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## Question Paper Code: 41399

## B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Fifth/Seventh Semester Mechanical Engineering

ME 6501 – COMPUTER AIDED DESIGN

(Common to Mechanical Engineering (Sandwich)/Manufacturing Engineering/ Mechatronics Engineering) (Regulations 2013)

Time: Three Hours

Maximum: 100 Marks

Answer ALL questions.

PART - A

 $(10\times2=20 \text{ Marks})$ 

- 1. What are the advantages of concurrent engineering?
- 2. What is meant by concatenation transformation?
- 3. List out the various Bezier curves based on control points.
- 4. What is the use of surface patch?
- 5. What is the need of visualization?
- 6. Mention the two approaches to hidden surface removal.
- 7. List out techniques of assembly modeling.
- 8. Define tolerance stack-up.
- 9. List out the international organizations involved to develop the graphics standards.
- 10. What is the objective of GKS-3D standard?

PART - B

 $(5\times13=65 \text{ Marks})$ 

11. a) Explain the various graphic transformations required for manipulating the geometric information.

(OR)

b) Describe and demonstrate DDA line drawing algorithm.

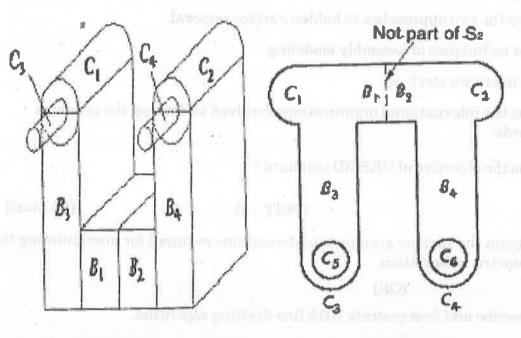
(13)

(13)

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12. a)	Briefly discuss about the (OR)	ne Bezier surface a	and composite surface.	(13)
b)	Discuss the most comm	only used solid en	tities with help of neat	sketch. (13)
13. a)	Explain the area orient (OR)	ted algorithm for h	nidden line removal.	(13)
b)	Explain the techniques	of Phong shading	and Gouraud shading	g. (13)
14. a)	Explain the following m	ating conditions r	equire to assembling to	wo parts. (13)
	<ul><li>i) Coincident and cond</li><li>ii) Parallel and tangen</li></ul>			
	(OR)			
b)	Describe the various ma	ass properties on (	CAD/CAM systems.	(13)
15. a)	List and discuss the maj	or available modu	les in CAD software pa	ackages. (13)
b)	i) Explain IGES File S	tructure with exa	mples.	(7)
	ii) Explain the concept.	of Product Data H	exchange using STEP	A STATE OF THE PARTY OF THE PAR

PART - C

16. a) Sketch the CSG tree for each of the two solids shown below.



a) Solid  $S_1$ 

b) Solid  $S_2$ 

 $(1\times15=15 \text{ Marks})$ 



The solid  $S_2$  is divided symmetrically and it consist of four blocks  $(B_1 \text{ to } B_4)$  and six cylinder  $(C_1 \text{ to } C_6)$ . The dashed line shown inside  $S_2$  in the figure (b) is not part of  $S_2$ . It is a hypothetical line that uses to divide the top part of  $S_2$  into two blocks,  $B_1$  and  $B_2$ . (15)

(OR)

b) A cubic Bezier curve is defined by coordinates  $P0 = [2 \ 2 \ 0]^T$ ,  $P1 = [2 \ 3 \ 0]^T$ ,  $P2 = [3 \ 3 \ 0]^T$  and  $P3 = [3 \ 2 \ 0]^T$ . Find the equation of the resulting Bezier curve.

Also find the points on the curve for u = 0, 0.25, 0.5, 0.75 and 1. (15)

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The saint  $S_{ij}$  is discided symmetrically and it consists of four blocks  $(B_{ij}$  to  $B_{ij})$  and an excluder  $(C_{ij}$  to  $C_{ij})$ . The doubted line above these consists  $S_{ij}$  in the figure that not part of  $S_{ij}$ . It is a hypotic Starl line that now in discist the top part of  $S_{ij}$  into two blocks. If, and  $B_{ij}$ .

do

15 A color Boson curve is defined by coordinates P0 = [2 2 0]?, P1 = [2 5 0]?.
P2 = [3 4 0] \*\*mo P4 = 15 2 0]? Find the equation of the resulting Boson curve.
Max find the points on the curve form =0, 0.25, 0.5, 0.75 and 1.