LAYING THE FOUNDATION

NATA MOCK PAPER -1

STUDENTS NAME:----------
CONTACT NUMBER:----------
WHATSAPP NUMBER:----------
EMAIL ID:----------

Get a detailed analysis of your answers from the experts in 3 simple steps

1.Answer the question Paper
2.Click the picture on your mobile
3.WhatsApp it to 9886452274, 988603418

or meet us in person and get it analysed face to face

For more question papers and to get tips and tricks to crack architecture and design entrance exams visit us on www.thedesignvenue.com or call us on 9886452274, 9886034182

SECTION 1A-(MATHEMATICS)

1. If $\frac{Log\,x}{a-b} = \frac{Log\,y}{b-c} = \frac{Log\,z}{c-a}$ then $xyz =$

1) 0
2) 1
3) -1
4) 2

2. The last digit in 7^{300} is .....

1) 7
2) 9
3) 1
4) 3

3. How many numbers of 6 digits can be formed from the digits of the number 112233 ?

1) 30
2) 60
3) 90
4) 120

4. The number of solutions for the equation $x^2 - 5|x| + 6 = 0$ is .....

1) 4
2) 3
3) 2
4) 1

5. 0.5737373 ..... =

1) $\frac{284}{497}$
2) $\frac{284}{495}$
3) $\frac{568}{999}$
4) $\frac{567}{990}$

6. If $ax^2 - y^2 + 4x - y = 0$ represents a pair of lines then a = ...

1) -16
2) 16
3) 4
4) -4

7. What is the equation of the locus of a point which moves such that 4 times its distance from the x - axis is the square of its distance from the origin ?

1) $x^2 + y^2 - 4y = 0$
2) $x^2 + y^2 - 4|y| = 0$
3) $x^2 + y^2 - 4x = 0$
4) $x^2 + y^2 - 4|x| = 0$

8. Equation of the straight line making equal intercepts on the axes and passing through the point (2, 4) is .....

1) $4x - y - 4 = 0$
2) $2x + y - 8 = 0$
3) $x + y - 6 = 0$
4) $x + 2y - 10 = 0$

9. If the area of the triangle with vertices $(x, 0)$, $(1,1)$ and $(0,2)$ is 4 square units then a value of x is .....

1) -2 2) -4

3) -6 4) 8

10. $\lim_{\theta \to \frac{\pi}{2}} \frac{\frac{\pi}{2} - \theta}{Cot\ \theta} =$

1) 0 2) -1

3) 1 4) ∞

12. If $A + B + C = 180^0$ then $\sum Tan \frac{A}{2} Tan \frac{B}{2} =$

1) 0 2) 1

3) 2 4) 3

13. In a triangle ABC if $b = 2$, $B = 30^0$ then the area of the circumcircle of triangle ABC in square units is .....

1) π 2) 2π

3) 4π 4) 6π

14. If $Sin\, x + Sin^2 x = 1$ then, $Cos^{12} x + 3Cos^{10} x + 3Cos^8 x + Cos^6 x =$

1) 1 2) 2

3) 3 4) 0

15. If R denotes the set of all real numbers then the function $f : R \to R$ defined by $f(x) = |x|$ is .....

1) one - one only 2) onto only

3) both one-one and onto 4) neither one-one nor onto

16. Which of the following is the inverse of the proposition : "If a number is a prime then it is odd" ?

1) If a number is not a prime then it is odd.
2) If a number is not a prime then it is not odd.
3) If a number is not odd then it is not a prime.
4) If a number is odd then it is a prime.

17. $\sim p \wedge q$ is logically equivalent to .....

1) $p \to q$ 2) $q \to p$

3) $\sim (p \to q)$ 4) $\sim (q \to p)$

18. What must be the matrix X if $2X + \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} 3 & 8 \\ 7 & 2 \end{bmatrix}$?

1) $\begin{bmatrix} 1 & 3 \\ 2 & -1 \end{bmatrix}$

2) $\begin{bmatrix} 1 & -3 \\ 2 & -1 \end{bmatrix}$

3) $\begin{bmatrix} 2 & 6 \\ 4 & -2 \end{bmatrix}$

4) $\begin{bmatrix} 2 & -6 \\ 4 & -2 \end{bmatrix}$

19. The value of $\begin{vmatrix} 1 & 1 & 1 \\ bc & ca & ab \\ b+c & c+a & a+b \end{vmatrix}$ is .....

1) 1

2) 0

3) $(a-b)(b-c)(c-a)$

4) $(a+b)(b+c)(c+a)$

20. The value of $\begin{vmatrix} 441 & 442 & 443 \\ 445 & 446 & 447 \\ 449 & 450 & 451 \end{vmatrix}$ is .....

1) $441 \times 446 \times 451$

2) 0

3) -1

4) 1

21. Inverse of the matrix $\begin{bmatrix} Cos\,2\theta & -Sin\,2\theta \\ Sin\,2\theta & Cos\,2\theta \end{bmatrix}$ is .....

1) $\begin{bmatrix} Cos\,2\theta & -Sin\,2\theta \\ Sin\,2\theta & Cos\,2\theta \end{bmatrix}$

2) $\begin{bmatrix} Cos\,2\theta & Sin\,2\theta \\ Sin\,2\theta & -Cos\,2\theta \end{bmatrix}$

3) $\begin{bmatrix} Cos\,2\theta & Sin\,2\theta \\ Sin\,2\theta & Cos\,2\theta \end{bmatrix}$

4) $\begin{bmatrix} Cos\,2\theta & Sin\,2\theta \\ -Sin\,2\theta & Cos\,2\theta \end{bmatrix}$

22. If $\left|\vec{a}\right| = 3$, $\left|\vec{b}\right| = 4$ then a value of λ for which $\vec{a} + \lambda\vec{b}$ is perpendicular to $\vec{a} - \lambda\vec{b}$ is .....

1) $\frac{9}{16}$

2) $\frac{3}{4}$

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

4) $\frac{4}{3}$

23. $\left(\vec{a}\cdot\hat{i}\right)\hat{i}+\left(\vec{a}\cdot\hat{j}\right)\hat{j}+\left(\vec{a}\cdot\hat{k}\right)\hat{k}=$

1) $\vec{a}$ 2) $2\vec{a}$

3) $3\vec{a}$ 4) $\vec{0}$

24. The projection of $\vec{a}=2\hat{i}+3\hat{j}-2\hat{k}$ on $\vec{b}=\hat{i}+2\hat{j}+3\hat{k}$ is

1) $\frac{1}{\sqrt{14}}$ 2) $\frac{2}{\sqrt{14}}$

3) $\sqrt{14}$ 4) $\frac{-2}{\sqrt{14}}$

25. In the group $\{1, 2, 3, 4, 5, 6\}$ under multiplication modulo 7, $2^{-1}\times 4=$

1) 1 2) 4

3) 2 4) 3

26. If Q_1 is the set of all rationals other than 1 with the binary operation $*$ defined by $a*b=a+b-ab$ for all a, b in Q_1 then the identity in Q_1 w.r.t. $*$ is

1) 1 2) 0

3) -1 4) 2

27. Which of the following is true ?

1) The set of all fourth roots of unity is a multiplicative group.
2) The set of all cube roots of unity is an additive group.
3) $(ab)^{-1}=a^{-1}b^{-1}$ for all a, b in any group G.
4) If $(ab)^2=a^2b^2$ for all a, b in any group G, then the group G is nonabelian.

28. The set of all integral multiples of 5 is a subgroup of

1) The set of all rational numbers under multiplication.
2) The set of all integers under multiplication.
3) The set of all nonzero rational numbers under multiplication.
4) The set of all integers under addition.

29. The circle $x^2+y^2-8x+4y+4=0$ touches

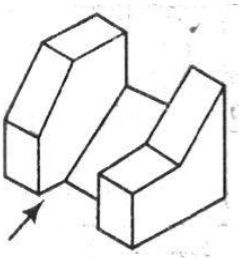
1) x – axis
2) y – axis
3) both axes
4) neither x – axis nor y – axis

30. The value of k so that $x^2+y^2+kx+4y+2=0$ and $2(x^2+y^2)-4x-3y+k=0$ cut orthogonally is

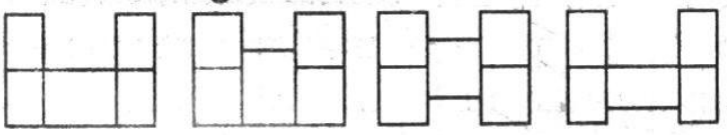
1) $\frac{10}{3}$
2) $\frac{-8}{3}$
3) $\frac{-10}{3}$
4) $\frac{8}{3}$

SECTION 1B-(MENTAL ABILITY)

31.The 3-D problem figure shows an object. Identify the correct front view, from amongst the answer figures, looking in the direction of arrow?



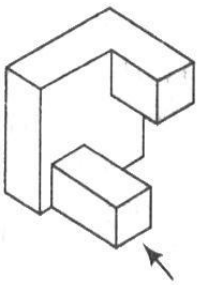
Answer Figures



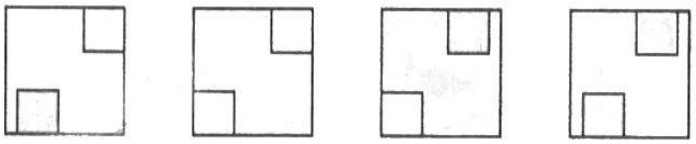
(a) (b) (c) (d)

32.The 3-D problem figure shows an object. Identify the correct view, from amongst the answer figures, looking in the direction of arrow?

Problem figure



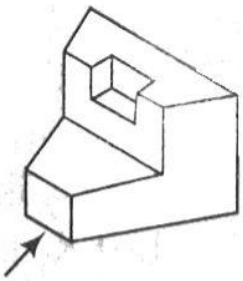
Answer Figures



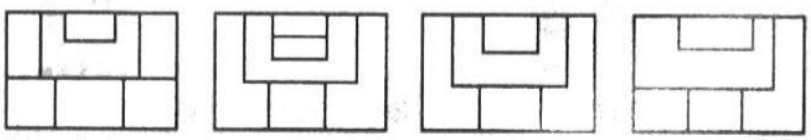
(a) (b) (c) (d)

33.The 3-D problem figure shows an object. Identify the correct front view, from amongst the answer figures, looking in the direction of arrow?

Problem figure

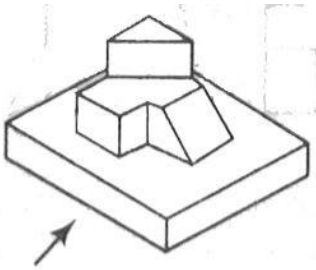


Answer Figures

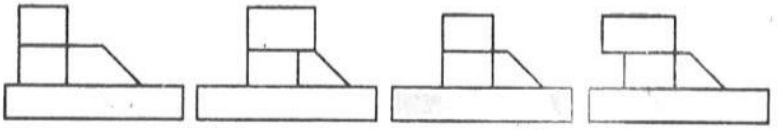


(a) (b) (c) (d)

34.The 3-D problem figure shows an object. Identify the correct front view, from amongst the answer figures, looking in the direction of arrow?



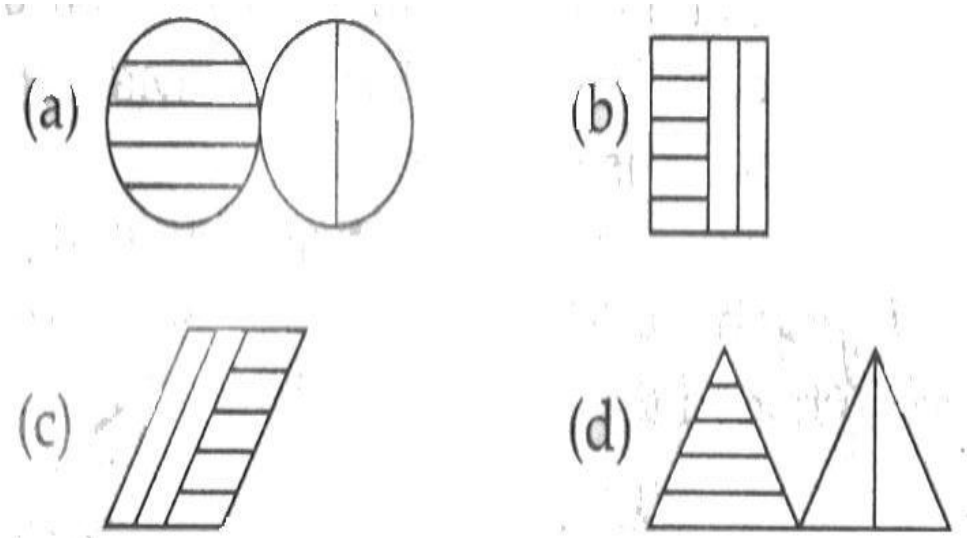
Answer Figures



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

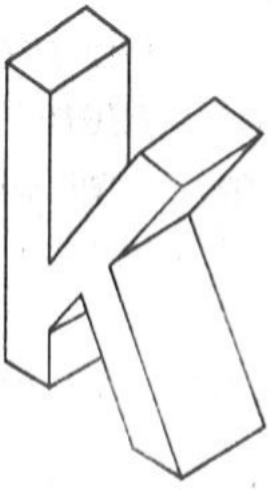
35.Find the odd figure out in the problem figure given below?

Problem figure



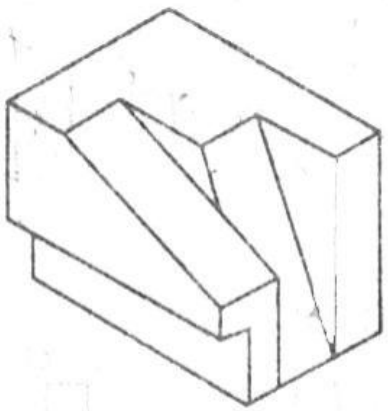
36.Find out the total number of surfaces of the object given below in the problem figure?

Problem figure



(a) 14 (b) 11 (c) 12 (d) 13

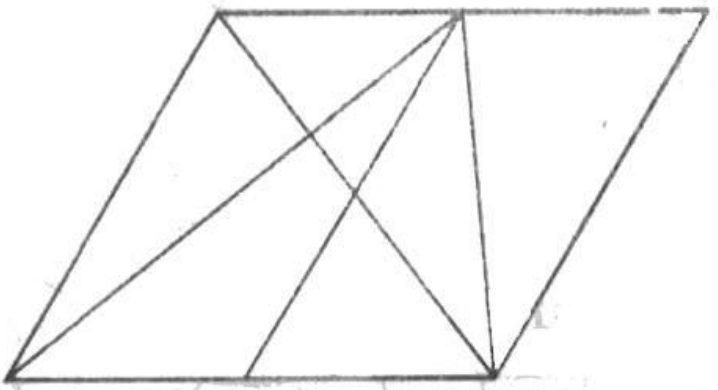
37.Find out the total number of surfaces of the object given below in the problem figure?



(a) 16 (b) 14
(c) 12 (d) 15

38.How many total number of triangles are there in the problem figure below?

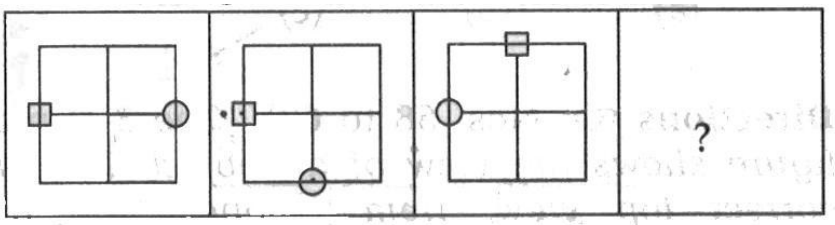
Problem figure



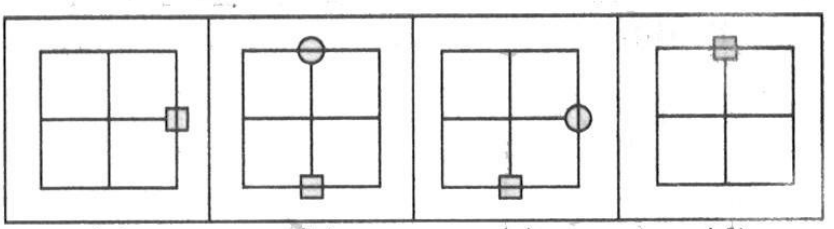
(a) 17 (b) 14 (c) 16 (d) 18

39. Which one of the answers figures will complete the sequence of the theproblem figures?

Problem figure

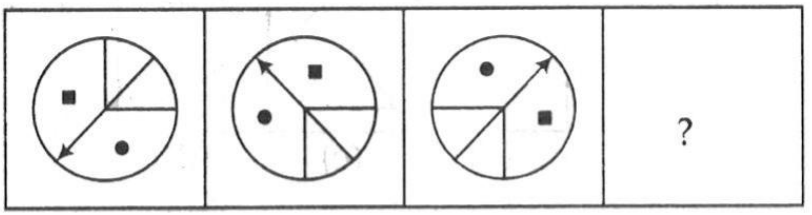


Answer Figures

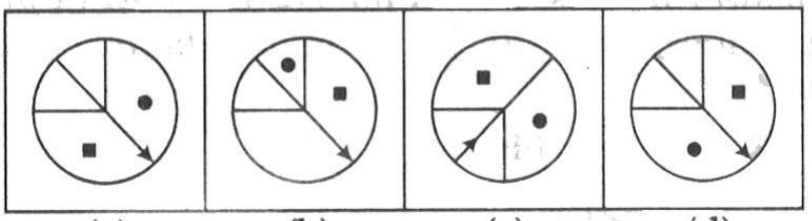


40. Which one of the answers figures will complete the sequence of the theproblem figures?

Problem figure

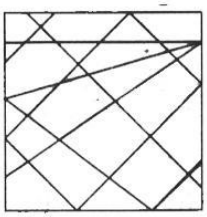


Answer Figures

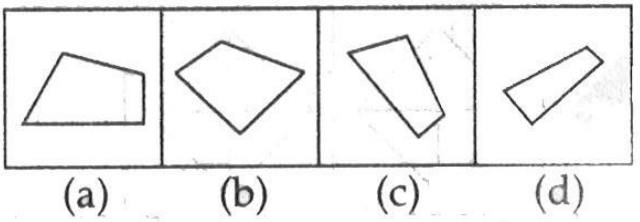


41. One of the fllowing answer figures is hidden in the problem figure, in the same size and direction. Select, which one is correct?

Problem figure

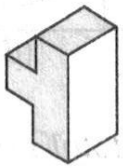


Answer Figures

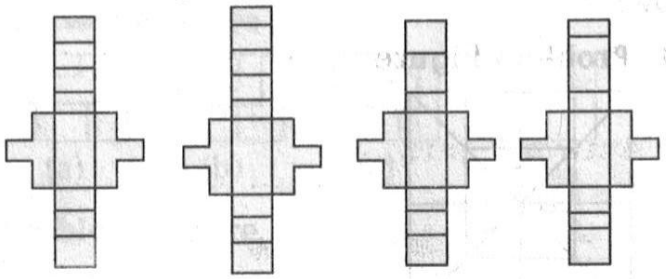


42.Which one of the answer figures,shows the correct view of the 3-D problem figure after the problem figure is opened up?

Problem figure

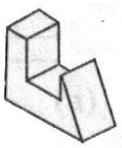


Answer Figures

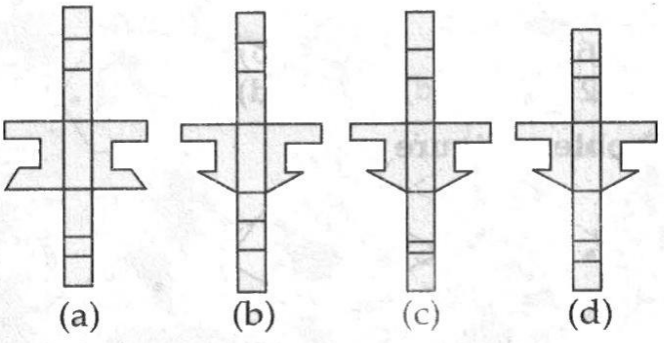


43.Which one of the answer figures,shows the correct view of the 3-D problem figure after the problem figure is opened up?

Problem figure

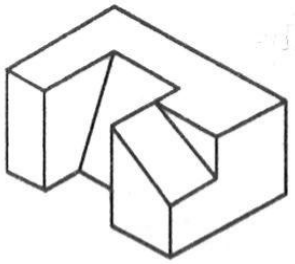


Answer Figures

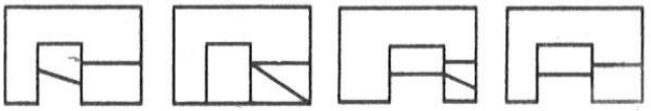


44.The 3-D problem figure shows the view of an object. Identify its correct top view, from amongst the answer figures.

Problem figure



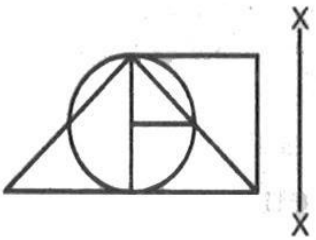
Answer Figures



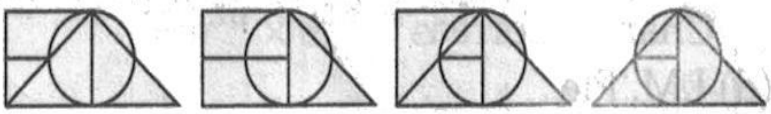
(a) (b) (c) (d)

45.Which one of the answer figures is the correct mirror image of the problem figure with respect to X-X?

Problem figure

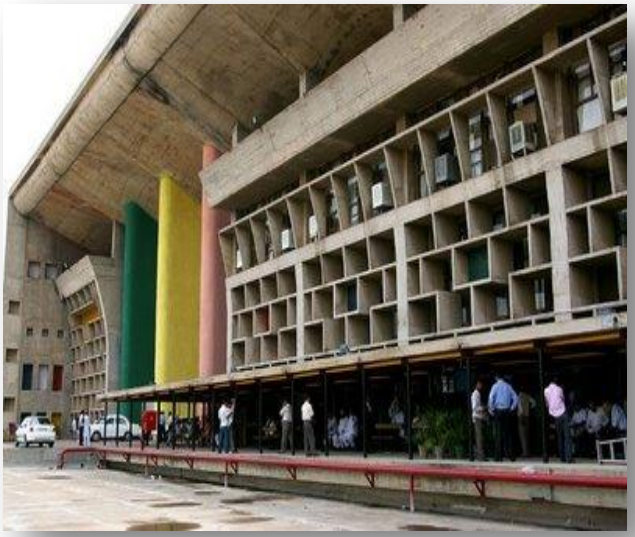


Answer Figures



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

46. The famous building in the given picture is designed by ?



a) Charles Correa
b) Le Corbusier
c) BV Doshi
d) Albert Meyer

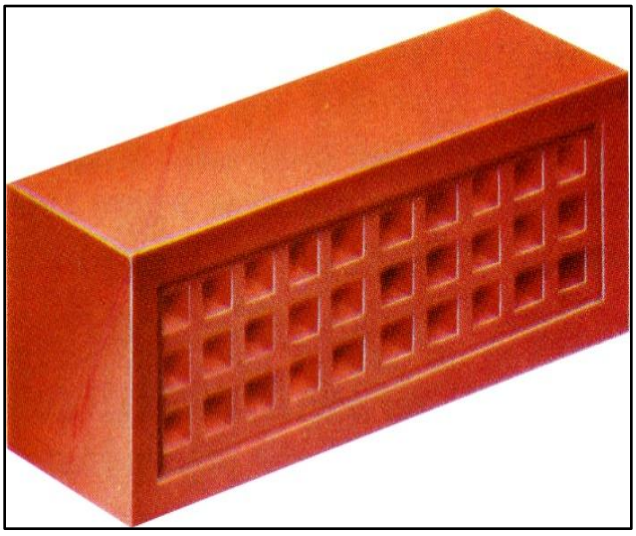
47. Who is the architect of given building ?

a) Albert Meyer
b) Charles Correa
c) Le Corbusier
d) None of these

48. Identify the material shown in the following figure.

a) Plastics
b) Gypsum
c) Asbestos
d) Synthetic adhesive

49. Identify the material shown in the following figure.



a) Bricks
b) Terracotta
c) Glazed earthen tiles
d) None of the above

50. Identify the component of the building shown in the figure.

a) Foundation
b) Plinth
c) Walls
d) Floors

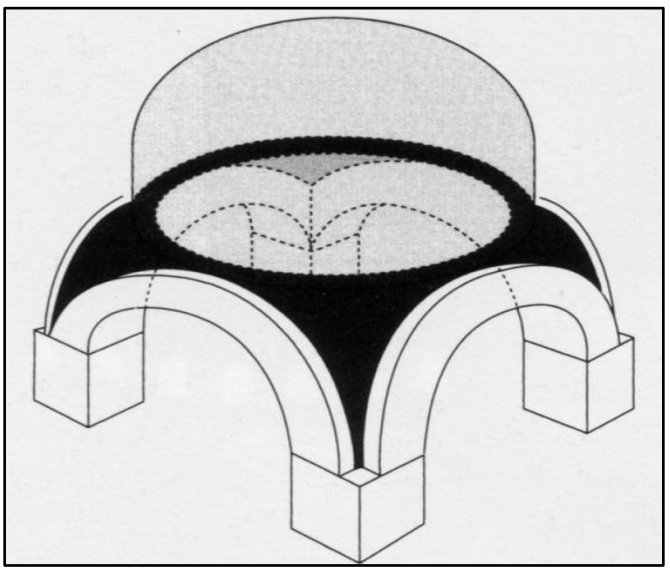
51. Identify the component of the building shown in the figure.

a) Plinth
b) Floors
c) Doors
d) Stairs

52. Identify the architectural element shown in the figure

a) *Pendentive*
b) *Tympanum*
c) *Pediment*
d) *Niche*

53. Identify the architectural element shown in the figure black solid fill.



a) *Flying buttress*
b) *Pendentive*
c) *Pediment*
d) *Niche*

54.Victoria Memorial is built of which building material material?

A. White marble

B. Granite

C. Brick

D. Wood

55.In which Era was the Qutb Minar built in?

A. Delhi Sultanate

B. Mughal

C. Satvahanas

D. Cholas

56.The outline of Qutb Minar is :-

A. Identical on all floors

B. Same on all floors

C. Symmetrical on all floors

D. None of the above

57.Which material is cladded in Guggenheim museum designed by Frank o Gehry in Bilbao, Spain?

A. Stainless Steel

B. Titanium

C. Aluminium

D. Silver

58.What is the material which is cladded on Walt Disney Concert hall, LA Designed by Frank O Gehry

A. Titanium

B. Aluminuim

C. Stainless Steel

D. Silver

59.Attack on dry rot on timber reduces it to

A. Powder
B. Crack
C. Spilt in edge
D. Decays

60.Where is central road research institute located?

A. Delhi
B. Hyderabad
C. Banagalore
D. Dehra Dun

SECTION 2-(DRAWING ABILITY)

1.YOU AND YOUR FRIENDS ARE SITTING IN A ROAD SIDE FRUIT JUICE SHOP.DRAW WHAT YOU SEE AT AND AROUND THE COUNTER WHERE TE JUICE VENDOR IS PREPARING JUICE FOR THE ORDER PLACED BY YOU. (40 MARKS)

2.IN THE GIVEN SPACE ARRANGE 5 EARTHEN POTS OF ANY SHAPE AND SIZE TO MAKE A INTERESTING LOOKING STABLE COMPOSITION.DRAW THE COMPOSITION FROM INTERESTING ANGLE AND SHOW SHADES AND SHADOWS ON THE COMPOSITION. (40 MARKS)