JEE PAPER 2 MOCK TEST 2

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: _____

Section 1: Mathematics : Questions 1 – 25

1. If a plane meets the coordinate axes at A, B and C and ΔABC has centroid at the point G $\left(\frac{a}{2},\frac{b}{2},\frac{c}{2}\right)$, then the equation of the plane is

    (A) $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=\frac{1}{3}$

    (B) $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=\frac{3}{2}$

    (C) $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=\frac{2}{3}$

    (D) $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=\frac{1}{2}$

2. The latus rectum of the conic section $9x^2+4y^2 = 36$ is:
    (A) 9   (B) 1/9
    (C) 3/8   (D) 8/3

3. The area of the region bounded by the curves $y = 1 – x^2$, $x + y + 1 = 0$ and x– y –1 = 0 is
    (A) 3   (B) 10/3
    (C) 7/3   (D) 8/3

4. tan9° – tan27°– tan63° + tan81° is equal to:
    (A) 1   (B) 4
    (C) 0   (D) 1

5. Statement - 1: The equation | x | + | y | = 2 represents a parallelogram. Statement - 2: Lines x + y = 2 and x + y = 2 are parallel. Also, lines x – y = 2 and x + y = 2 are parallel.
    (1) Statement - 1 is true, Statement - 2 is false.
    (2) Statement - 1 is false, Statement - 2 is true.
    (3) Statement - 1 is true, Statement - 2 is true; Statement - 2 is correct explanation for Statement - 1.
    (4) Statement - 1 is true, Statement - 2 is true; Statement - 2 is not a correct explanation for Statement - 1.

6. $\int_0^{\pi/2} \min(\sin x, \cos x)\, dx$, equal to:
    (A) $2 + \sqrt{2}$ (B) $2\sqrt{2}$
    (C) $\sqrt{2}$ (D) $2– \sqrt{2}$

7. The equation $y^2 + x^2 + 2x - 1 = 0$ represents
   (A) A hyperbola
   (B) An ellipse
   (C) A pair of straight lines
   (D) A rectangular hyperbola

8. If $x_1, x_2, x_3, ..., x_{13}$ are in A.P. then the value of $\begin{vmatrix} e^{x1} & e^{x4} & e^{x7} \\ e^{x4} & e^{x7} & e^{x10} \\ e^{x7} & e^{x10} & e^{x13} \end{vmatrix}$, is
   (A) 9
   (B) 27
   (C) 0
   (D) 1

9. The value of α and β such that $\lim\limits_{x \to \infty} \left[\dfrac{x^2+1}{x+1} - \alpha x - 2\beta \right] = \dfrac{3}{2}$ are:
   (A) $\alpha = 1, \beta = 3/4$
   (B) $\alpha = 1, \beta = -3/4$
   (C) $\alpha = 1, \beta = -5/4$
   (D) $\alpha = 1, \beta = 5/4$

10. The function $f(x) = xe^{-x}$ has:
    (A) a maximum at $x = 1$
    (B) neither maximum nor minimum at $x = 1$
    (C) a minimum at $x = 1$
    (D) a maximum at $x = 1$

11. Statement - 1: The function $f(x) = x^2 e^{-x^2} \sin |x|$ is even.
    Statement - 2: Product of two odd functions is an even function.
    (A) Statement - 1 is true, Statement - 2 is false.
    (B) Statement - 1 is false, Statement - 2 is true.
    (C) Statement - 1 is true, Statement - 2 is true; Statement - 2 is a correct explanation for Statement - 1.
    (D) Statement - 1 is true, Statement - 2 is true; Statement - 2 is not a correct explanation for Statement - 1.

12. If the sum of the coefficients in the expansion of $(x+y)^n$ is 2048, then the greatest coefficient in the expansion is:
    (A) $^{12}C_6$
    (B) $^{10}C_6$
    (C) $^{11}C_6$
    (D) $^{11}C_7$

13. Let p, q, r be real numbers such that $p + q + r \neq 0$. The system of linear equations
    $x + 2y - 3z = p$

2x + 6y −11z = q,

x − 2y + 7z = r has at least one solution if:

(A) 5p + 2q − r = 0   (B) 5p − 2q − r = 0

(C) 5p + 2q + r = 0   (D) 5p − 2q + r = 0

14. If $x^2 − 3x + 2$ is factor of $x^4 − ax^2 + b = 0$, then the equation whose roots are a and b is:

(A) $x^2 + 9x − 20 = 0$ (B) $x^2 + 9x + 20 = 0$

(C) $x^2 − 9x − 20 = 0$ (D) $x^2 − 9x + 20 = 0$

15. Angle of intersection of the curves r = sinθ + cosθ and r = 2 sinθ is equal to

(A) $\frac{\pi}{2}$ (B) $\frac{\pi}{3}$

(C) $\frac{\pi}{4}$ (D) None of these

16. PQ is a double ordinate of the parabola $y^2 = 4ax$. The locus of the points of trisection of PQ is

(A) $9y^2 = 4ax$ (B) $9x^2 = 4ay$

(C) $9y^2 + 4ax = 0$ (D) $9x^2 + 4ay = 0$

17. The latus rectum of a parabola whose directrix is x + y - 2 = 0 and focus is (3, - 4), is

(A) $−3\sqrt{2}$ (B) $3\sqrt{2}$

(C) $−3/\sqrt{2}$ (D) $3/\sqrt{2}$

18. The centre of the conic represented by $2x^2 - 72xy + 23y^2 - 4x - 28y - 48 = 0$ is

(A) $\left(\frac{11}{15}, \frac{2}{25}\right)$ (B) $\left(\frac{2}{25}, \frac{11}{15}\right)$

(C) $\left(\frac{11}{15}, \frac{-2}{25}\right)$ (D) $\left(\frac{-11}{15}, \frac{-2}{25}\right)$

19. The equation of the conic with focus at (1, -1), directrix along x−y +1 = 0 and with eccentricity $\sqrt{2}$ is

(A) $x^2 − y^2 = 1$ (B) xy =1

(C) 2xy - 4x + 4y +1 = 0   (D) 2xy + 4x - 4y -1= 0

20. The centre of $14x^2 + 4xy + 11y^2 - 44x - 58y + 71 = 0$
    (A) (2, 3)   (B) (2, -3)
    (C) (- 2, 3)   (D) (- 2, - 3)

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. If the vertex of a parabola be at origin and directrix be x + 5 = 0, then its latus rectum is

22. If a double ordinate of the parabola $y^2 = 4ax$ be of length 8a, then the angle between the lines joining the vertex of the parabola to the ends of this double ordinate is

°

23. If P(A) = 0.4, P(B') = 0.6 and P(A∩B) = 0.15, then the value of P(A|A'∪B') is

24. If $\begin{vmatrix} y + z & x - z & x - y \\ y - z & z + x & y - x \\ z - y & z - x & x + y \end{vmatrix} = kxyz$, then the value of k is

25. If $A = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix}$, then $A^5 = k*A$, Then k=

Section 2: Aptitude : Questions 1 – 50

Q(1-2)- Find the odd figure out in the problem figures given below.

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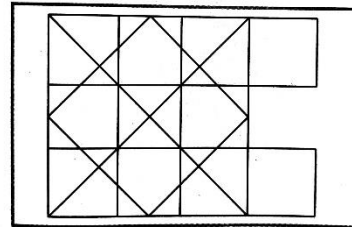   C) c
     D) d
     E) e

(a)   (b)   (c)   (d)   (e)
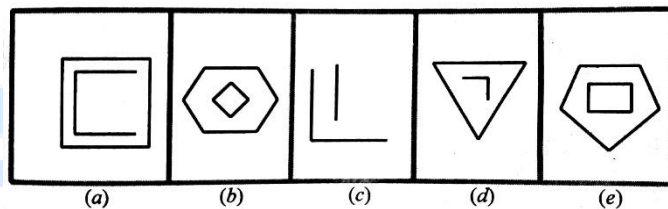
Q2. A) a
     B) b
     C) c
     D) d
     E) e

(a)   (b)   (c)   (d)   (e)
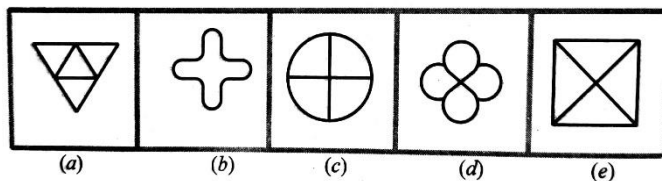
Q3. Count number of circles in the figure?
     A) 11
     B) 12
     C) 13
     D) 14
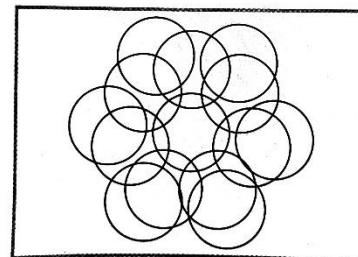
Q4. Count the number of triangles in the figure?

A) 50
B) 38
C) 48
D) 56

Q5 & 6. Identify similar figures

Q5.　　A) a, b
　　　　B) b, c
　　　　C) a, f
　　　　D) d, e
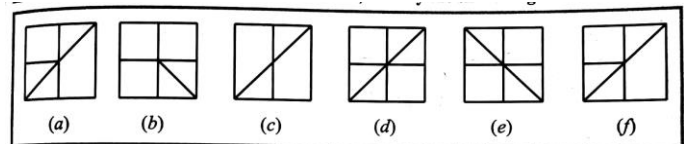
Q6.　　A) a, b
　　　　B) b, c
　　　　C) c, d
　　　　D) a, e
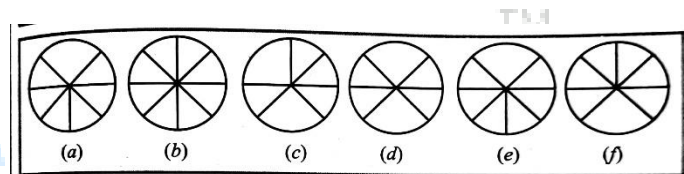
Q(7-8)- Identify the object from their plan & elevation given below.

Q7.　　A) a
　　　　B) b
　　　　C) c
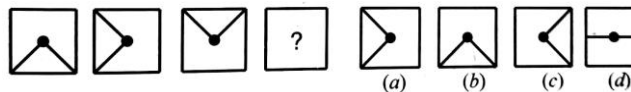　　　　D) d
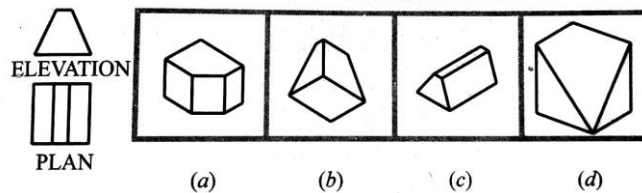
Q8.　　A) a
　　　　B) b
　　　　C) c
　　　　D) d
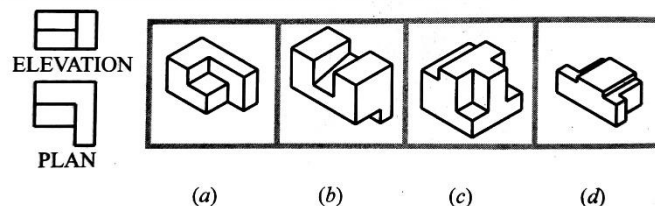
Q(9-10)- Complete the sequence of the problem figure.
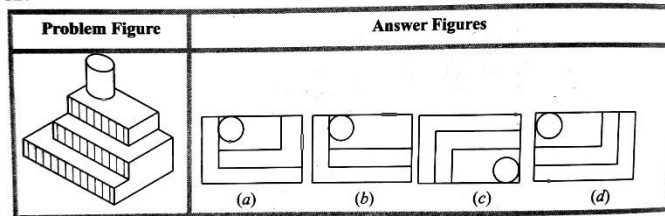
Q9. A) a
    B) b
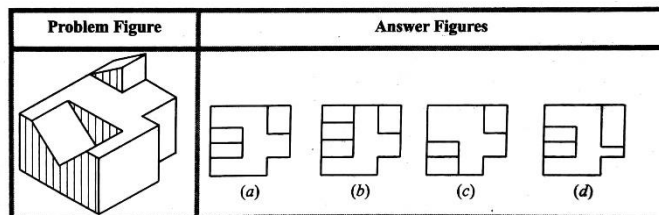   C) c
    D) d
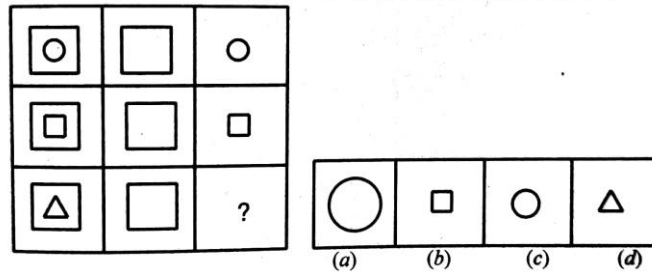
Q10. A) a
    B) b
    C) c
    D) d

Q(11-14)-The 3-D problem figure shows a view of an object .Identify the top view from amongst the answer figures.
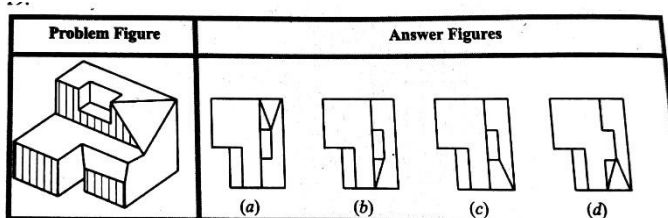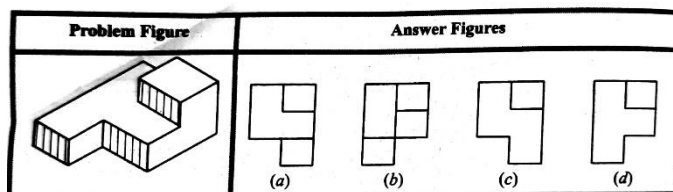
Q11. A) a
    B) b
    C) c
    D) d

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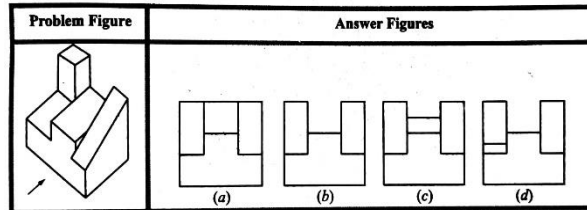   C) c
    D) d

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

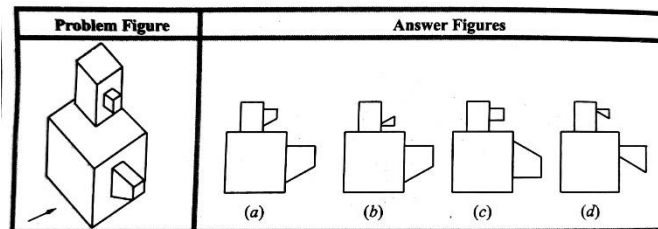Q14. A) a
    B) b
    C) c
    D) d

Q(15-22)-The 3D problem figures show the view of an object, identify its correct view from the direction of the arrow from the given answer figures.
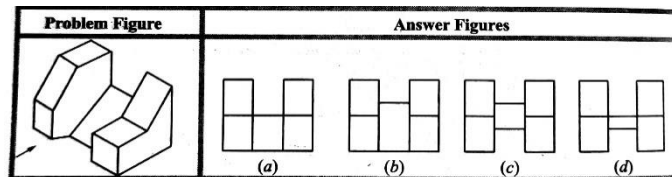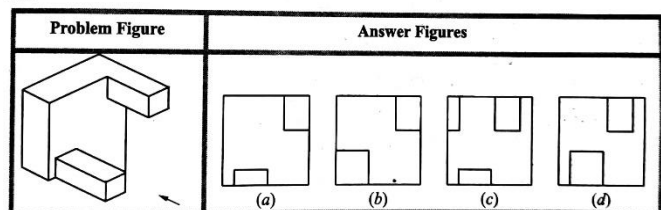
Q15. A) a
       B) b
       C) c
       D) d

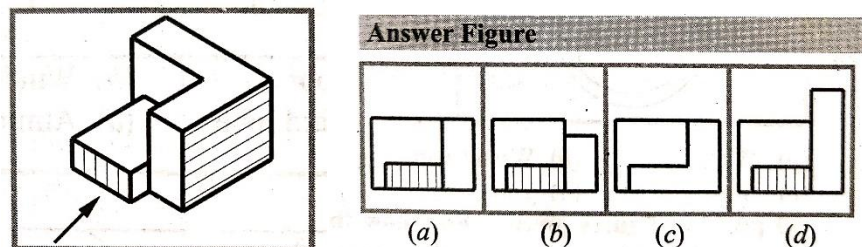Q16. A) a
       B) b
       C) c
       D) d

Q17. A) a
       B) b
       C) c
       D) d
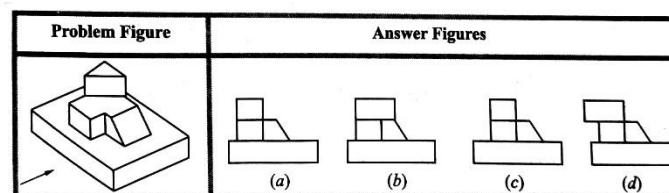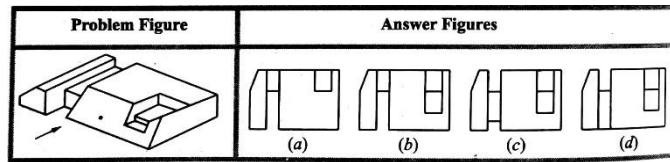
Q18. A) a
       B) b
       C) c
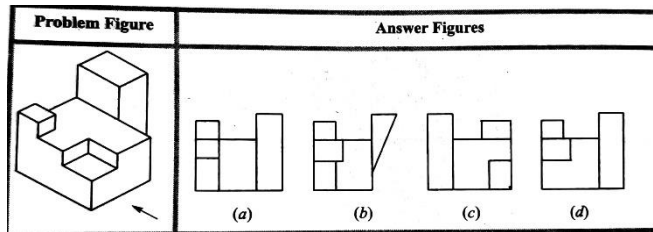   D) d

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

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

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

Problem Figure	Answer Figures
	(a) (b) (c) (d)

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

Problem Figure	Answer Figures
	(a) (b) (c) (d)

Q(23-24)- Which of the answer figures is the correct mirror image of the problem figure with respect to XX?

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

Answer Figures

(a) (b) (c) (d)

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

Answer Figures
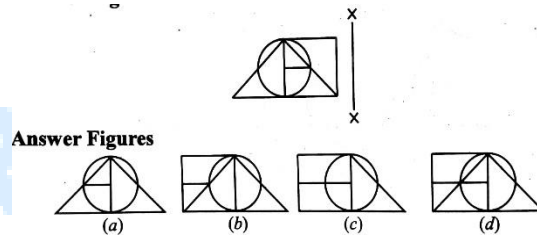
(a) (b) (c) (d)
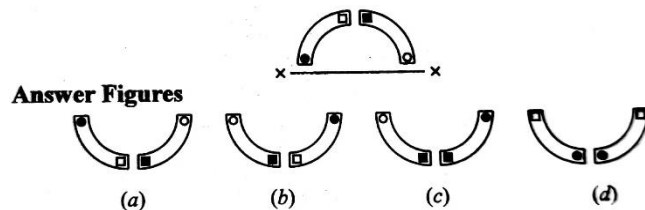
Q25. Group the given figures into three classes using each figure only once.

1   2   3   4   5

6   7   8   9

A) 1,3,5 ; 2,4,7 ; 6,8,9   B) 1,5,7 ; 2,3,6 ; 4,8,9

C) 1,3,5 ; 2,6,7 ; 4,8,9   D) 1,6,9 ; 2,4,7 ; 3,5,8

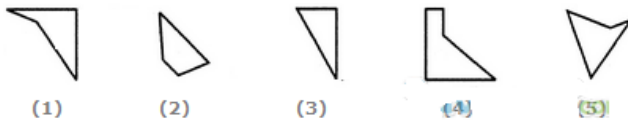Q26. Select the alternative which represents three out of the five alternative figures which when fitted into each other would form a complete square.

A) 1,2,5   B) 1,2,3
C) 2,3,5   D) 2,3,4

Q27. Select the alternative which represents three out of the five alternative figures which when fitted into each other would form a complete square.

A) 1,2,3   B) 2,3,4
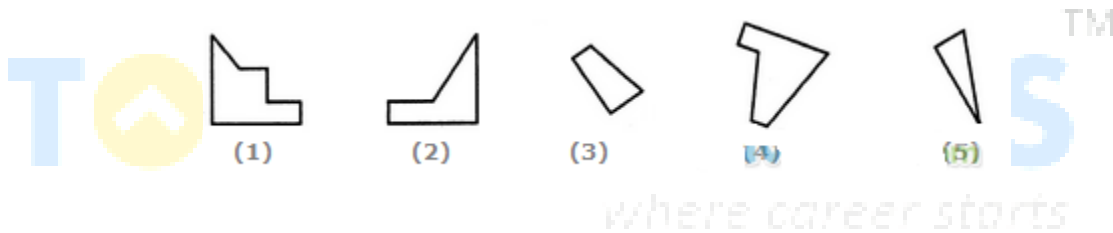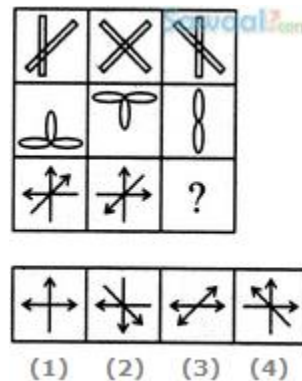C) 3,4,5   D) 2,4,5

Q28. Select a suitable figure from the four alternatives that would complete the figure matrix.

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

Q29. Select a figure from the four alternatives that would complete the Figure Matrix.
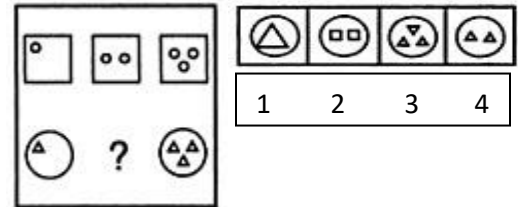
A) 1   B) 2
C) 3   D) 4

Q30. Find out from amongst the four alternatives as to how the pattern would appear when the transparent sheet is folded at the dotted line.
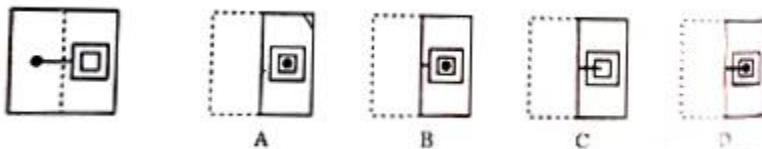
A) A   B) B

C) C   D) D

Q31. Choose a figure which would most closely resemble the unfolded form of Figure (Z).

A) 1   B) 2
C) 3   D) 4
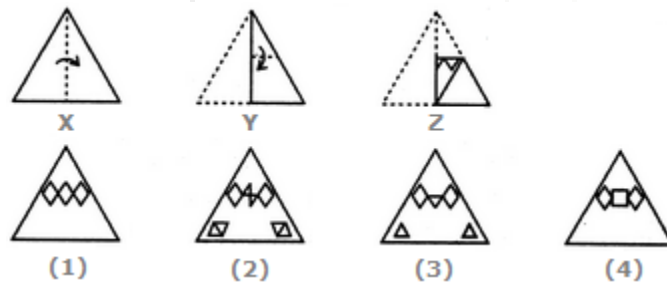
Q32. In a certain code language:

1. '134' means 'good and tasty';
2. '478' means 'see good pictures' and
3. '729' means 'pictures are faint'.

Which of the following digits stands for 'see'?
     A) 9   B) 2
     C) 1   D) 8

Q33. Early morning after sunrise, Karthik was standing infront of his house in such a way that his shadow was falling exactly behind him. He starts walking straight and walks 5 metres. He turns to his left and walks 3 metres and again turning to his left walks 2 metres. Now in which direction is he from his starting point?
A) West   B) North-East
C) East   D) South-West

Q34. Rasik walked 20 m towards north. Then he turned right and walks 30 m. Then he turns right and walks 35 m. Then he turns left and walks 15 m. Finally he turns left and walks 15 m. In which direction and how many metres is he from the starting position?
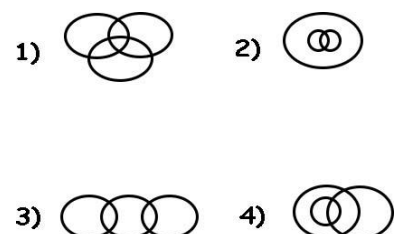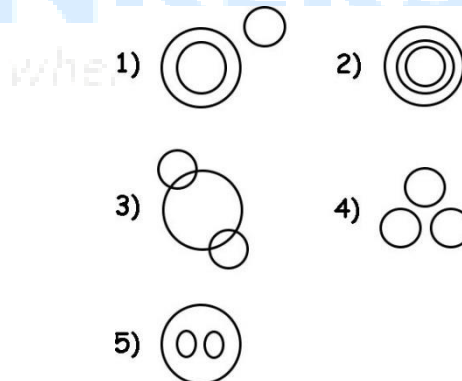A)15 m West   B) 30 m East
C) 30 m West   D) 45 m East

Q35. Select from the five alternative diagrams, the one that best illustrates the relationship among the three classes: *Truck, Ship, Goods*

A) 1   B) 3
C) 4   D) 5

Q36. Which of the following Venn- diagram correctly illustrates the relationship among the classes : *Tennis fans, Cricket players, Students*?

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

Q37. Identify the place?

A) Forum Romadum   B) St. Peter's Basilica
C) John the Devine   D) Milan Cathedral

Q38. Identify the monument?

A) Matrimandir, Auroville   B) American Pavallion Expo'67
C) Disney World Rosort, Disney   D) Golden Globe, Amritsar

Q39. Identify the material used in partition wall as shown below?

A) Stone Slab   B) Concrete Blocks
C) Glass Blocks   D) Wooden Blocks

Q40. Identify the material used for roof covering:

A) Country Tiles   B) Ceramic Tiles
C) Porcelain Tiles   D) Concrete Tiles

Q41. Identify the texture?

A) Rough Wood   B) Jungle Wood
C) Teak wood   D) None of the above

Q42. How terrazzo flooring is laid?
A) Thin Layer over concrete base B) Thick Layer over concrete base
C) Just below the concrete base   D) All of the above

Q43. Where cork flooring is used?
A) In Residential buildings   B) In Industrial buildings
C) In Commercial buildings   D) In Library buildings

Q44. In building activities PVC stands for?
A) Poly Vinyl Chloride   B) Poly Vinyl Concrete
C) Poly Vinyl Cement   D) All of the above

Q45. Steel is suitable for building?
A) Bridges   B) Buildings
C) Culverts   D) All of the above

Q46. What is green architecture?
A) Where maximum green plants are used   B) Where green colored grass is used
C) Where buildings are painted green   D) Where building materials used have
                                           consumed least energy

Q47. The first pyramid was build by?
A) Pharoah   B) Cheops
C) Ramases   D) Ozymandiaz

Q48. Which canal connects Mediterranean Sea and Red Sea?
A) Panama   B) Suez
C) White Sea   D) Thames

Q49. The capital of Pakistan Occupied Kashmir is?
A) Muzaffar Nagar   B) Mazaffarpur
C) Muzaffarabad   D) Gilgit

Q50. The past town of Harappan Civilization in India is excavated at?
A) Lothal   B) Dholavia
C) Kalibangem   D) Gaya

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

Question 1 & 2- Bond paper A-4 only pencil Sketches

Attach sheets for Answers

Q1. Scene.   (**50 marks)**
You have visited a temple on a hill top along with your family members. Now you are returning. There are some who have gone ahead of you, also few people are still climbing the stairs. Create the Scene.

Q2. Scene.   (**50 marks)**
Scene: You are travelling in a local public transport bus. You are seated on first seat behind the driver facing towards people in bus.

---End of Question Paper---

Space for Rough Work

Space for Rough Work

Space for Rough Work

Space for Rough Work