Engineering Graphics with AutoCAD

By

Prof. D. M. Kulkarni

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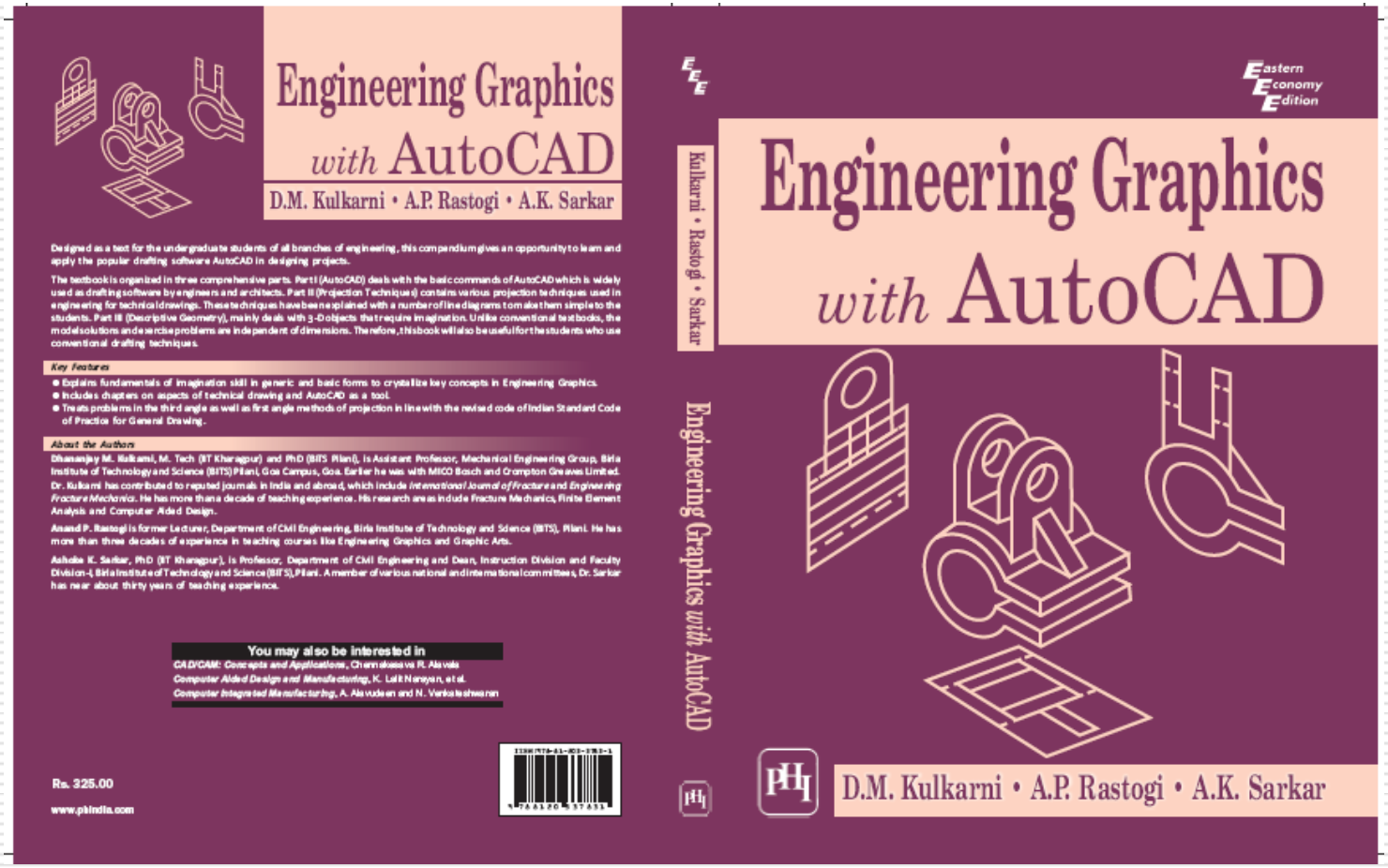

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What is Engineering Graphics

Engineering Graphics is the language of Engineers. Like any other language, one should be able to READ | WRITE | SPEAK. The knowledge of Engineering Graphics is useful to both scientist as well as Engineers.

Engineering Graphics

- Engineers use graphics to communicate technical information without ambiguity to executives, fabricators, customers, and each other.
- Engineering graphics has a well-defined set of standards by which technical drawings are produced.
- This course teaches the language of engineering graphics from basic sketching through 3-D solid modeling using computer aided design (CAD) software AutoCAD.
- The course also gives the opportunity to apply this new knowledge to creative engineering design projects.

Applications of Computer Aided Drafting

Mechanical : Design of machine elements, CNC machine tools, Robotics.

Automotive : Kinematics, Hydraulics, Steering.

Electrical : Circuit layout, Panel design, control system.

Electronics : Schematic diagrams of PCs, Ics, etc.

Communication: Communication network, satellite transmitting pictures, T.V Telecasting

Civil : Mapping, contour plotting, building drawing, structural design.

Architectural: Town planning, interior decorations, multi storied complex.

Aerospace : Design of spacecraft, flight simulator, lofting

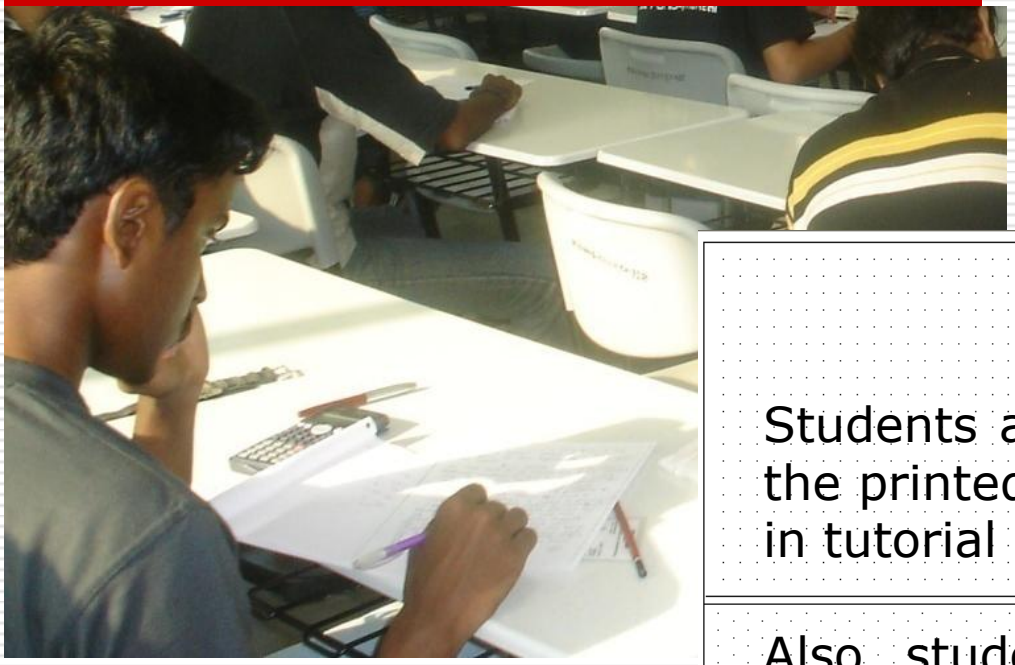
Why with AutoCAD?

- Current industrial practice (traditional drafting is obsolete).
- Helps students to explore other solid modelling softwares in their own disciplines
- Helps Mechanical students to generate 2-D Machine drawings as well as 3-D models using Pro-Engineers

Helps Institute in many ways:

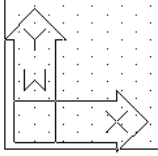
- Online Assignments, online Exams and online evaluation solves n number of problems.
- Storing the digital drawings (if required)

What about the hand-skills of students?



Students are asked to practice on the printed (ortho/iso) grid papers in tutorial section.

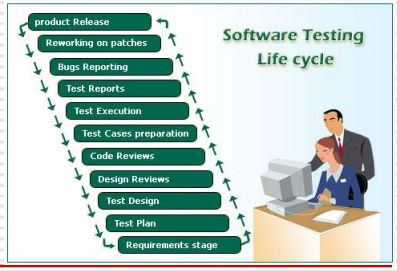
Also, students are asked to draw free-hand sketches on paper.



Course Objectives

1. To learn the AutoCAD tool
2. To learn the theory of projections
3. To learn the descriptive geometry
4. To learn a 3-D imaginational skill
5. To learn a hand-sketch skills for 2-D drawing and 3-D modelling

Course Coverage



E N G I N E E R I N G

AutoCAD

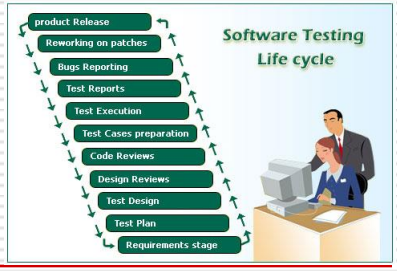
Theory of Projections

G R A P H I C S

Descriptive Geometry

Freehand Sketching

Proficiencies



Institutional proficiencies assigned to this course

Successful completion of this course will enhance the student's ability to:

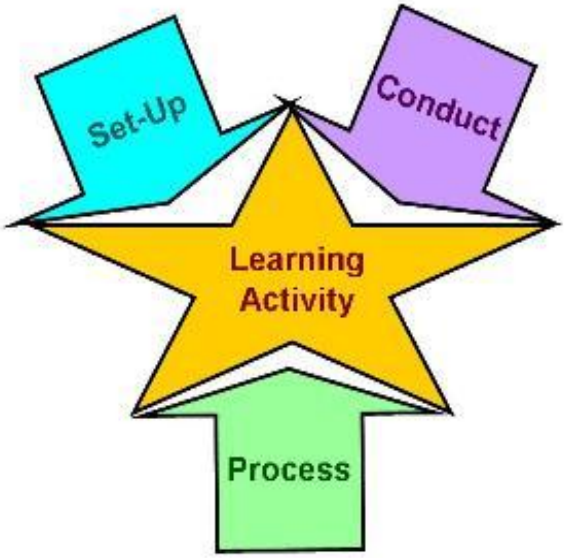
- Interpret and synthesize information and ideas
- Analyze and evaluate
- Use computer technologies for communication

Department-specific proficiencies assigned to this course

By completing this course, students will understand:

- Visualization as it pertains to engineering design
- Engineering drawing techniques
- Orthographic and pictorial projections
- Auxiliary and section views
- Basic dimensioning
- 2-D CAD drawing techniques
- 3-D CAD modeling techniques

Course Conduct

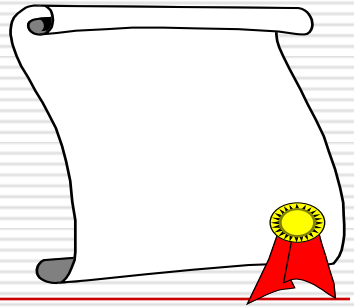


30 Lectures (50 Mins each)

15 Tutorials (50 Mins each)

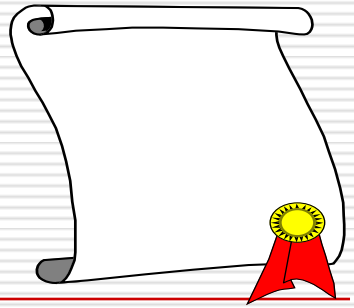
25 Practical (2 Hrs each)

Course Handout



Lect. No.	LearningObjectives	Topics to be covered	Pract. Classes	Chap./Sec.
1 to 4	Intro. To AutoCAD	Basic commands	4	Ch.1, Ch.2&Ch 4
5 to 9	Orthographic projections	Theory, techniques, first and third angle projections, Multi view drawing from pictorial views.	3	3 & Ch. 5
10 to 12	Pictorial drawings	Theory of isometric and oblique drawing, construction of isometric and oblique from orthographic.	3	Ch. 6
13 to 14	Missing line(s) & view	Identification and drawing of missing line(s) and view in orthographic projections	2	Ch. 7

Course Handout



Lect. No.	LearningObjectives	Topics to be covered	Pract. Classes	Chap./Sec.
15 to 16	Auxiliary projections	Need, primary and secondary auxiliary views, true shapes.	1	Ch. 8
16 to 20	Spatial geometry	Projection of points; lines, true lengths, inclinations, shortest distance; planes	3	Ch. 9, Ch.10& Ch11
21 to 24	Geometrical solids and sections	Construction of right, regular, oblique solids; section planes and sectional view.	4	12 & Ch. 13
25 to 26	Development of surfaces	Radial line, parallel line; reverse development	2	14
27 to 30	Intersection of surfaces	Intersections between: line-plane, plane-plane, line-solid, solid-solid	3	15

Online Teaching through AutoCAD

2 Lectures per Week

Tutorial Class Conduct on Grid Sheet

1 Tutorial Hour per Week (Hand skills)

Online Assignment

2 Practicals, each of 2 hours (4 Hours per Week)

Online Examination & Evaluation

Evaluation Components & Evaluation

1)Assignments	120 Marks
2)Mid-Test	60 Marks
3)Compre. Exam.	120 Marks
Total	300 Marks

Assignments Evaluation

Total 25 Assignments

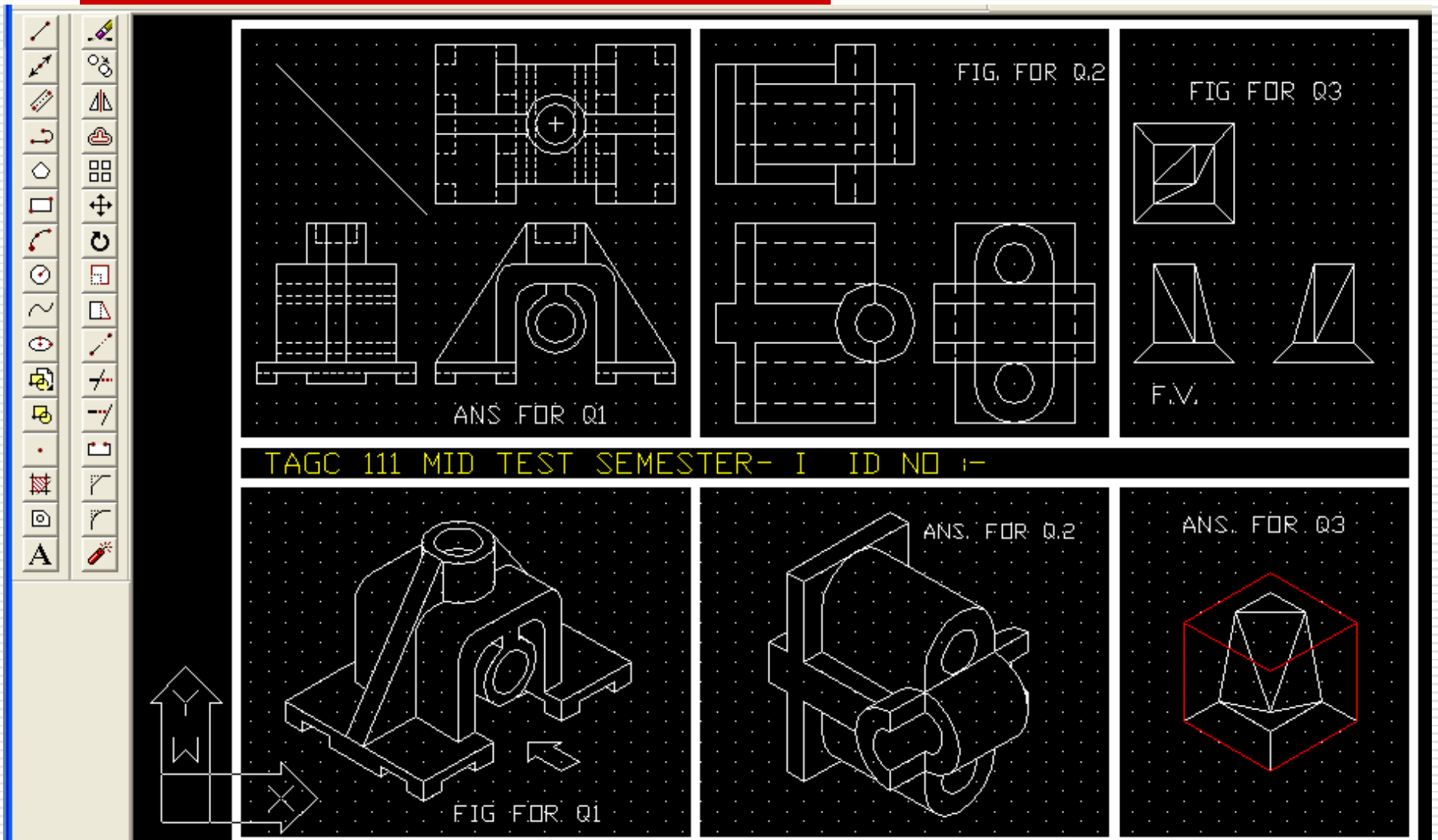
First 5 Assignments on AutoCAD Commands

Total 20 Assignments on course

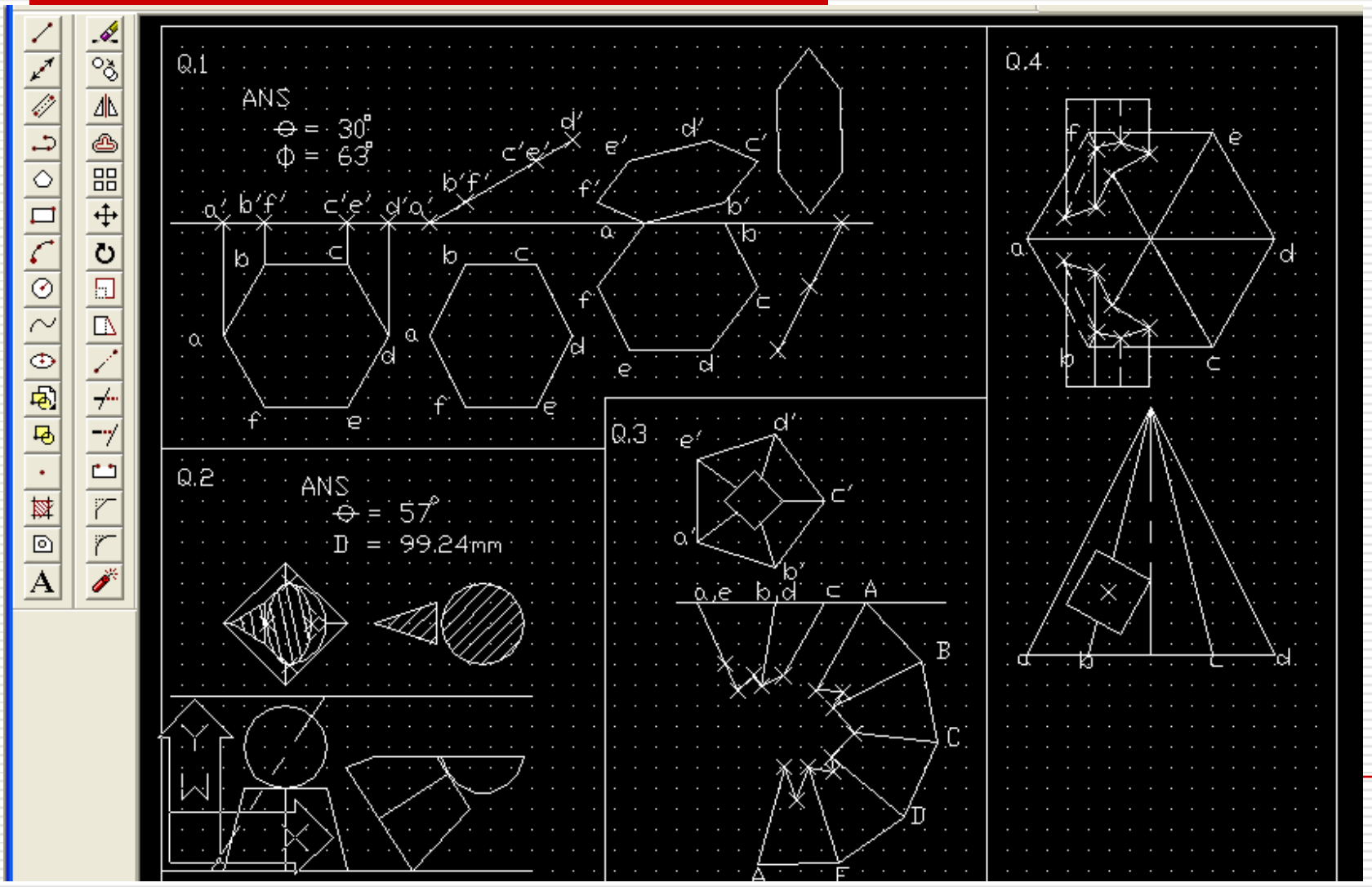
20 Assignments X 20 Marks Each = 400 Marks

400 Marks X 0.3 = **120 Marks**

Mid-Test (60 M)
Model Q & A Sheet



Compre Examination (120M) Model Q & A Sheet



Thanks