

**FOURTH SEMESTER**

**B.E. (IT)**

**MID SEM EXAMINATION**

**March**

**2007**

**IT-211 SYSTEM ANALYSIS AND DESIGN**

**Time: 1 Hour 30 Minutes**

**Max. Marks : 20**

**Note : Answer ALL questions.**

**Assume suitable missing data, if any.**

- 1[a] Is CMM a s/w process model? Justify your answer by giving suitable reasons. 1
- [b] List the advantages and disadvantages of Incremental process model. 1
- [c] What are the common reasons for showing implementation stores in a DFD? 1
- 2[a] Why is software requirement specification important? What are the characteristics of SRS? Explain? 2
- [b] Which bubbles in a DFD requires process specifications and why? 1
- 3 Define Entity, Relationship, Attribute, Cardinality, Process, Store, Terminator, Feasibility, Analysis, Real time system, Essential model of a system. 5
- 4[a] Draw state transition diagram to model the working of a washing machine. 2
- [b] What are the rules for balancing STD against the DFD? 1
- 5[a] What are the three major components of the environmental model?

- [b] Identify the critical activities and critical path for the problem. Also, draw activity graph

Activity	Duration	Predecessor
A	10	--
B	8	--
C	12	A
D	10	--
E	8	B
F	12	D
G	15	D
H	5	G
I	12	C, E
J	8	F
K	7	I
L	8	J, K
M	10	H

2

1

- 6[a] What are three common synonyms for (i) process in a DFD (ii) DFD

1

- [b] What is the meaning of the following in DD

(i) address = (city) + (state)

(ii)  $a = 1\{b\}$

(iii)  $a = 1\{b\}10$

1

- [c] What is the difference between a decision table with binary variables and a decision table with multivalued variables?

1

Total No. of Pages 2

Roll No. ....

FOURTH SEMESTER

B.E. (IT)

MID SEM EXAMINATION

March 2007

IT-212 ANALOG & DIGITAL COMMUNICATION

Time: 1 Hour 30 Minutes

Max. Marks : 20

Note : Answer ALL questions.

Assume suitable missing data, if any.

- 1 Find the Fourier transform of a truncated sinc pulse as shown in Fig.1 and draw the spectrum. 3

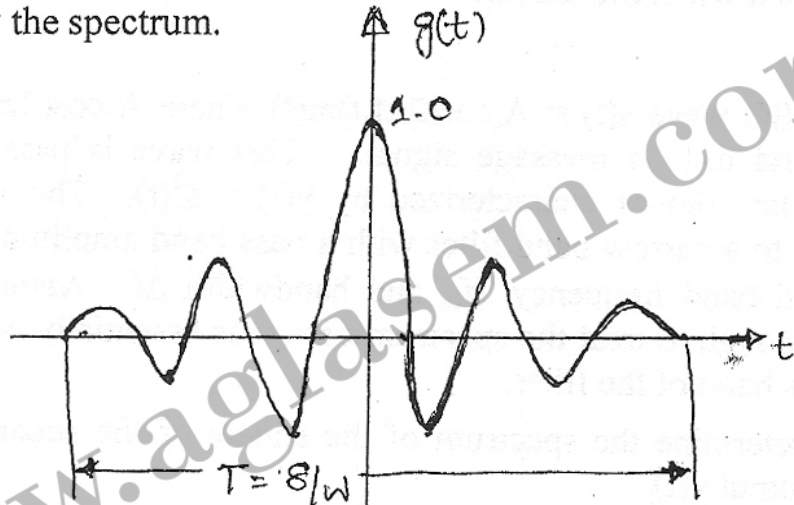
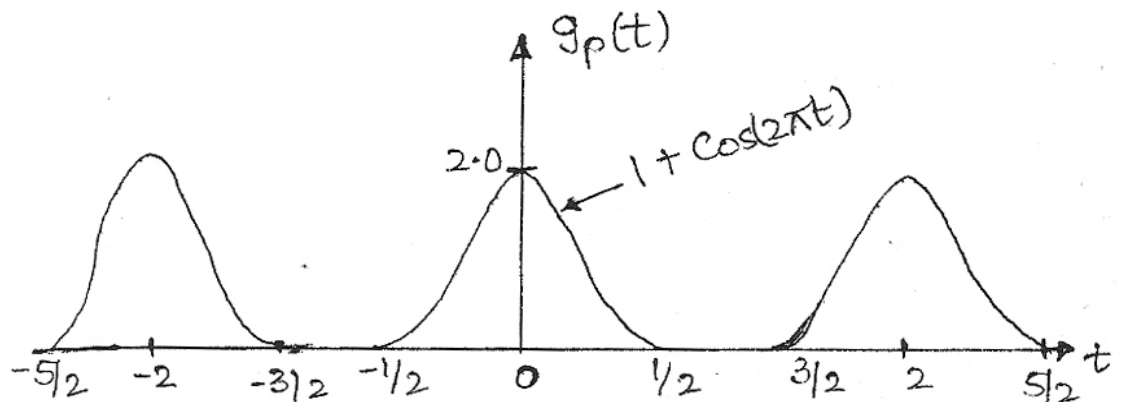


Fig. 1.

- 2 Show that the first three terms in the Fourier series expansion of  $g_p(t)$  shown in Fig.2 is  $g_p(t) = \frac{1}{2} + \frac{8}{3\pi} \cos(\pi t) + \frac{1}{2} \cos(2\pi t) + \dots$  5



- 3 Enumerate the differences between amplitude modulation and angle modulation. Also, sketch the waveforms of above modulation techniques for single tone modulation taking sinusoidal signal as carrier and message signals. 2
- 4 Sketch the AM wave for 75% modulation if the message signal is  $m(t) = 20 \cos(2\pi t)$  volts and the carrier wave is  $c(t) = 50 \cos(100\pi t)$  volts. Also, find the power developed across a load of  $100 \Omega$  due to this AM. Derive the equations used. 3
- 5 Derive an expression for NBFM of a single tone frequency signal and compare it with AM scheme. 3
- 6 A DSBSC wave  $s(t) = A_c \cos(2\pi f_c t) m(t)$  where  $A_c \cos(2\pi f_c t)$  is carrier wave and  $m(t)$  is message signal. This wave is passed through a square law device characterized by  $y(t) = s^2(t)$ . The output  $y(t)$  is applied to a narrow band filter with a pass band amplitude response of one mid band frequency  $2f_c$ , and bandwidth  $\Delta f$ . Assume that  $\Delta f$  is small enough to treat the spectrum of  $y(t)$  as essentially constant inside the pass band of the filter.
  - a) Determine the spectrum of the square of the square law device output  $y(t)$ .
  - b) Show that the filter output  $v(t)$  is approximately Sinusoidal, given by  $v(t) \approx \frac{A_c^2}{2} E \Delta f \cos 4\pi f_c t$  where  $E$  is the energy of the signal  $m(t)$ . 4

**FOURTH SEMESTER****B.E. (IT)****MID SEM EXAMINATION****March- 2007****IT-213 OPERATING SYSTEMS****Time: 1 Hour 30 Minutes****Max. Marks : 20****Note : Answer ALL questions.**

Assume suitable missing data, if any.

1 What do you mean by multiprogramming? What are its advantages. 2

2 Describe the difference between short term, medium term and long term scheduler. 2

3 Consider the following set of processes with the length of the CPU burst time given in milliseconds.

Process	Burst time	Priority
P <sub>1</sub>	10	3
P <sub>2</sub>	1	1
P <sub>3</sub>	2	3
P <sub>4</sub>	1	4
P <sub>5</sub>	4	2

The processes are assumed to have arrived in the order P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>, P<sub>4</sub>, P<sub>5</sub> all at time 0.

Draw Gantt chart illustrating the execution of these processes, calculate turnaround time and waiting time for each process for the following scheduling algorithms.

(i) SJF

(ii) a non pre-emptive priority (a smaller priority number implies a higher priority)

(iii) RR (quantum = 1) scheduling 9

4 Describe banker's algorithm to avoid a deadlock. 5

5 Draw the process state diagram. 2

## FOURTH SEMESTER

B.E. (IT)

## MID SEM EXAMINATION

March

2007

## IT-214 COMPUTER GRAPHICS

Time: 1 Hour 30 Minutes

Max. Marks : 20

Note : Answer ALL questions.

Assume suitable missing data, if any.

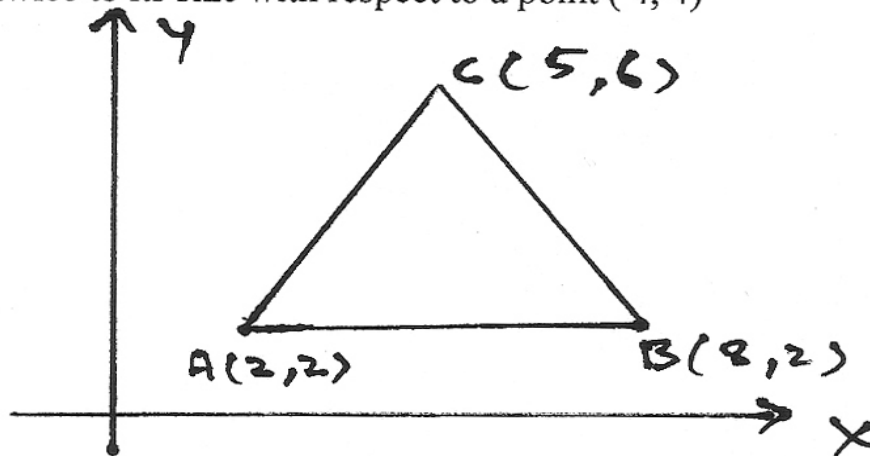
1 Attempt any FOUR of the following:

- [a] Explain the differences between the raster-scan systems and random-scan systems. 2
- [b] Explain any four uses of computer Graphics. 2
- [c] What is interlacing? Explain? 2
- [d] What is the relationship between  $R_\theta$ ,  $R_{-\theta}$ , and  $R_\theta^{-1}$ ? 2
- [e] Transform a point  $P(40,30)$  given in a window ( 10, 10, 100, 60) in world coordinate system to a viewport ( 30, 30, 150, 90) on screen. 2

2 Generate a line from ( 5, 5) to ( 13, 11) using (a) trigonometric method (b) polynomial method. 4

3 Use midpoint approach to generate circle drawing algorithm. 4

4 Consider a triangle ABC in the given figure. Magnify the triangle ABC twice to its size with respect to a point ( 4, 4)



Find out the composite transformation matrix to perform the given transformations. Also, show output and input matrices. 4

Total No. of Pages 1

Roll No. ....

**FOURTH SEMESTER**

**B.E. (IT)**

**MID SEM EXAMINATION**

**March 2007**

**IT-215 COMPUTER SYSTEM ARCHITECTURE**

*Time: 1 Hour 30 Minutes*

*Max. Marks : 20*

**Note :** Answer **ALL** questions.

Assume suitable missing data, if any.

- 1 List the name of all the registers for a basic computer along with the functions performed by them. 3
- 2 What is the difference between RISC and CISC? Explain with examples. 4
- 3 Explain Flynn's classification with the help of relevant examples. 4
- 4 Explain key concept of Von Newman Architecture with the help of a diagram. 4
- 5 Write short notes on any TWO:  
[a] Microprogramming  
[b] Vector processing  
[c] Cache memory. 5