

# GEOMETRICAL AND BUILDING DRAWING (870)

**This subject may not be taken with Geometrical and Mechanical Drawing.**

Candidates will be required to reach a minimum standard in the subject as a whole. The use of drawing board, tee-square and set-squares will be required. (Candidates may, if they wish, use a drawing board fitted with parallel motion straight

edge. The use of drafting machines will be permitted). A2 size paper will be used. The recommendations of IS:962-1972 Indian Standard, Code of Practice for Architectural and Building Drawings should be followed.

The use of models is to be encouraged in studying this syllabus.

## CLASS XI

*There will be two papers in the subject:*

**Paper I - Theory: 3 hours..... 80 Marks**

**Paper II - Project Work ..... 20 Marks**

### **PAPER I (THEORY): 80 Marks**

#### **SECTION A**

##### **Plane Geometry**

Construction and use of scales including diagonal scales. Enlargement and reduction of irregular plane figures. Construction of triangles, quadrilaterals and polygons. Similar plane figures. Problems on circles, tangents and normals. Loci such as the paths of points in simple link mechanisms. Methods of construction of ellipse, including its elementary properties, parabola and rectangular hyperbola: cycloidal and involute curves.

#### **SECTION B**

##### **Solid Geometry**

Orthographic projection. (Diagrams printed in the question papers may be either First or Third Angle projections; the projection used will be stated. Solutions in either First or Third Angle projections will be accepted).

Projection involving use of auxiliary planes: simple problems on auxiliary projection. Simple problems on the intersection of prisms, pyramids, cylinders, right circular cones, and spheres. Determination of true length of a line in space: sections and surface development of prisms, pyramids, cylinders and right circular cone. Helix treated as a locus with applications on the projection of helices. Isometric and oblique projection without the use of isometric scales.

### **PAPER II (PROJECT WORK): 20 Marks**

In addition to the syllabus prescribed above, candidates are also required to be assessed in Project Work.

All candidates will be required to have completed **two projects** from any topic/s covered in theory. The Project work is to be assessed by the subject teacher. For details refer to Class XII.

## CLASS XII

There will be two papers in the subject

**Paper I - Theory:** 3 hours..... 80 Marks

**Paper II - Project Work** ..... 20 Marks

### PAPER I (THEORY): 80 Mark

#### Building Drawing

Candidates will be required to answer **all** questions.

The course on Building Drawing should be based on the form and construction of simple buildings and parts of buildings; small dwelling houses (single and two storey), garages, sheds and green houses.

Orthographic projection in either First or Third Angle projection, including sectional views of buildings and parts of buildings and building details, e.g. foundations, walls (including openings), jambs, sills,

lintels and arches, floors and roofs, doors and windows, simple stairs.

Preparation of simple working drawings and details from free-hand sketches.

Free-hand sketching on both orthographic and pictorial form of simple building details and tools used in the various building crafts and school workshops such as hammer, mallet, tri - square, plane chisel, trowel, screwdriver and the like.

Drawing paper (folded) will be provided but candidates may use any type of drawing paper for answering the question provided it is of suitable quality and of the correct size.

### PAPER II (PROJECT WORK): 20 Marks

In addition to the syllabus prescribed above, candidates are also required to be assessed in Project Work.

The Project work is to be assessed by the subject teacher and the Visiting Examiner appointed locally and approved by the Council.

All candidates will be required to have completed **two** projects from any topic/s covered in theory.

#### Assessment Criteria for different types of Projects

**Theory Based Project: Mark allocation for each project (10 marks)\*:**

S. No.	Criteria	Marks
1.	Title of the Project and Introduction	1
2.	Content	3
3.	Presentation and originality	2
4.	Conclusion/Comments/Summary	1
5.	Viva-Voce (Visiting Examiner)	3
	<b>Total</b>	<b>10</b>

**Model Based Project: Mark allocation for each project (10 marks)\*:**

S. No.	Criteria	Marks
1.	Title of the Project	1
2.	Model construction	4
3.	Concise Project report	2
4.	Viva-Voce (Visiting Examiner)	3
	<b>Total</b>	<b>10</b>

**Sketching Based Project: Mark allocation for each project (10 marks)\*:**

S. No.	Criteria	Marks
1.	Annotations	3
2.	Line weights	4
3.	Viva-Voce (Visiting Examiner)	3
	<b>Total</b>	<b>10</b>

**List of suggested assignments for Project Work:**

#### 1. Model Making:

Make a Study model to Scale, selecting any topic from the syllabus. Example:

- Scaled model of Small Residence
- Detailed model of Staircase
- Model demonstrating different types of roofs

## 2. Market Survey on Building Materials (Online/offline):

Conduct a market survey of selected building materials which are commonly used in construction along with their rates. Collect samples/pictures of **any 5** building materials used (e.g.: Bricks, Wood & Wood Finishes, Flooring, Doors & Windows materials). Prepare a report including:

- The findings of your Market Survey, along with samples/pictures of building materials collected.
- Factors to be kept in mind while selecting building materials.
- Innovation in technologies and other global factors leading to a rapid change in building materials.

## 3. Site Study/Desktop Study:

Select a site (It could be a site which is under construction, a completed project such as an apartment, bungalow, independent villa, interiors of a residence or a project online, etc.). Visit the selected site to understand the type of construction, the materials used and the architectural or interior design.

Prepare a project report highlighting your observations and findings along with site pictures.

## 4. Sketching:

Develop ten free hand sketches of buildings and their details. Examples:

- Door & Window details
- Types of bricks
- Isometric views of building or their details
- Plan & Section details
- One point or two-point perspectives

## 5. Working Drawings:

Prepare two simple working drawings (manually) for any project, including sectional views of buildings and parts of buildings along with building details, with lineweights, e.g.: Civil Drawings, Sections & Elevations, etc.

Students must be given sample working drawings for reference and asked to draft manually with lineweights (This exercise will help students understand the role of consultants who prepare different types of working drawings).

Example: Foundations, walls including openings, jambs, sill, lintels, arches, floors, roofs, doors and windows & simple stairs.

## 6. Research Study:

Study any one of the following topics and present your findings in the form of a report (giving a few examples of projects) **OR** prepare a Powerpoint presentation (of not less than 15 slides) on the same.

- Contemporary/Modern Architecture
- Sustainable Architecture
- Traditional Architecture
- Art Deco
- Brutalist Architecture

## 7. Precedent Study - Indian Architecture:

Conduct a deep and extended study on an **Indian Architect** (e.g. - Charles Correa, B.V. Doshi, Raj Rewal, Laurie Baker, etc.). Prepare a report giving examples of the projects done by the architect, along with images & sketches **OR** prepare a Powerpoint presentation (of not less than 15 slides) on the same.

### SAMPLE TABLE FOR PROJECT WORK

S. No.	Unique Identification Number (Unique ID) of the candidate	<u>PROJECT 1</u>					<u>PROJECT 2</u>					TOTAL MARKS
		A	B	C	D	E	F	G	H	I	J	
		Teacher	Visiting Examiner	Average Marks (A + B ÷ 2)	Viva- Voce by Visiting Examiner	Total Marks (C + D)	Teacher	Visiting Examiner	Average Marks (F + G ÷ 2)	Viva-Voce by Visiting Examiner	Total Marks (H + I)	
		7 Marks	7 Marks	7 Marks	3 Marks	10 Marks	7 Marks	7 Marks	7 Marks	3 Marks	10 Marks	20 Marks
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

\*For breakup of the 7 Marks to be awarded separately by the Teacher and the Visiting Examiner, please refer to the table giving the criteria for mark allocation for *each* project.

**NOTE: VIVA-VOCE (3 Marks) for each Project is to be conducted only by the Visiting Examiner and should be based on the Project only.**