

[03 - 4211]

IV/IV B.E. DEGREE EXAMINATION.

Second Semester

Mechanical Engineering

COMPUTER AIDED DESIGN

(With effective from the admitted batch of 2006-2007)

(Common with Metallurgical Engineering)

Time : Three hours

Maximum : 70 marks

Question No. 1 is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

Assume suitable missing data wherever necessary.

Answer to question No. 1 must be at one place.

1. (a) What is the function of a plotter in CAD?
- (b) What are the techniques used in computer graphics?
- (c) Briefly describe 3-D curves.
- (d) Explain the properties of Bezier curves.
- (e) What are the applications of a solid model?

- (f) Briefly explain the various techniques used for the preparation of finite element data.
- (g) Briefly explain the benefits of Artificial intelligence in design.
2. (a) With a suitable example, explain the various steps involved in a design process?
- (b) Explain with the help of a neat sketch, how an image is generated on a computer terminal.
3. (a) What are the functions of an interactive graphic design workstation?
- (b) What is meant by a concatenation matrix? Demonstrate how translation, scaling and rotation operations can be performed simultaneously on a graphic element using concatenation matrix.
4. (a) Distinguish between interpolation and approximation approaches used in design of curves.
- (b) Why the sweep representation is useful in creating solid models of $2\frac{1}{2}$ D objects? Explain.

5. (a) What are the basic steps involved in finite element analysis and explain them briefly.
(b) Explain the semi automatic mesh generation technique.
6. (a) List any three Finite element analysis software and explain their capabilities.
(b) Write a short note on capabilities and limitations of application software.
7. How do you locate the M.I. of a rectangular cuboid with a hole using CAD? Explain it through an example.
8. (a) What is Artificial Intelligence? Discuss the various elements of Artificial Intelligence.
(b) Briefly discuss the use of sensors and AI in computer aided design.

[2527/I/11]