JEE PAPER 2 MOCK TEST 1

INSTRUCTIONS FOR CANDIDATES

1. Fill up the necessary information in the space provided on the cover
2. The total duration of this test (Part 1 Part II and Part III) is 3 hours. There are 25 questions in Part I, 50 questions in Part II and 2 questions in Part III.
3. There is No Negative Marking.
4. You may attempt the questions in any order you prefer.
5. Please check for the completeness of the Question Booklet
6. Mark all answers in the booklet only. For Section 3, ask for additional papers.
7. Rough work, if any, is to be done on the Question Booklet only. No separate sheet will be provided/used for rough work.
8. Calculator, Mobile or any Electronic Gadgets, etc., are not permitted inside the examination hall.
9. Candidates seeking, receiving and/or giving assistance during the test will be disqualified.
10. The right to exclude any question(s) from final evaluation rests with the Examining authority.

QUESTION BOOKLET

NAME:_____

MOBILE NUMBER:_____

DATE:_____

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Section 1: Mathematics : Questions 1 – 25

1. If $\log_7 2 = m$, then $\log_{49} 28$ is equal to:

   1) $2(1 + 2m)$ 2) $\frac{(1+2m)}{2}$

   3) $\frac{2}{1+2m}$ 4) $1 + m$

2. Tangents are drawn from the point (4, 3) to the circle $x^2 + y^2 = 9$. The area of the triangle formed by them and the line joining their points of contact is

   1) $124/51$ 2) $64/25$

   3) $192/25$ 4) $192/51$

3. A certain type of bacteria reproduces itself at the rate of 10% every 5 minutes. In how many minutes will the number double itself?

   1) 20 minutes 2) 30 minutes

   3) 40 minutes 4) None of these

4. If the points (– 1, 2, – 3), (4, a, 1) and (b, 8, 5) are collinear then the values of a and b respectively will be

   1) 5, 5 2) 9, 5

   3) 5, 9 4) – 5, 9

5. The direction cosines of the line $4x – 4 = 1 – 3y = 2z – 1$ are

   1) $\frac{3}{\sqrt{56}}, \frac{-4}{\sqrt{56}}, \frac{6}{\sqrt{56}}$ 2) $\frac{3}{\sqrt{29}}, \frac{-4}{\sqrt{29}}, \frac{6}{\sqrt{29}}$

   3) $\frac{3}{\sqrt{61}}, \frac{-4}{\sqrt{61}}, \frac{6}{\sqrt{61}}$ 4) $\frac{4}{\sqrt{29}}, \frac{-3}{\sqrt{29}}, \frac{2}{\sqrt{29}}$

6. $\int_0^{\pi/2} \log sinx \, dx =$

   1) $\frac{-\pi}{2} * log10$ 2) $\frac{-\pi}{2} * log2$

   3) $log2$ 4) None of these

7. The value of $(\sqrt{5} +1)^5 – (\sqrt{5} –1)^5$ is

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1) 252 2) 352
3) 452 4) 532

8. If $T_0, T_1, T_2 \ldots\ldots T_n$, represent the terms in the expansion of $(x + a)^n$, then $(T_0 - T_2 + T_4 - \ldots.)^2 + (T_1 - T_3 + T_5 - \ldots.)^2 =$
1) $(x^2 + a^2)$ 2) $(x^2 + a^2)^n$
3) $(x^2 + a^2)^{1/n}$ 4) $(x^2 + a^2)^{-1/n}$

9. The number of diagonals in an octagon, is
1) 28 2) 20
3) 10 4) 16

10. $\frac{d}{dx}(\tan a^{1/x}) =$
1) $\frac{\sec^2(a^{1/x}).(a^{1/x}.\log_e a)}{x^2}$
2) $\frac{\sec^2(a^{1/x}).(a^{1/x}.\log x)}{x}$
3) $\frac{\sec x.\log a}{x^2}$
4) $-\frac{\sec^2(a^{1/x}).(a^{1/x}.\log_e a}{x^2}$

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11. The number of straight lines that can be formed by joining 20 points no three of which are in the same straight line except 4 of them which are in the same line
1) 183 2) 186
3) 187 4) 185

12. $\int \frac{dx}{1+e^x} =$
1) $\log 1 + e^x$ 2) $-(\log(1 + e^{-x})$
3) $(\log(1 + e^{-x})$ 4) $\tan^{-1}(1 + e^x)$

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13. If on an average 1 vessel out of 10 is wrecked, the probability that out of 5 vessels expected to arrive, 4 at least will arrive safely is.

1) $45927/50000$ 2) $4592/50000$

3) $8627/5000$ 4) None of these

14. The differential equation of the family of the curves represented by the equation $x^2 + y^2 = a^2$, is

1) $x + y * \frac{dy}{dx} = 0$ 2) $x - y * \frac{dy}{dx} = 0$

3) $y * d^2y/dx^2 = -\left(\frac{dy}{dx}\right)^2$ 4) None of these

15. A family has 5 children. Assuming that the probability of girl on each birth was ½ and five births are independent. The probability that the family has at least one girl given they have at least one boy is.

1) $31/32$ 2) $30/31$

3) $15/16$ 4) $15/31$

16. $\int_0^1 cos^{-1} x \, dx =$

1) 0 2) 1

3) 2 4) None of these

17. $\lim_{n\to\infty} \frac{\sqrt{n}}{\sqrt{n} + \sqrt{n+1}}$

1) 1 2) 0

3) $\frac{1}{2}$ 4) ∞

18. $\lim_{x\to a} \frac{x^9 + a^9}{x + a} = 9, then\ find\ a$

1) 1 2) 8

3) $\sqrt[8]{9}$ 4) 2

19. If $e^x = y + \sqrt{1 + y^2}$, then y is

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

3) $e^x + e^{-x}$ 4) $e^x - e^{-x}$

20. The extreme value of f(x) = $\frac{\log(x)}{x}$, x > 0, is

1) e 2) x

3) e –1 4) $\frac{1}{e}$

Numeric Entry Questions

Direction for question 21- 25: Each of the following questions an answer has to be filled in the box given.

Example: if the answer is 25, write-down it in the box as given below.

25

And if answer is a fraction like 25/32 enter it as,

25
32

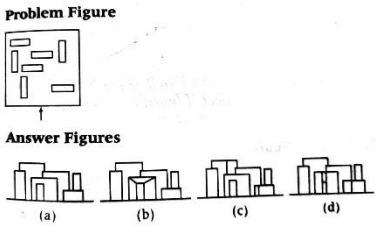
21. A and B throw alternately with a pair of dice, A wins if he throws 6 before B throws 7 and B wins if he throws 7 before A throws 6. If A begins then his chance of winning is.

22. The last two digit in 7^{300} is

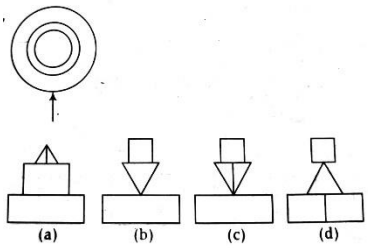
23. The positive integer just greater than $(1 + 0.0001)^{10000}$ is

24. Area bounded by the curve $y = x^3$, x axis and the ordinates x = 1 and x = 4 is

Or



25. Six identical coins are arranged in a row. The number of ways in which the number of tails is equal to the number of heads is



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Section 2: Aptitude : Questions 1 – 50

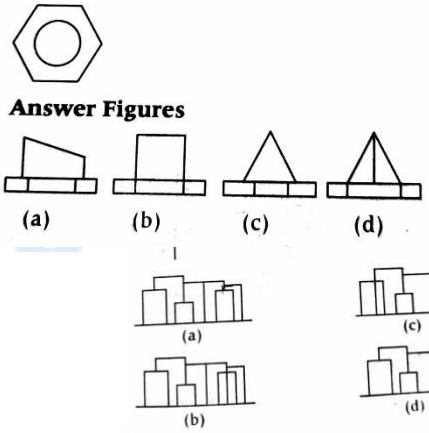
Q(1-5)-The problem figure shows the top view of objects .Looking in the directions of arrow, identify the correct elevation, from amongst the answer figures.

Q1. A) a
B) b
C) c
D) d

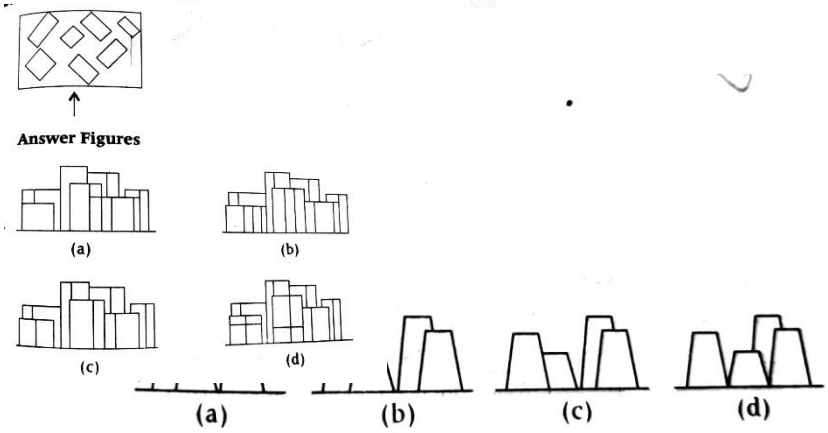
Q2. A) a
B) b
C) c
D) d

Q3. A) a
B) b
C) c
D) d

Q4. A) a
B) b
C) c
D) d



Q5. A) a
B) b
C) c
D) d



Q(6-9)-The problem figure shows the top view of an object. Identify the correct front view from amongst the answer figures.

Q6. A) a

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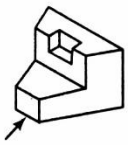
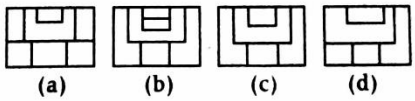
B) b
C) c
D) d



Answer Figures



Q7. A) a
B) b
C) c
D) d

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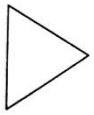
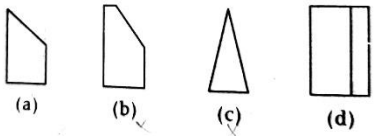
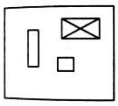
Q8. A) a
B) b
C) c
D) d



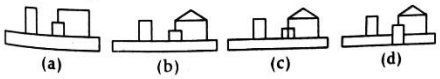
Answer Figures



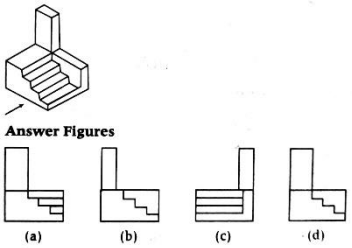
Q9. A) a
B) b
C) c
D) d



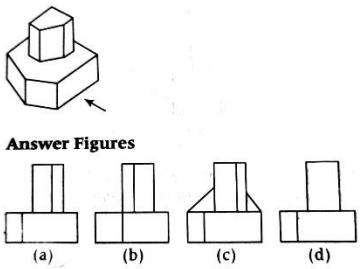
Answer Figures



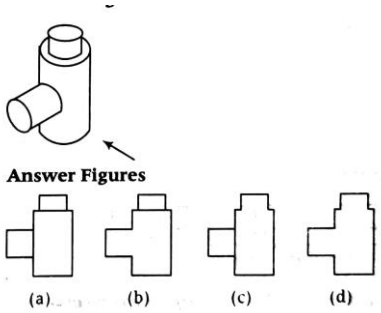
Q(10-15)-The 3-D problem figure shows a view of an object .Identify the correct front view figures, looking in the direction of the arrow.



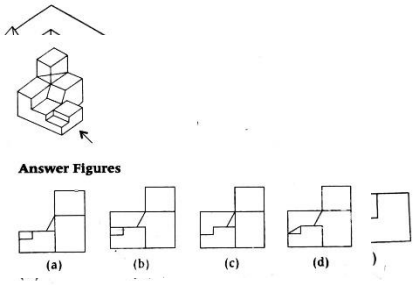
Q10. A) a
B) b
C) c
D) d



Q11. A) a
B) b
C) c
D) d



Q12. A) a
B) b
C) c
D) d



Q13. A) a
B) b
C) c
D) d

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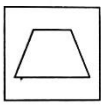
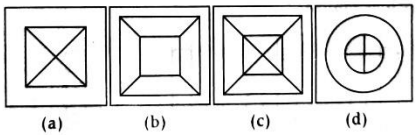


Answer Figures

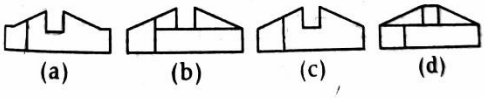


Q14. A) a
B) b
C) c
D) d

Q15. A) a
B) b
C) c
D) d

Q(16-20)-The 3-D figure shows the view of an object. Identify the correct top view from amongst the answer figures.

Answer Figures



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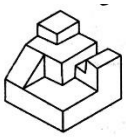
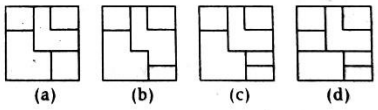
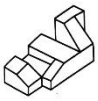
Q16. A) a
B) b
C) c
D) d



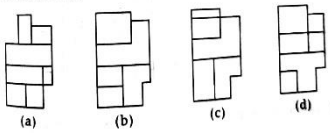
Answer Figures



Q17. A) a
B) b
C) c
D) d



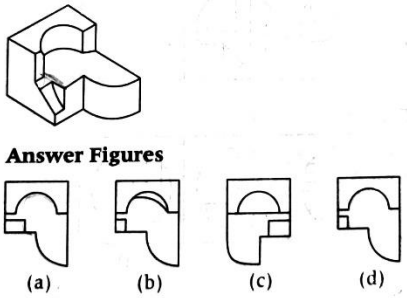
Answer Figures



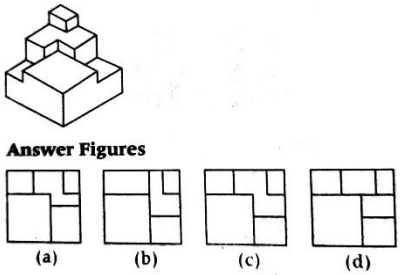
Q18. A) a
B) b

C) c
D) d

Q19. A) a
B) b
C) c
D) d

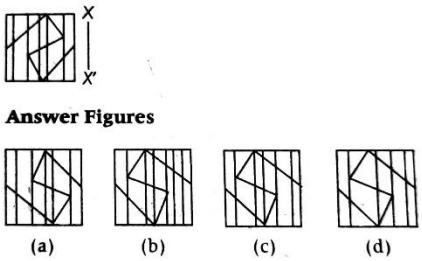


Q20. A) a
B) b
C) c
D) d

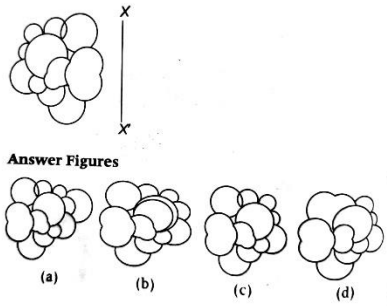


Q(21-25)-Which one of the answer figures is the correct mirror image of the problem figure with respect to X-X?

Q21. A) a
B) b
C) c
D) d



Q22. A) a
B) b
C) c
D) d



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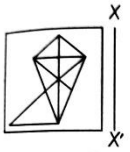
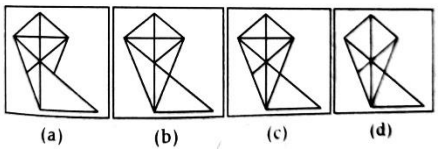
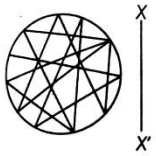


Q23. A) a
B) b
C) c
D) d

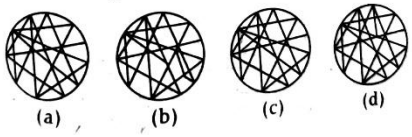
Answer Figures

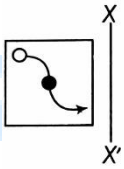




Q24. A) a
B) b
C) c
D) d

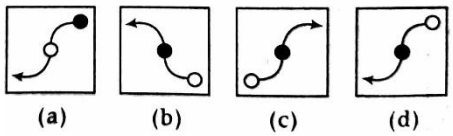
Answer Figures



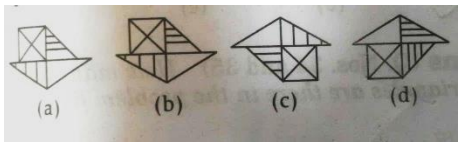


Q25. A) a
B) b
C) c
D) d

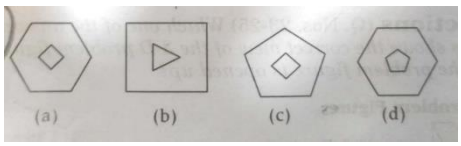
Answer Figures



Q(26-30)-Find the odd figure out in the problem figures given below.



Q26. A) a
B) b
C) c
D) d



Q27. A) a

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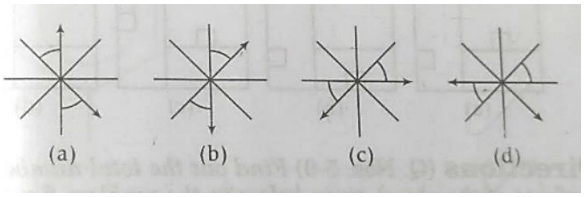
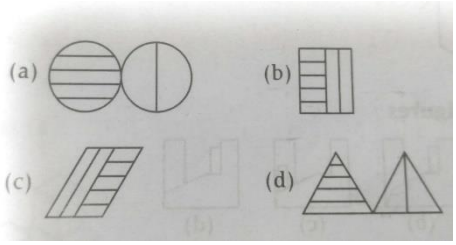
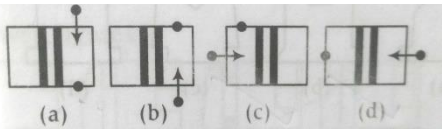
B) b
C) c
D) d



Q28. A) a
B) b
C) c
D) d



Q29. A) a
B) b
C) c
D) d



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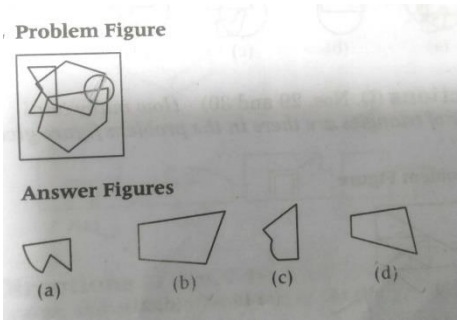
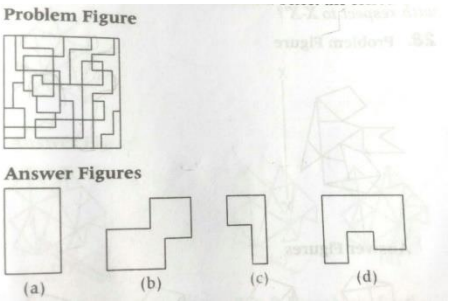
Q30. A) a
B) b
C) c
D) d



Q(31-35)-One of the following answer figures is hidden in the problem figure in the same size and direction. Select the correct one.

Q31. A) a
B) b
C) c
D) d



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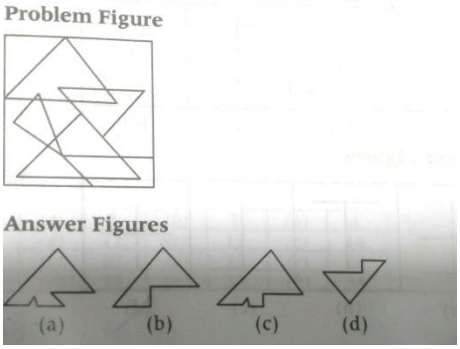
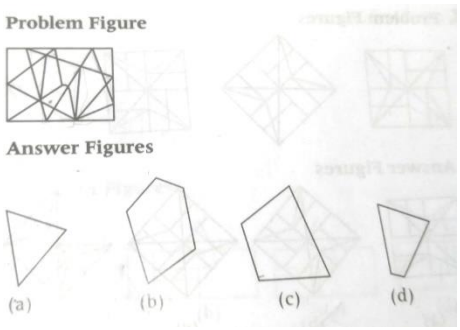
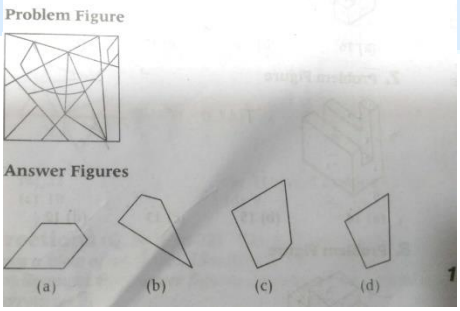
Q32. A) a
B) b
C) c
D) d



Q33. A) a
B) b
C) c
D) d



Q34. A) a
B) b
C) c
D) d

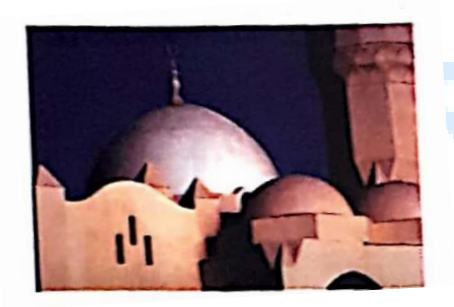


Q35. A) a
B) b
C) c
D) d

Q36. Large window is not used in?

A) Toilet
B) Bedroom
C) Kitchen
D) Living room

Q37. What kind of roof does the structure has?



A) Flat roof
B) Domical roof
C) Pitched roof
D) Perforate roof

Q38. Which type of floor finish used in railway station platform edges?
A) Textured
B) Glazed
C) Smooth
D) Vitrified

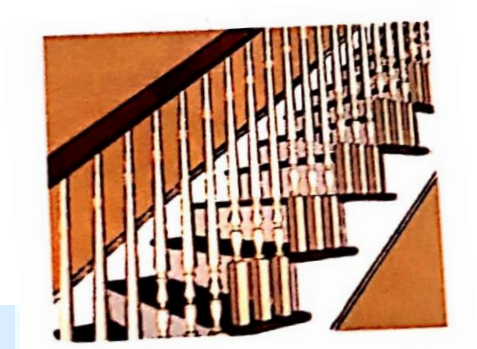
Q39. Which color will get after mixing red and blue?
A) Green
B) Brown
C) Orange
D) Violet

Q40. The path around the ideal of god is called
A) Pradakshina path
B) Portico
C) Both
D) None

Q41. A cuboid shaped wooden block has 4 cm length, 3 cm breadth and 5 cm height. Two sides measuring 5 cm x 4 cm are coloured in red. Two faces measuring 4 cm x 3 cm are coloured in blue. Two faces measuring 5 cm x 3 cm are coloured in green. Now the block is divided into small cubes of side 1 cm each. How many small cubes will have will have three faces coloured?

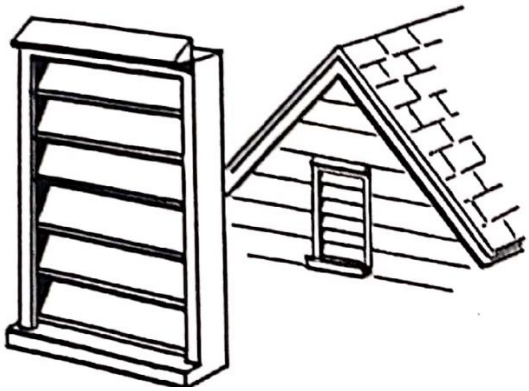
A) 14 B) 8
C) 10 D) 12

Q42. Identify the vertical element



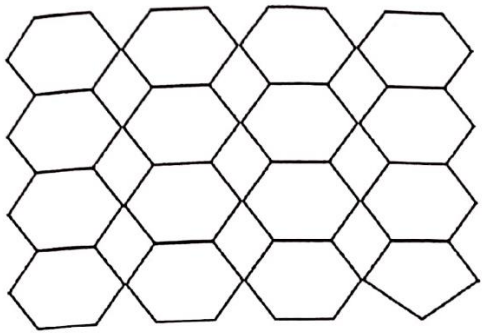
A) Handrail B) Balusters
C) Steps D) Column

Q43. A shows which element of the building



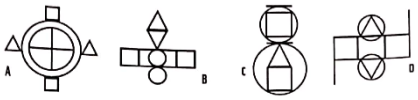
A) Louvers B) Podium
C) Jamb D) Lintel

Q44. How many hexagons (six-sided figures) can you find here?



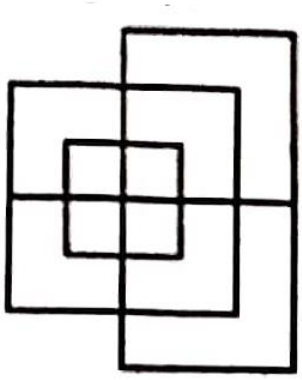
A) 20
B) 21
C) 22
D) 24

Q45. Which is the odd one out?



A) A
B) B
C) C
D) D

Q46. Find the minimum number of straight lines required to make the given figure.



A) 13
B) 15

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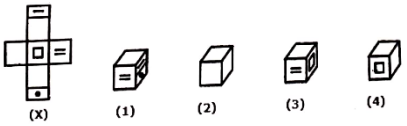
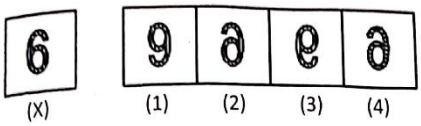
C) 17 D) 19

Q47. Choose the figure, which is different from the rest.



A) 1 B) 2
C) 3 D) 4

Q48. Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



A) 1 B) 2
C) 3 D) 4

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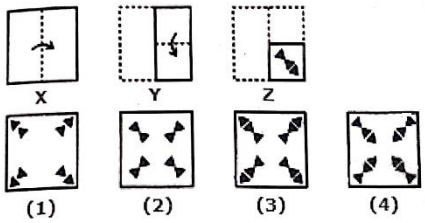
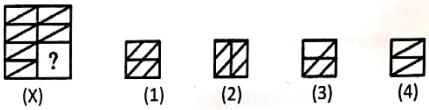
Q49. Choose a figure, which would most closely resemble the unfolded form of Figure (Z).



A) 1 B) 2
C) 3 D) 4

Q50. Identify the figure that completes the pattern.

A) 1 B) 2
C) 3 D) 4



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Section 3: Drawing : Questions 1 & 2
General Instructions:

Question 1- Size A4 cartridge using pencil colors only
Question 2 - Bond paper A-4 only pencil Sketches

Attach sheets for Answers

Q1. Scene. You are visiting your grandfathers place in summer season. (**25 marks)**

1. One morning you visit a small temple on the hilltop with your local friends.
2. You still have to climb a little to reach to the temple when you see the temple on the top with a few people standing/seating near it looking at your group.

Q2. Scene. You are a 5-year-old naughty girl/boy always up to mischief. (**25 marks)**

1. Today for some mischief that you have played, your mother is furious.

2. She puts you on top of a 2 metre (6.6ft) tall cupboard in your living room.

3. You are unable to get down from this cupboard on your own and have no choice but to sit quietly there.

----------End of Question Paper----------

Space for Rough Work

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