

## ANNEXURE

**STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU**  
**DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS**  
**M-SCHEME**  
**(Implements from the Academic year 2015-2016 onwards)**

Course Name : All branches of Diploma in Engineering and Technology and Special Programmes except DMOP, HMCT and film & TV.

Subject Code : 30015

Semester : I Semester

Subject Title : **ENGINEERING GRAPHICS – I**

### TEACHING AND SCHEME OF EXAMINATION

**No. of weeks per semester: 15 weeks**

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
ENGINEERING GRAPHICS - I	5	75	Internal Assessment	Board Examination	Total	3 Hrs.
			25	75	100	

### **Topics and Allocation of Hours**

Sl.No.	Topics	Time (Hrs)
1	Drawing office practice, Lettering and Dimensions.	15 Hrs.
2	Geometric Constructions and Constructions of conics curve	20 Hrs.
3	Projection of points and straight lines.	17 Hrs
4	Orthographic projections.	23 Hrs.
	<b>Total</b>	<b>75 Hrs.</b>

### **RATIONALE:**

Engineering graphics is a basic subject for all branches of Diploma Engineering and Technology. Since engineering drawing is considered as the language of engineers, the proper understanding and practice is required with proper instruments.

This subject is aimed at providing basic understanding of the fundamentals of Engineering Drawing; mainly visualization, graphics theory, standards & conventions of drawing, the tools of drawing and the use of Drawings in engineering applications.

The topics covered are based on the syllabus for Diploma studies in engineering. The subject is planned to include sufficient practices which would help the student in visualization of three dimensional objects and developing the drawing.

The chapters are arranged in sequence and starts from the basic concepts of geometrical constructions & engineering curves, proceeds to the principles of projection techniques. By the end of the subject it is expected that the students would be matured to visualize any engineering component by reading an engineering drawing.

**OBJECTIVES:**

At the end of the practice, the students will be able to,

- Understand the importance of drawing.
- Identify and use the drawing instruments.
- Practice the rules and methods of dimensioning.
- Acquire knowledge about geometric construction.
- Construct conics curves.
- Draw the projection of points and straight lines.
- Draw orthographic views from isometric drawings.

**30015 ENGINEERING GRAPHICS – I**

**DETAILED SYLLABUS**

**Contents: Theory**

Unit	Name of the Topic	Hours
I	<p><b>1. 1. Drawing office practice</b>            Importance of engineering drawing - drawing instruments: drawing board, mini drafter, compass, divider, protractor, drawing sheets, drawing pencils, set squares etc.,-title block – folding of drawing sheets.            Lettering and numbering as per BIS 9609 - importance - single stroke letters – slanting letters - upper case and lower case letters - general procedures for lettering and numbering - height of letters – guidelines-practices.            Scales - full scale, reduced scale and enlarged scale.</p> <p><b>1. 2. Dimensioning</b>            Dimensioning – terms and notations as per BIS -requirement of dimensioning - Dimension line, Extension lines and Leader lines – Dimensioning systems - Methods of dimensioning – Important dimensioning rules – Exercises (One view of the object).</p>	15
II	<p><b>2.1 Geometric Constructions</b>            Geometric constructions: Bisect a line – bisect an arc – bisect given angle – divide straight line into number of equal parts – divide the circle into number of equal divisions – draw an arc touching two lines at any angle – draw an arc touching two arcs.</p>	20

	<p><b>2.2 Constructions of conics</b></p> <p>Conics: Cone – conic sections - Definition of locus, focus, directrix, axis, vertex and eccentricity. Definition: ellipse, parabola and hyperbola.</p> <p>Ellipse: Construction of ellipse by concentric circle method, rectangular method and Eccentricity method when focus and directrix are given – Exercises.</p> <p>Parabola: Construction of parabola by rectangular method, parallelogram method and eccentricity method when focus and directrix are given– exercises.</p> <p>Hyperbola: Construction of hyperbola by rectangular method and eccentricity method when focus and directrix are given – exercises.</p>	
III	<p><b>3.1 Projection of points.</b></p> <p>Projection of points – points on the different quadrants and on the reference planes.</p> <p><b>3.2 Projection of straight lines.</b></p> <p>Projection of straight lines – Line in the first quadrant and on the reference planes - perpendicular to one plane and parallel to other plane – inclined to one plane and parallel to the other plane – parallel to both the planes – inclined to both the planes – Exercises.</p>	17
IV	<p><b>4.1. Orthographic projection</b></p> <p>Introduction – Orthographic projection - terms - First angle projection - Third angle projection – Draw symbols – Compare first and third angle projections.</p> <p>Draw the projection of the simple isometric objects using first angle projection only – Draw front view / top view / right / left side view.(Any two views only)</p>	23

### Text Books

1. Bhatt N.D. and Panchal V.M., “Engineering Drawing”, Charotar Publishing House, 50<sup>th</sup> Edition, 2010.
2. Gill P.S., “Engineering drawing”, S.K.Kataria & Sons.

### Reference Books

1. Gopalakrishnan.K.R., "Engineering Drawing", (Vol.I and Vol.II), Dhanalakshmi publishers, Edition 2, 1970
2. Venugopal.K, Sreekanjana G, “Engineering Graphics” New Age International Publishers.
3. K V Nataraajan “A Text Book of Engineering Drawing”
4. Besant Agrawal, C M Agrawal “Engineering drawing”, Tata McGraw Hill Education Private Limited.
5. Barkinson & Sinha, "First Year Engineering Drawing", Pitman Publishers.

## Board Examination – Question pattern

**Time: 3 Hrs.**

**Max.Marks: 75**

[Note: Answer all the questions in the drawing sheet only. Assume missing dimensions suitably]

### **Part A**

Answer all questions. Each question carries five marks.

3 X 5 = 15

**Note: Three questions will be asked (1 to 3). One question from UNIT I, II and III.  
(Lettering, Geometric constructions and Projection of Points.)**

### **Part B**

Answer any four questions. Each question carries fifteen marks.

4 X 15 = 60

**Note: Six questions will be asked (4 to 9). Minimum one question from each unit.**

**TOTAL                      75**

### **Internal Marks**

Assignment drawings	-	10
Test	-	10
Attendance	-	5
<b>Total</b>	<b>-</b>	<b>25</b>