

<b>B. E. MECHANICAL ENGINEERING</b>			
<b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b>			
<b>SEMESTER - III</b>			
<b>COMPUTER AIDED MACHINE DRAWING</b>			
Course Code	18ME36A/46A	CIE Marks	40
Teaching Hours/Week (L:T:P)	1:4:0	SEE Marks	60
Credits	03	Exam Hours	03
<b>Course Learning Objectives:</b>			
<ul style="list-style-type: none"> <li>• To acquire the knowledge of CAD software and its features.</li> <li>• To familiarize the students with Indian Standards on drawing practices.</li> <li>• To impart knowledge of thread forms, fasteners, keys, joints and couplings.</li> <li>• To make the students understand and interpret drawings of machine components leading to preparation of assembly drawings manually and using CAD packages.</li> <li>• To acquire the knowledge of limits, tolerance and fits and indicate them on machine drawings.</li> </ul>			
<b>Part A</b>			
<b>Part A</b>			
<b>Introduction:</b>			
Review of graphic interface of the software. Review of basic sketching commands and navigational commands. Starting a new drawing sheet. Sheet sizes. Naming a drawing, Drawing units, grid and snap. Conversion of pictorial views into orthographic projections of simple machine parts (with and without section). Hidden line conventions. Precedence of lines.			
Sections of Solids: Sections of Pyramids, Prisms, Cubes, Tetrahedrons, Cones and Cylinders resting only on their bases (No problems on axis inclinations, spheres and hollow solids). True shape of sections.			
Conversion of pictorial views into orthographic projections of simple machine parts. Hidden line conventions. Precedence of lines.			
Conversion of pictorial views into orthographic projections of simple machine parts (with section planes indicated on the part).			
Thread Forms: Thread terminology, sectional views of threads. ISO Metric (Internal & External), BSW (Internal & External) square and Acme. Sellers thread, American Standard thread.			
Fasteners: Hexagonal headed bolt and nut with washer (assembly), square headed bolt and nut with washer (assembly) simple assembly using stud bolts with nut and lock nut. Flanged nut, slotted nut, taper and split pin for locking, counter sunk head screw, grub screw, Allen screw.			
<b>Part B</b>			
<b>Keys:</b> Parallel key, Taper key, Feather key, Gib-head key and Woodruff key.			
<b>Joints:</b> Cotter joint (socket and spigot), knuckle joint (pin joint) for two rods.			
<b>Couplings:</b> Split Muff coupling, Protected type flanged coupling, pin (bush) type flexible coupling, and universal coupling (Hooks' joint)			
<b>Part C</b>			
Limits, Fits and Tolerances: Introduction, Fundamental tolerances, Deviations, Methods of placing limit dimensions, machining symbols, types of fits with symbols and applications, geometrical tolerances on drawings. Standards followed in industry.			
<b>Assembly Drawings: (Part drawings shall be given)</b>			
1. Plummer block (Pedestal Bearing)			
2. Lever Safety Valve			
3. I.C. Engine connecting rod			
4. Screw jack (Bottle type)			
5. Tailstock of lathe			
6. Machine vice			
7. Tool head of shaper			

**Course Outcomes:** At the end of the course, the student will be able to:

CO1: Identify the national and international standards pertaining to machine drawing.

CO2: Understand the importance of the linking functional and visualization aspects in the preparation of the part drawings

CO3: Apply limits and tolerances to assemblies and choose appropriate fits for given assemblies.

CO4: Interpret the Machining and surface finish symbols on the component drawings.


CO5: Preparation of the part or assembly drawings as per the conventions.

**Scheme of Examination:** Two questions to be set from each Part A, part B and Part C. Student has to answer one question each from Part A and Part B for 25 marks each and one question from Part C for 50 marks.

**INSTRUCTION FOR COMPUTER AIDED MACHINE DRAWING (15ME36A/46A) EXAMINATION**

1. No restriction of timing for sketching/ computerization of solutions. The total duration is 3 hours.
2. It is desirable to do sketching of all the solutions before computerization.
3. Drawing instruments may be used for sketching.
4. For Part A and Part B, 2D drafting environment should be used.
5. For Part C, 3D environment should be used for parts and assembly, and extract 2D views of assembly.
6. Part A and Part B  
25 Marks ( 15 marks for sketching and 10 marks for computer work)
7. Part C  
50 Marks ( 20 marks for sketching and 30 marks for computer modelling)

Sl No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Machine Drawing	K.R. Gopala Krishna	Subhash Publication	2005
2	Machine Drawing	N.D.Bhat&V.M. Panchal	Charoratar publishing house	2005
<b>Reference Books</b>				
3	A Text Book of Computer Aided Machine Drawing	S. Trymbaka Murthy	CBS Publishers, New Delhi	2007
4	Engineering drawing	P.S.Gill	S K Kataria and Sons	2013
5	Machine Drawing	N. Siddeshwar, P. Kanniah, V.V.S. Sastri	Tata McGraw Hill	2006

  
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