c) 4 d) 0
- 15. A circular field has a circumference of 360 km. Three cyclists start together and can cycle 60 km, 72 km and 90**

km a day. round the field. After how many days will they meet again at the starting point?

- | | |
|------------|------------|
| a) 45 days | b) 60 days |
| c) 50 days | d) 40 days |

16. The absolute value of $|x-6|+|6-x|$, when $0 < x < 6$ is

- | | |
|-------------|------------------|
| a) $6x$ | b) 12 |
| c) $2(6-x)$ | d) None of these |

17. If $HCF(a,b) = 12$ and $a \times b = 1800$, then $LCM(a,b) =$

- | | | | |
|--------|--------|-------|---------|
| a) 900 | b) 150 | c) 90 | d) 3600 |
|--------|--------|-------|---------|

18. Three bells begin tolling at the same time and continue to do so at intervals of 21, 28 and 30 seconds respectively. The bells will toll together again after.

- | | |
|----------------|-----------------|
| a) 7seconds | b) 420 seconds |
| c) 630 seconds | d) 1764 seconds |

19. If N is a natural number then, when N^3 is divided by 9, it leaves a remainder 'r'. What can you say about 'r'?

- | | |
|-------------------------|---------------------------|
| a) It is a perfect cube | b) It is a perfect square |
| c) It is equal to N | d) None of these. |

20. Which one of the following numbers is rational ?

- | | |
|---------------------|-------------------------------|
| a) $(2+\sqrt{7})^2$ | b) $(3-\sqrt{5})(3+\sqrt{5})$ |
| c) $\sqrt{32}$ | d) $\frac{9}{3\sqrt{17}}$ |

21. If P is a prime number, then \sqrt{P} is

- | | |
|-------------|---------------|
| a) rational | b) irrational |
| c) prime | d) none |

22. The rational expression $\frac{x^3 - 3x^2 + 2x}{x^2y - 2xy}$ in its lowest form is

- a) $\frac{x-1}{xy}$ b) $\frac{x-1}{y}$ c) $\frac{x+2}{y}$ d) $\frac{x-2}{y}$

23. If $x + y + z = 0$, then the value of

$$\frac{x^2 + y^2 + z^2}{x^2 - yz} \text{ is}$$

- a) 4 b) 6 c) 2 d) 8

24. $\frac{1}{1+a^{(n-m)}} + \frac{1}{1+a^{(m-n)}} = ?$

- a) $\frac{1}{2}$ b) 0 c) 1 d) a^{m+n}

25. If $27^k = \frac{9}{3^k}$, then value of $\frac{1}{k^2}$ is

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

26. If $4^{\sqrt{x} \cdot \sqrt{x}} = 256$ then the value of x is

- a) 2 b) 16 c) 4 d) $\sqrt{2}$

27. If $3^{2x^2} - 2.3x^{2+x+6} + 3^{2(x+6)}$ then the values of x are

- a) $x = -3, -2$ b) $x = 3, 2$
 c) $x = -3, 2$ d) $x = 3, -2$

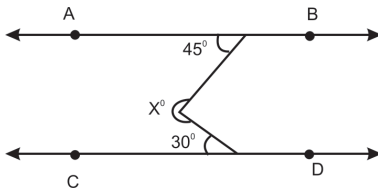
28. If $a = x^{\frac{1}{3}} + x^{\frac{-1}{3}}$ then $a^3 - 3a =$

- a) $x - x^{-1}$ b) $2x$ c) $x + x^{-1}$ d) 0

29. If $\frac{3^x}{1+3^x} = \frac{1}{9}$, the value of $\frac{9^x}{1+9^x}$ is
- a) $\frac{1}{27}$ b) $\frac{1}{64}$
c) $\frac{1}{65}$ d) None of these
30. The largest number amongst $\sqrt{2}, \sqrt[3]{3}, \sqrt[4]{4}$ is
- a) $\sqrt{2}$ b) $\sqrt[3]{3}$
c) $\sqrt[4]{4}$ d) all are equal
31. Number of prime factors in $(216)^{\frac{3}{5}} \times (2500)^{\frac{2}{5}} \times (300)^{\frac{1}{5}}$ is
- a) 6 b) 7
c) 8 d) None of these
32. If $\frac{5x-3y}{5y-3x} = \frac{3}{4}$, then value of $\frac{x}{y}$ is
- a) 2:9 b) 7:2
c) 7:9 d) None of these
33. The average age of three boys is 25 years, and their ages are in the ratio 3:5:7. The age of the youngest boy is
- a) 15 years b) 21 years
c) 9 years d) 18 years
34. A man's working hours per day were increased by 20% and his wages per hour were increased by 15%. By how much percent are his earnings (daily wages) increased?
- a) 38 % b) 39% c) 40 % d) 19 %

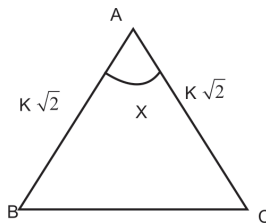
35. The population of a city is 155625, for every 1000 men, there are 1075 women. If 40% of men and 24% of women be literate, then what is the percentage of literate people in the city?
- a) 30% b) 32% c) $32\frac{10}{15}\%$ d) $31\frac{59}{83}\%$
36. The difference between S.I. and C.I on a sum for 2 years at 8% per annum is Rs. 160. If the interest were compounded half yearly, the difference in interests in two years will be nearly
- a) Rs. 246.50 b) Rs. 240
c) Rs. 168 d) Rs. 160
37. If a person makes a profit of 10% on $\frac{1}{4}$ th of the quantity sold and loss of 20% on the rest, then his average percent profit or loss is
- a) 15% profit b) 15 % loss
c) 12.5 loss d) 12.5 profit
38. A businessman allows two successive discounts of 20% and 10% . If he gets Rs. 108 for an article, then its marked price is
- a) Rs. 124 b) Rs. 140
c) Rs. 150 d) Rs. 170
39. A person sells two watches for Rs.500 each. On one he loses 10% and on the other he gained 10%. His gain or loss% is
- a) 1.5 % gain b) 1.5 % loss
c) 1% loss d) 1% gain
40. Rekha sold a watch at a profit of 15%. Had he bought it at 10% less and sold it for Rs. 28 less. He would have gained 20%. The C.P. of the watch is
- a) Rs. 250 b) Rs. 400 c) Rs. 425 d) Rs. 450

41. In the given figure, $AB \parallel CD$.Value of angle x is



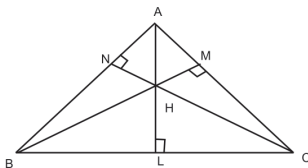
- a) 295°
- b) 305°
- c) 275°
- d) 285°

42. In the given triangle if $90^\circ < x < 180^\circ$ and $K > 1$, then which of the following must be true?



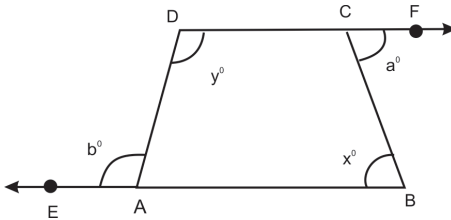
- a) $BC = 2K$
- b) $2K > BC < \frac{K}{4}$
- c) $BC = 2K\sqrt{2}$
- d) $2K < BC < 2K\sqrt{2}$

43. If H is the orthocentre of $\triangle ABC$,then the Orthocentre $\triangle HBC$ is



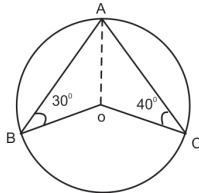
- a) N
- b) M
- c) A
- d) L

44. The sides BA and DC of quadrilateral ABCD are produced as shown in the figure given below. Then $x + y$ is equal to



- a) $a + b$
- b) $a - b$
- c) $\frac{a}{b}$
- d) $\frac{b}{a}$

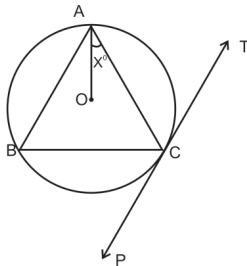
45. In the given figure, value of $\angle BOC$ is



- a) 70°
- b) 140°
- c) 110°
- d) 100°

46. In the adjoining figure, PT is a tangent at point C of the circle. O is the circumcentre of $\triangle ABC$.

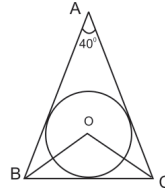
If $\angle ACP = 118^\circ$. then the measure of $\angle x$. is



- a) 28°
- b) 32°
- c) 42°
- d) 38°

47. In the given figure O is the centre of incircle for $\triangle ABC$.
Value of $\angle BOC$ if $\angle BAC = 40^\circ$ is

- a) 105°
- b) 80°
- c) 110°
- d) 130°



48. The locus of the centre of wheel rolling on a straight road is

- a) Circle
- b) Curved path
- c) Straight line
- d) None of these

49. The locus of a point which is equidistant from two non-intersecting lines l and m is a

- a) Straight line parallel to the line ' l '
- b) Straight line parallel to the line ' m '
- c) Straight line parallel to lines l and m and mid way between them
- d) None of these

50. One of the angles of a parallelogram measures 63° . Measures of the other three angles of the parallelogram are

- a) $63^\circ, 63^\circ$, and 63° because all the angles of a parallelogram are always congruent
- b) $63^\circ, 27^\circ$, and 27° , because consecutive angles of a parallelogram are complementary and the sum of the measures of the angles of a parallelogram is 180°
- c) $63^\circ, 117^\circ$, and 117° , because consecutive angles of a parallelogram are supplementary and the sum of the measures of the angles of a parallelogram is 360°
- d) Cannot be determined

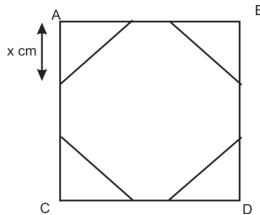
51. Consider the following statements:

- I. a parallelogram in which two adjacent angles are equal is a rectangle.
- II. A quadrilateral in which both pairs of opposite angles are equal is parallelogram.
- III. In a parallelogram the number of acute angles is zero or two.

Which of the following is Correct?

- a) Only I
- b) II and III
- c) I, II and III
- d) All, II and III

52. In the figure, ABCD is a square of side 10 cm. From the square, four congruent isosceles triangles are cut so that the remaining portion is regular octagon. The value of x is



- a) 5.45 cm.
- b) 2.93 cm
- c) 1.73 cm
- d) 3.68 cm

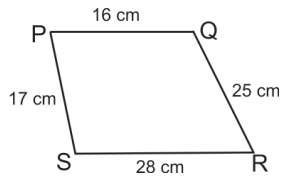
53. The number of sides of a regular polygon, if each of its interior angles is 135° , is given by

- a) 4
- b) 6
- c) 8
- d) 10

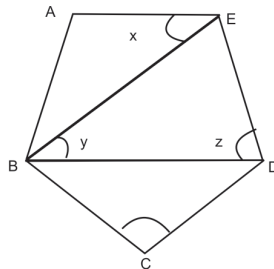
54. Each interior angle of a regular polygon of n sides ($n \geq 3$) contains

- a) $4n$ right angles
- b) $\frac{2(n+1)}{n}$ right angles
- c) $\frac{2(n-1)}{n}$ right angles
- d) $\frac{2(n-2)}{n}$ right angles

55. PQRS is a trapezium. $PQ \parallel SR$. the distance between parallel sides is



- a) 15.5 cm b) 16 cm c) 15 cm d) 14 cm
56. The angles of a pentagon in degree are x° , $(x+20)^\circ$, $(x+40)^\circ$, $(x+60)^\circ$ and $(x+80)^\circ$. Measure of the largest angle is
- a) 78° b) 148° c) 68° d) 158°
57. ABCDE is a regular pentagon, The measure of the angles marked 'y' is :

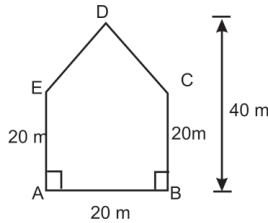


- a) 72° b) 78° c) 36° d) 112°
58. Consider the following statements:
- A. In a trapezium the diagonal bisect each other
- B. In a rectangle diagonals intersect at right angles.
- C. The diagonals of a rhombus are equal.
- D. The sum of the angle of a quadrilateral is three right angles.

Which of these statements are NOT correct?

- a) A and D b) B and C
- c) B,C and D d) All A,B,C and D

59. The ratio of the sides of two regular polygons is 1:2 and of their interior angles is 3:4, then the number of sides of each polygon is
 a) 5, 10 b) 9, 12 c) 10, 5 d) 5, 12
60. The sides of a triangle are in the ratio 3 : 4: 5. If its perimeter is 36 cm then the area of the triangle is
 a) 54 sqm b) 56.5 sqm
 c) 57 sqm d) None of these
61. Area of pentagonal park shown below is



- a) 600 m² b) 800 m² c) 450 m² d) 700 m²
62. The ratio of area of a square to another square drawn on its diagonal is
 a) 3 : 4 b) 4 : 5 c) 2 : 3 d) 1 : 2
63. The length and breadth of a rectangular plot of a land are in the ratio 5 : 3. The owner spent Rs. 3000 for surrounding it from all the sides at the rate of Rs. 7.5 per meter. The difference between the length and breadth of the plot is
 a) 75 m b) 50 m
 c) 90 m d) 60 m
64. Four equal sized maximum circular plates are cut off from a square paper sheet of area 784 cm². The circumference of each plate is
 a) 20 cm b) 32 cm
 c) 44 cm d) 64 cm

65. If the radius of circles increased by 1 cm, its area increases by 22 cm^2 , then original radius of the circle is
- a) 4 cm b) 3 cm c) 3.5 cm d) 5 cm
66. A circular road runs around a circular garden. If the difference between the circumference of the outer circle and inner circle is 44 m, then the width of the road is
- a) 7 m b) 5 m c) 6.5 m d) 7.5 m
67. The length of a rectangle is increased by 60%. By what percent would the width be decreased so as to maintain the same area?
- a) 37.5% b) 50% c) 65% d) 70%
68. A hemisphere of radius 6 cm is cast into a right circular cone of height 75 cm. The radius of the base of the cone is
- a) 2.4 cm b) 2.8 cm c) 3.5 cm d) 3.8 cm
69. The radius of a hemisphere is decreased by 10%. The percentage change in its surface area is
- a) decrease by 10% b) decrease by 15%
c) decrease by 19 % d) increase by 10%
70. The average age of a committee of seven trustees is the same as it was five years ago, a younger man having been substituted for one of them. How much younger was he than the trustee whose place he took?
- a) 32 years b) 35 years
c) 33 years d) 34 years
71. If the value of mode and mean is 60 and 66 respectively, then find the value of median.
- a) 65 b) 64 c) 70 d) 75

72. In a class of 100 students there are 70 boys whose average marks in a subject are 75. If the average marks of the complete class are 72, then the average marks of the girls are

- a) 73 b) 65 c) 68 d) 74

73. The median of a set of 9 distinct observations is 20.5. If each of the largest 4 observation of the set is increased by 2, then the median of the new set is

- a) Is increased by 2
b) Is decreased by 2
c) Is two times the original median
d) Remains the same as that of the original set

74. Find the missing frequency 'f' from the following data. It is given that mean is 16.

x_i	5	10	15	20	25
f_i	2	8	f	10	5

- a) 15 b) 12.5
c) 13 d) 16

75. Median of first 30 prime numbers is

- a) 10 b) 13 c) 12 d) 15

KEY TO MODEL PAPER - I

- | | | | | | |
|-------|-------|-------|-------|-------|-------|
| 1. d | 2. c | 3. d | 4. a | 5. c | 6. d |
| 7. a | 8. a | 9. b | 10. b | 11. b | 12. a |
| 13. c | 14. d | 15. b | 16. c | 17. b | 18. b |
| 19. a | 20. b | 21. b | 22. b | 23. c | 24. c |
| 25. b | 26. c | 27. d | 28. c | 29. c | 30. c |
| 31. b | 32. d | 33. a | 34. a | 35. d | 36. a |
| 37. c | 38. c | 39. c | 40. b | 41. d | 42. d |
| 43. c | 44. a | 45. b | 46. a | 47. c | 48. c |
| 49. c | 50. c | 51. d | 52. b | 53. c | 54. d |
| 55. c | 56. b | 57. c | 58. d | 59. a | 60. a |
| 61. a | 62. d | 63. b | 64. c | 65. b | 66. a |
| 67. a | 68. a | 69. c | 70. b | 71. b | 72. b |
| 73. d | 74. a | 75. b | | | |

ADVANCED MATHS TEST-II

Code : 1182

FINALS

Max. Marks : 60

Duration : 60 Mins.

General Instructions :

1. Please find the separate Answer Sheets along with the question paper.
2. Mention your Test Code, Student ID, Name, Class, Section, Contact no. and School Name on the Answer Sheet as per Question Paper and Hall Ticket.
3. This question paper contains VI sections, duration is 60 minutes.
4. Please read the instructions carefully before attempting the question.
5. Answer questions in Answer Sheet only.
6. Don't write or tick anything on the question paper.
7. Use only Black or Blue Ball Point Pen to answer the question in Answer Sheet.
8. Submit only answer sheet(s) to the invigilator.

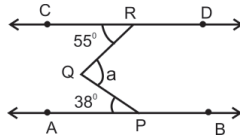
SECTION - I

10 × 1 = 10

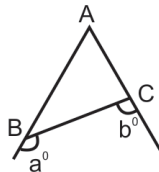
DIRECTIONS:(1 - 10) - Complete the following statements with an appropriate word/term to be written in the answer sheet.

1. Draw the venn diagram to $A' \cup B'$ is _____
2. Express $0.12\bar{3}$ in $\frac{p}{q}$ form _____
3. If $3^a = 4^b = 12^c$, then $C =$ _____

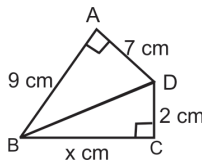
4. Two numbers are in the ratio 9 : 14. If the longer number is 55 more than the smaller number, then the numbers are _____
5. What percent of 120 is 30 _____
6. In the given figure $AB \parallel CD$, then $\angle a$ _____



7. In the given figure $\angle a > \angle b$, then compare AB and AC is _____



8. In the given figure, ABCD is a quadrilateral then the value of x _____



9. Sides of a triangle are in the proportion of 4 : 5 : 6 and the perimeter is 195 m. then its area _____.
10. If the mean of 6,4,7, p and 10 is 8, then the value of p is _____

SECTION - II

10 × 1 = 10

DIRECTIONS: (11 - 20) Read the following statements and write true or false with reasons or solutions; in the answer sheet.

11. If A is any set and U is an universal set then

$$A \cup A' = \phi \text{ and } A \cap A' = U$$

12. The number of irrational numbers between 15 and 18 is infinite.
13. Degree of a polynomial is a rational number.
14. If a, b, c are in continued proportion, then $b = \sqrt{ac}$
15. When 75% of a number is added to 75 the result is the same number. then the number is 200.
16. The circumcenter of an obtuse triangle is located inside the triangle.
17. If one angle of a triangle is 60° then the triangle is isosceles.
18. All rectangles are also squares.
19. Volume of the solid is measured in cubic units.
20. The number of times a particular observation occurs is called is mode.

SECTION - III

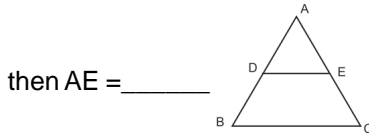
10 × 1 = 10

DIRECTIONS: (21 - 30) Each question contains statements given in two columns which have to be matched. Match the statements (21,22,...30) in column I with statements (A,B,...R) in column II . Arrange the matched statements in order and write in the answer sheet.

Column I	Column II
21) law of empty set $\phi' =$	A) 1.8 cm
22) $4A^8 + 3B^6 + 5C^4 = 1278$ what could be the maximum value of C	B) 125^0
23) If $2^{x+1} + 3 \cdot 2^{x-3} = 76$, then $x =$	C) $225\sqrt{3}cm^2$
24) What must be subtracted from each term of the ratio 3 : 7, so that the ratio becomes 2 : 5	D) Observation
25) If $\frac{a}{x-y} = \frac{b}{y-z} = \frac{c}{z-x}$, then $a + b + c =$	E) ϕ

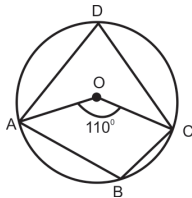
26) A polygon bounded by eight line segments is called a F) 5

27) If $DE \parallel BC$, $\frac{AD}{DB} = \frac{3}{5}$, $AC = 4.8$ cm, (G) 3



28) In the figure 'O' is the centre of the circle (H) 0

and $\angle AOC = 100^\circ$ Then $\angle ABC$



29) One side of an equilateral triangle is 30 cm. Its area is : I) Pentagon

30) Each numerical figure in a data is called an J) 1.6 cm

K) 135°

L) $220\sqrt{3} \text{ cm}^2$

M) grouped

N) μ

O) 6

P) $\frac{1}{3}$

Q) 4

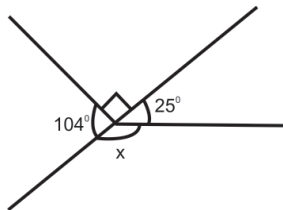
R) octagon

SECTION - IV

10 × 1 = 10

Directions: (31 - 40) Identify the correct answer from the given options and write in the answer sheet.

31. Let $A = \{x,y,z\}$ and $B = \{1,2\}$, then the number of relations from A to B.
 a) 32 b) 42 c) 64 d) 60
32. Find the units digit in the product $(1237)^{53} \times (121)^{36}$
 a) 1 b) 3 c) 5 d) 7
33. Express $(2^{-1} + 3^{-1})^{-2}$ as rational number = _____
 a) $\frac{25}{27}$ b) $\frac{32}{27}$ c) $\frac{36}{25}$ d) $\frac{36}{27}$
34. If $a : b = 2:3$; then $(3a+4b) : (4a - b)$ is
 a) $\frac{7}{5}$ b) $\frac{11}{5}$ c) $\frac{15}{5}$ d) $\frac{18}{5}$
35. Value of $\angle x =$



- a) 141° b) 70° c) 105° d) 45°
36. The measure of an angle, if six times its complement is 12° less than twice its supplement. is
 (a) 58° b) 48° c) 38° d) 78°
37. An angle is equal to one - third of its supplement. then its angle is.
 a) 45° b) 60° c) 75° d) 90°

38. The perimeter of an isosceles triangle is 42 cm. If the base is 16 cm, then the equal side is.
- a) 10 cm b) 12 cm c) 13 cm d) 14 cm
39. The regular hexagon whose side is 6 cm, then area is
- a) 90.528 cm^2 b) 93.528 cm^2
c) 95.528 cm^2 d) 97.528 cm^2
40. The average score of boys in an examination of a school is 71 and that of girls is 73. The average score of the school in that examination is 71.8. The ratio of the number of boys to the number of girls appeared in the examination is
- a) 3 : 2 b) 4 : 5 c) 3 : 5 d) 5 : 3

SECTION - V **$10 \times 1 = 10$**

DIRECTIONS: 41 - 50) Choose the correct answers (More than one correct answer) from the given options and write in the answer sheet.

41. Which of the following is/are empty set?
- a) Set of all even natural numbers divisible by 5.
b) $\{x : x^2 - 2 = 0 \text{ and } x \text{ is rational}\}$
c) $\{x : x \text{ is a natural number, } x < 8 \text{ and simultaneously } x > 12\}$
d) $\{x : x \text{ is a point common to any two parallel lines}\}$
42. What should be the maximum value of Q in the following equation?
 $4P8 + 8Q3 + 7R8 = 2079$
- a) lies between $0 \leq Q \leq 9$ b) More than or equal to 7
c) Less than 6 d) $0 \leq Q \leq 11$

43. Which of the following expressions are not polynomials?

a) $\frac{2}{x} + x^3 + 2$

b) $\frac{3x^2 - x + 1}{x^2 + 1}$

c) $\frac{3x + 2}{x^2}$

d) $4x^3 + 5x^{10} - 9x^8 + 1$

44. 2,3 can make a proportion with

a) 14 and 21

b) 16 and 24

c) 10 and 12

d) 18 and 21

45. Which of the following is/are correct?

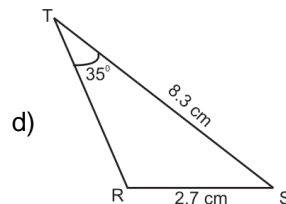
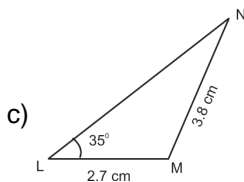
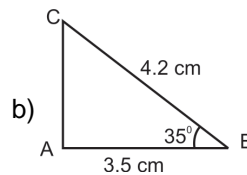
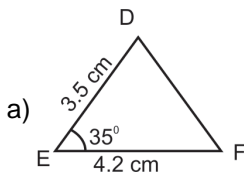
a) A region bounded by an arc and a chord is called the segment of a circle.

b) A circle has unlimited number of chords.

c) Area of semi-circle is πr^2

d) None of the above.

46. Which two of the triangles are congruent to each other?



47. Which of the following properties are not true for a parallelogram?
- a) Its diagonals are equal.
 - b) Its diagonals are perpendicular to each other.
 - c) The diagonals divide the figure into four congruent triangles.
 - d) Each diagonal divides a parallelogram into two congruent triangles.
48. Which one is/are correct?
- a) Total surface area of cuboid is $2(lb+bh+hl)$
 - b) Total surface area of a cube is $6l^2$
 - c) Area of four walls = $2h(l+b)$
 - d) Area of four walls = Height \times Perimeter of the room
49. Which of the following is/are related to cuboid?
- a) A match box
 - b) A brick
 - c) A room
 - d) A kite
50. The average of 4 numbers is 50. If two of the numbers are 20 and 40, which of the following could be the other two numbers?
- a) 60 and 80
 - b) 0 and 140
 - c) 50 and 50
 - d) None of these

Section - VI

$10 \times 1 = 10$

Assertion & Reason

DIRECTIONS: (51-60) - Each of these questions contains an Assertion followed by reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements and write in the answer sheet.

- a) If both **Assertion** and **Reason** are **correct** and Reason is the **Correct explanation** of Assertion.
- b) If both **Assertion** and **Reason** are correct, but Reason is **not the correct explanation** of Assertion.
- c) If **Assertion** is **correct** but **Reason** is **incorrect**.
- d) If **Assertion** is **incorrect** but **Reason** is **correct**.

51. **Assertion:** The set of all rectangles is contained in the set of all squares.

Reason: The sets $P = \{ a \}$ and $B = \{ \{a\} \}$ are equal .

52. **Assertion:** Sum of two irrational numbers $(2 - \sqrt{5})$ and $(2 + \sqrt{5})$ is also an irrational number

Reason: Sum of two irrational numbers need not be an irrational numbers

53. **Assertion:** We should multiply $(-7)^{-1}$ to $\frac{-7}{4}$ to get the product as 4^{-1} .

Reason: If $\frac{x}{y} = \left(\frac{5}{2}\right)^{-1} \times \left(\frac{8}{9}\right)^0$ then the value of $\left(\frac{x}{y}\right)^{-2}$ is $\left(\frac{2}{5}\right)^2$.

54. **Assertion:** The numbers 4,6 and 9 are in continued proportion.

Reason: The numbers 2,4,6 are also in continued proportion.

55. **Assertion:** A polygon bounded by four line segments is called a quadrilateral.

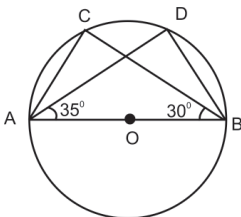
Reason: A polygon bounded by seven line segments is called a hexagon.

56. **Assertion :** The sum of interior angles of a polygon is 2520° . Number of sides of polygon is 16.

Reason: Measure of each interior angle of a regular polygon of n

sides = $\frac{(2n - 4)}{n}$ right angles.

57. **Assertion:**



In the given circle $\angle ACB = \angle ADB = 90^\circ$

Reason: An angle in a semi - circle is a right angle.

58. **Assertion:** Area of the triangle having three sides 4 m, 6m and 8m is 135 sq.m.

Reason: If a, b, c are the lengths of the sides of a triangle then

$$Area = \sqrt{s(s-a)(s-b)(s-c)} \text{ where } s = \frac{a+b+c}{2}.$$

59. **Assertion:** If the side of a rhombus is 10 cm and one diagonal is 16 cm, then area of the rhombus is

96 cm²

Reason: Area of rhombus = 2 × area of triangle.

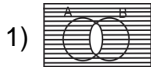
60. **Assertion:** If mean of the numbers 27 + x, 31 + x, 89 + x, 107 + x, 156 + x is 82 then value of x is 0.

Reason: Mean = $\frac{\text{Sum of observations}}{\text{Total no. of observations}}$

SOLUTIONS TO MODEL PAPER - II

SECTION - I

Fill in the Blanks



2) $\frac{37}{300} = \frac{111}{900}$

3) $\frac{ab}{a+b}$

4) 99,154

5) $x = 25\%$

6) $= 93^0$

7) $AB > AC$

8) $x = 11$

9) 1676.745 cm

10) 13

SECTION - II

True / False

11) False

12) True

13) False

14) True

15) False

16) False

17) False

18) False

19) True

20) False

SECTION - III

Match the Following

21) → N

22) → O

23) → F

24) → P

25) → H

26) → R

27) → A

28) → B

29) → C

30) → D

SECTION - IV

Multiple Choice Questions

32) c

32) d

33) c

34) d

35) a

36) b

37) a

38) c

39) b

40) a

SECTION - V**More than one correct answers**

- 41) b, c, d 42) a, d 43) a, b, c 44) a, b
45) a, b 46) a, b 47) a, b, c 48) a, b, c, d
49) a, b, c 50) a, b

SECTION - VI**Assertion & Reason**

51. c) If **Assertion** is **correct** but **Reason** is **incorrect**.
52. d) If **Assertion** is **incorrect** but **Reason** is **correct**.
53. c) If **Assertion** is **correct** but **Reason** is **incorrect**.
54. c) If **Assertion** is **correct** but **Reason** is **incorrect**.
55. c) If **Assertion** is **correct** but **Reason** is **incorrect**.
56. a) If both **Assertion** and **Reason** are **correct** and Reason is the **Correct explanation** of Assertion.
57. b) If both **Assertion** and **Reason** are correct, but Reason is **not the correct explanation** of Assertion.
58. d) If **Assertion** is **incorrect** but **Reason** is **correct**.
59. a) If both **Assertion** and **Reason** are **correct** and Reason is the **Correct explanation** of Assertion.
60. a) If both **Assertion** and **Reason** are **correct** and Reason is the **Correct explanation** of Assertion.