



CHENNAI
ACADEMY OF
ARCHITECTURE AND
DESIGN

PERIYAPALLAYAM, CHENNAI.

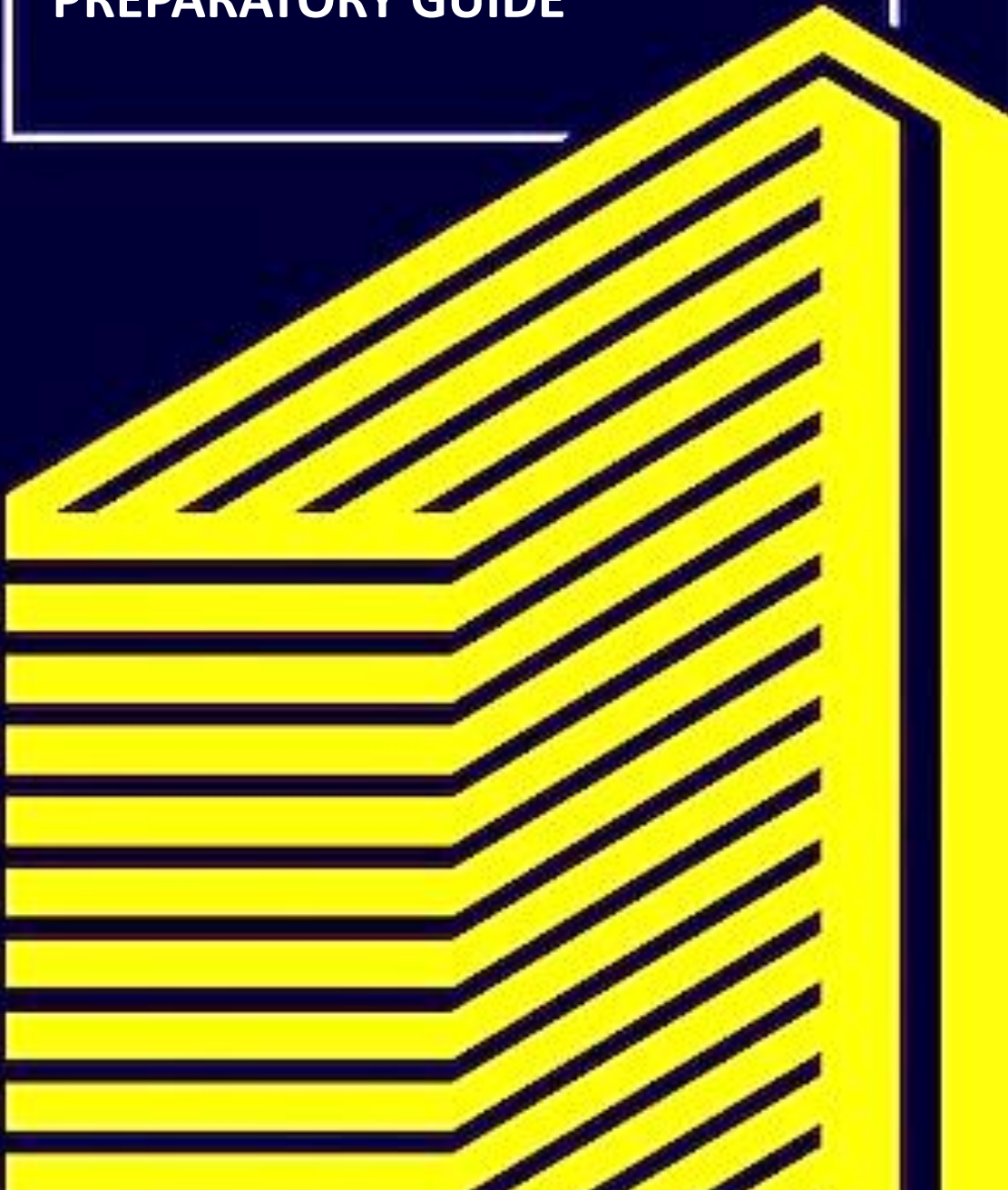
NATA 2024

PREPARATORY GUIDE

B.Arch.,

ANNA UNIVERSITY
COUNCELLING CODE

1152



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VISUAL REASONING

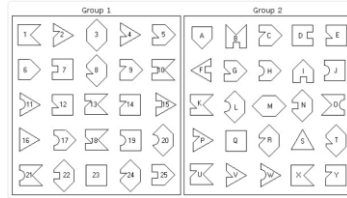
Ability to understand and reconstruct 2D and 3D composition, knowledge about its composition and technical concepts.

VISUAL REASONING

INTRODUCTION TO SPATIAL ABILITY ASSESSMENT (Few Samples)

01. SHAPE MATCHING (TWO DIMENSIONAL)

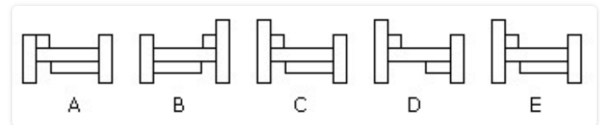
In this method, two groups of simple, flat objects are given and the question is to match the pairs by same size and shape. Each drawing in the first group is exactly the same as a drawing in the second group. The objects in the second group may have been moved and some may have been rotated.



Answers: 1. X; 2. P; 3. M; 4. V; 5. G; 6. A; 7. D; 8. T; 9. C; 10. B; 11. W; 12. E; 13. U; 14. Y; 15. F; 16. S; 17. H; 18. K; 19. J; 20. L; 21. O; 22. N; 23. Q; 24. R; 25. I

02. VISUAL COMPARISON (TWO DIMENSIONAL)

Several objects will be grouped together in the question and the identical pair has to be marked out.

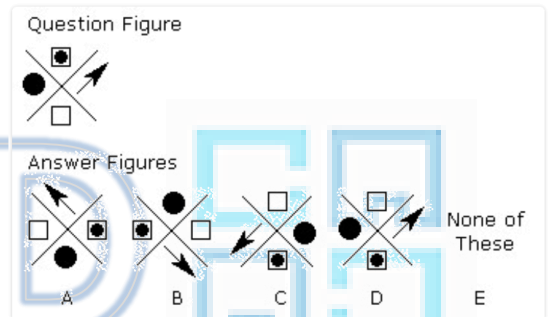


Answer: C and E are the only two pictures that are identical

03. GROUP ROTATION (TWO DIMENSIONAL)

In this method, the task is to identify the choices to the original shape/pattern. The multiple choices comprise of the original shape/pattern after single/multiple rotations.

Key Strategy - Choose the asymmetrical shape in the group and determine how the shape would look when rotated clockwise or anticlockwise.

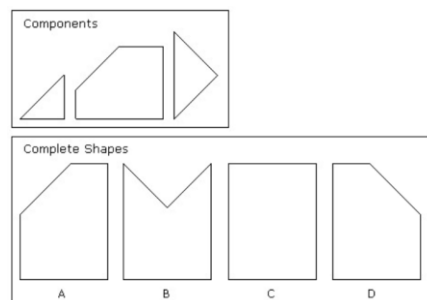


Answer: C

04. COMBINING TWO-DIMENSIONAL SHAPES

In this pattern, question comprise of series of two dimensional shapes which are cut from a parent shape. The question is to identify the parent shape.

Key Strategy: Observe parent shape from the choices and look for distinct features that matches with the element. Also parent shape does not have elements sticking out.



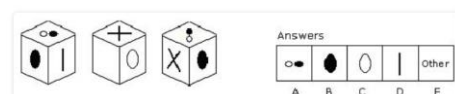
Answer: B

05. CUBE VIEWS IN THREE DIMENSIONS

These questions comprise of different views of a patterned cube. Question will be to identify the pattern on a particular face of the cube.

Key Strategy: Use the process of elimination

Three views of the same cube are shown above. Which symbol is opposite the X?



Answer: D

Reference: www.wikijob.co.uk.

VISUAL REASONING

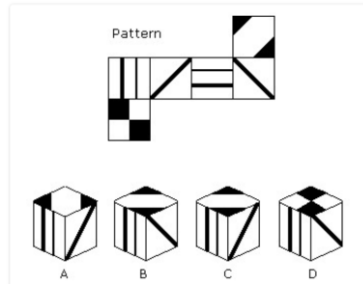
INTRODUCTION TO SPATIAL ABILITY ASSESSMENT

06. CUBES IN TWO & THREE DIMENSIONS

These type of questions have the layout of the cube in two dimension and is to identify the right cube when the layout is folded. The question can be vice-versa too.

Key Strategy - Mark the faces of the cube as Front, Back, Top, Bottom, Right side and Left side in the layout and work on the cube formation.

Which of the cubes shown could be made from the pattern?



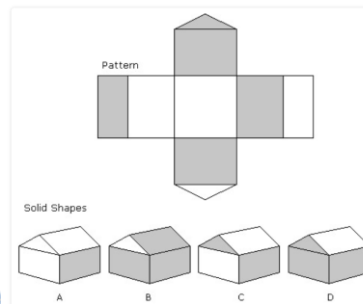
Answer: A

07. OTHER SOLIDS IN TWO & THREE DIMENSIONS

These questions use irregular solid shapes as a layout and the question is to identify the three dimensional form arrived at by folding. This is similar to cube exercise (Point no 6)

Key strategy - Use the process of elimination. Consider the connection between four visible faces and look out for patterns / shades.

Which of the solid shapes shown could be made from the pattern?

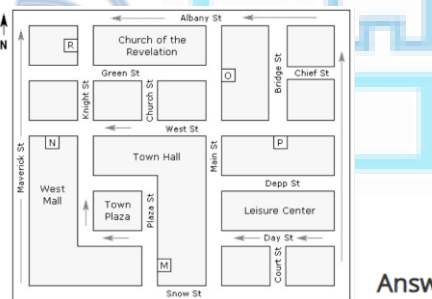


Answer: D

08. TWO-DIMENSIONAL MAPS

Simple two-dimensional maps will be given in the question to test the ability to follow instructions and visualizing a route.

Key Strategy - Basic sense of direction and imagine yourself following the instructions.



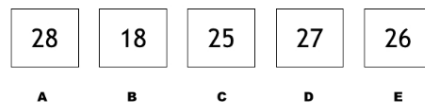
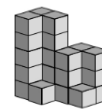
Answer: B

Officer Wilkinson is in Depp St and can see the Town Hall to her right. What direction is she facing?

09. BLOCK COUNTING IN THREE DIMENSIONS

This type of question will be having a three dimensional form made up of multiple units/ blocks, some of which may be hidden. The question will be to quantify the hidden elements that comprise the three-dimensional form.

Key Strategy - Count the number of units as rows and columns and calculate the hidden blocks numerically.



Answer: E

How many blocks make up the shape below?

10 TWO -DIMENSIONAL MIRROR REFLECTIONS

This question presents an image and will be asked to identify its mirror image.

Key Strategy - Use the process of elimination



Answer: D

Which answer shows a reflection of the image below?

Reference: www.wikijob.co.uk.

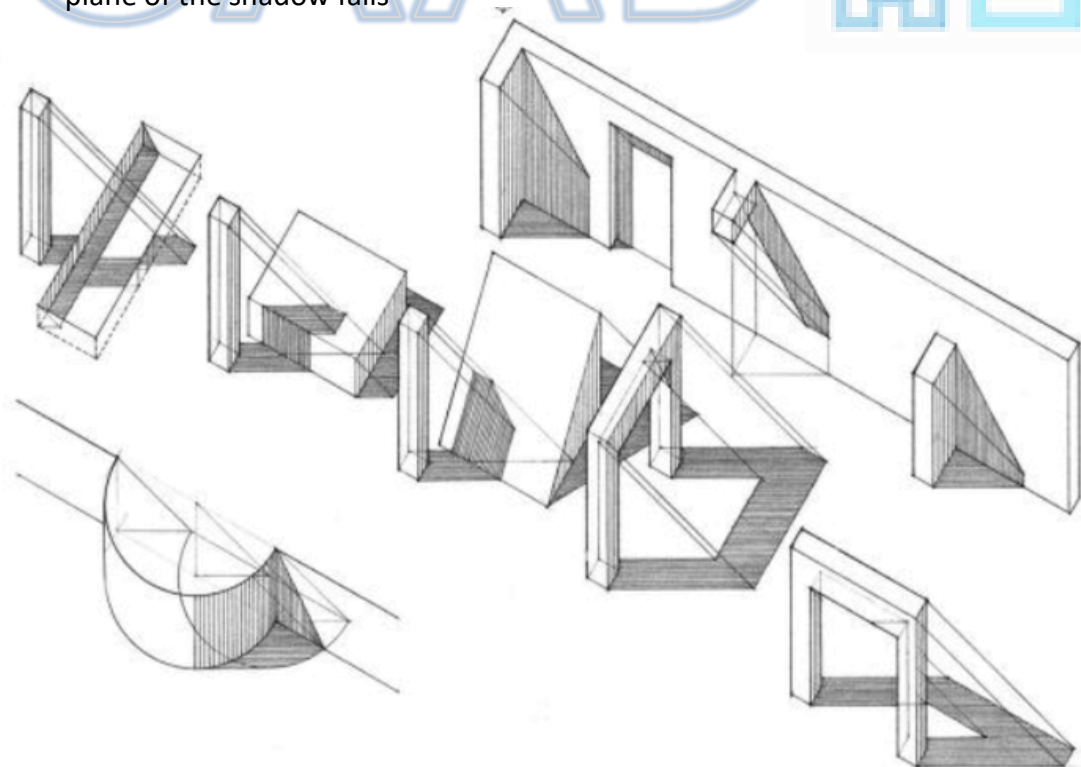
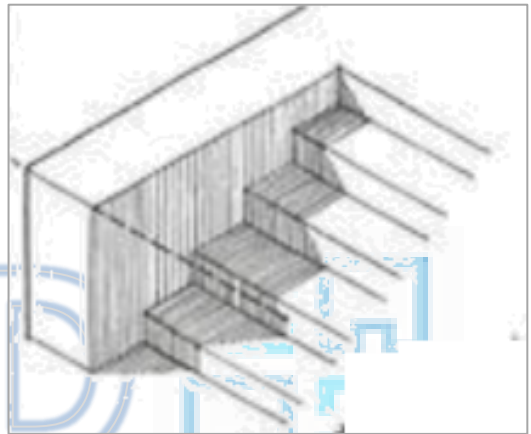
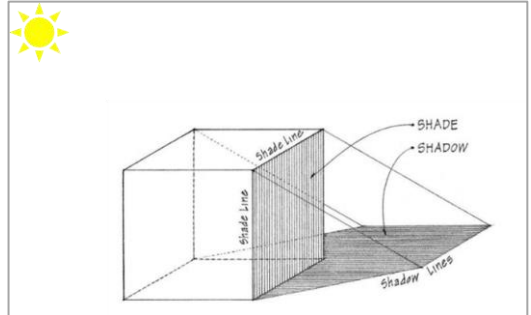
VISUAL REASONING

INTRODUCTION TO SCIOGRAPHY (SHADE & SHADOWS)

Scigraphy is a science of perspective dealing with the projection of shadows or delineation of an object in perspective with its gradations of light and shade.

SHADE & SHADOWS:

- Shade refers to the relatively dark area on those parts of a solid that are tangent to or turned away from a light source.
- Shadows are the relatively dark figures cast upon a surface by an opaque body or part of a body intercepting the rays from a light source.
- A shade line or casting edge separates an illuminated surface from one in shade.
- A shadow line is the shadow cast by a shade line on a receiving surface
- The shape of the shadow is dependent on
 - The position of shade line
 - The position of the observer
 - The direction of the light and
 - The form of the surfaces on which the plane of the shadow falls



VISUAL REASONING

INTRODUCTION TO PERSPECTIVES

The way one sees the world is driven by rules of perspective. Perspective in sketching is a tool to create a realistic illusion of three-dimensional space. Everything that is drawn, from an apple to a spaceship, needs to follow the rules of perspective in order to look realistic.

ONE-POINT PERSPECTIVE:

One-point perspective (frontal or central perspective) has only one vanishing point on the horizon line located somewhere within the picture plane (PP) and all the planes converge towards it.

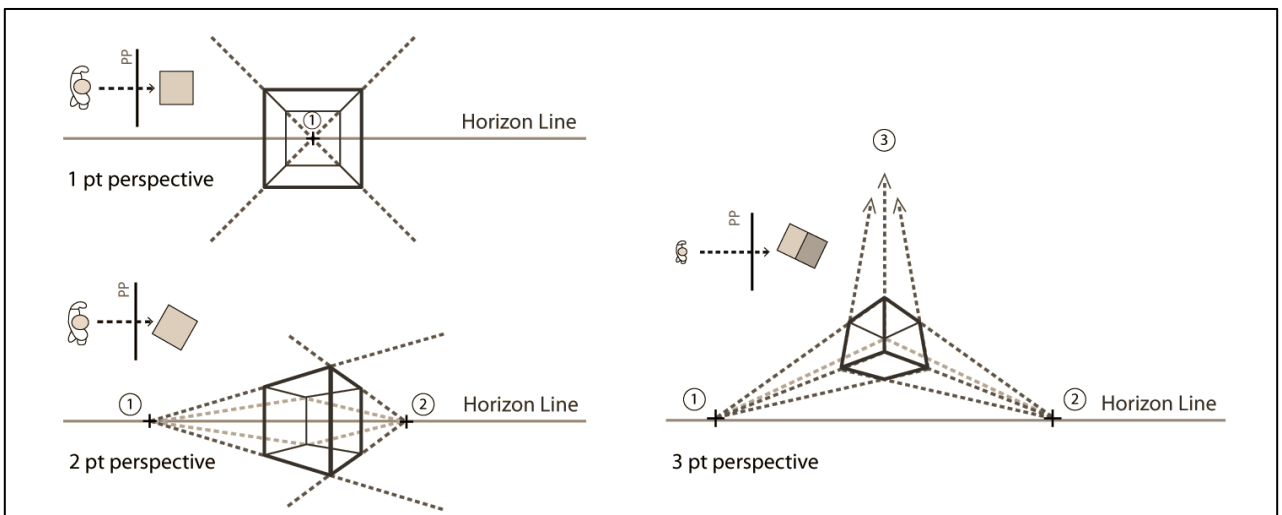
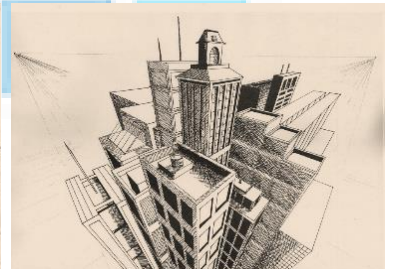
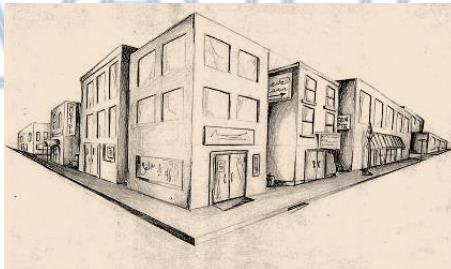
TWO-POINT PERSPECTIVE:

Two-point perspective (angular perspective) has two vanishing points on the horizon line, which do not necessarily need to be within the picture plane (PP)

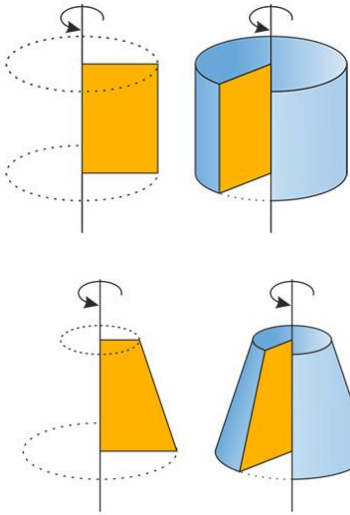
THREE-POINT PERSPECTIVE:

Three-point perspective uses three vanishing points where two of them are on the horizon line and the third is either high above the horizon line or below it. There are two basic types of three-point perspective based on the position of the horizon line:

- Worm’s Eye View
The view perceived when a person looking high up, the horizon line is situated very low.
- Bird’s Eye View
The view perceived when a bird views over a city and looking down, the horizon line is situated above.

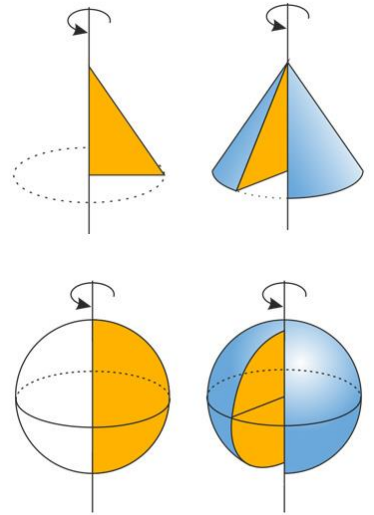


VISUAL REASONING



SOLIDS OF REVOLUTION

- A cylinder is formed by a rectangle rotating around one of the sides.
- A cone is formed by a right angled triangle rotating around one of the sides other than hypotenuse.
- A truncated cone is formed by rotating a trapezoid around its side, perpendicular to the trapezoid bases
- A sphere is formed by a semicircle or a circle rotating around the diameter.



ORTHOGRAPHIC PROJECTION

It is a technical drawing in which different views of an object are projected on reference planes by observing perpendicular to respective reference plane

