VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY

MID SEMESTER EXAMINATION 2017

Subject: Software Engineering & OOAD
5th Semester (B.Tech) – **CSE & IT**

Time: **2 Hours**
Max Marks: **20**

Answer any **four** questions **including question number 1.**

SECTION-A

[5 X 1 Marks]

1. i) How does IEEE define software engineering?
   ii) What is software life cycle? Why does it become mandatory for a development team to adhere to a suitable life cycle model?
   iii) How does a generic software product differ from a customized software product?
   iv) What do you mean alpha and beta testing?
   v) What is a structured program? What is its goal?

SECTION-B

2. i) Differentiate software process vs. project and software product? **[3 Marks]**

   ii) A few years ago, Sun Microsystems decided to develop and market StarOffice, a set of desktop tools that would be comparable to Microsoft's Office suite of tools but would be targeted for UNIX rather than Windows. At that time, no other major UNIX vendor had developed or was planning to develop such a product. Assuming yourself to be a part of the development team, what process model would you have used? Justify your answer **[2 marks]**

3. i) What is software crisis? Why does it occur? What are the set of problems that they pose to the customers? **[3 marks]**
   ii). "*The spiral model is considered a meta model*". Justify the statement. **[2 marks]**

4. i) What is a well engineered software? Discuss its characteristics. **[3 marks]**

   ii) How does a software product vary from a computer program? **[2 marks]**

5. i) What is phase containment of errors? Why is it considered to be important? **[2 marks]**

   ii) List down the major differences between the exploratory and modern software development practices. **[3 marks]**

5th CSE

Veer Surendra Sai University of Technology, Burla

Mid Semester Examination-2017

Subject Name: Cryptography and Network Security | Branch: CSE / IT

Time: 2 Hours | Semester: 5th

Max Marks: 20

Answer Question No.1 which is compulsory and any three from the rest.

The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** (1 x 5)

a) Differentiate between confidentiality and integrity?

b) Define a state in AES. How many states are there in each version of AES?

c) Find the multiplicative inverse of each element in Z_{10}?

d) Explain the Diffusion and Confusion.

e) What is cipher text stealing?

Q2 a) Describe passive and active attacks with suitable examples. (2.5)

b) Use the additive cipher with key = 15 to decrypt the message "WTAAD". (2.5)

Q3 a) Explain the round key generation in DES. Why does the round key generator need a parity bit drop? (2.5)

b) Discuss the types of D-boxes with suitable example. (2.5)

Q4 a) What is a transposition cipher? Discuss various transposition ciphers. (2.5)

b) In ECB mode, bit 17 in cipher text block 8 is corrupted during transmission. Find the possible corrupted bits in the plain text. (2.5)

Q5 a) Encrypt the massage "the house is being sold tonight" using playfair cipher. Use the secret key "GUIDANCE". The spaces in the plain text can be omitted. (2.5)

b) Write the NIST criteria for selection of AES algorithm. How the key size does affect the number of rounds in AES? (2.5)

Q6 Define and compare the various modes used in Morden block ciphers. (5)

Q7 Write short notes on any two (2x2.5)

a) ITU-T security mechanisms

b) Steganography

c) Blowfish cipher

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

B.Tech. 5th Sem, CSE

Mid Semester Examination, September 2017

Graph Theory

Time : 2 hrs Full Marks : 20

[Qs. No. 1 is Compulsory]

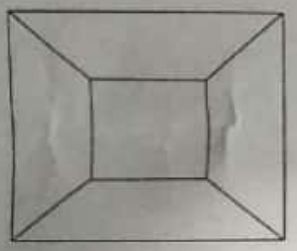
[1X5]

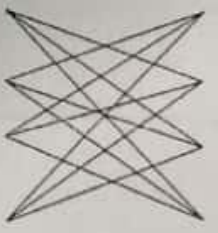
1. (i) Consider an undirected graph G where self-loops are not allowed. The vertex set of G is $\{(i, j): 1 \le i \le 12,\ 1 \le j \le 12\}$. There is an edge between (a, b) and (c, d) if $|a - c| \le 1$ and $|b - d| \le 1$. What is the number of edges in this graph ?
   (ii) Let G be a non-directed graph with 35 edges and degree of each vertex is at least 3, What is the maximum number of vertices in the graph ?
   (iii) Which of the following degree sequence represent a simple graph?
   A) {2, 3, 4, 4, 5} B) {5,5,5,4,2,1,1,1} C) {6,5,5,4,3,3,2,2,2} D) {1,3,3,3}
   (iv) If G is a forest with n vertices and k connected components, how many edges does G have?
   A) Floor (n/k) B) Ceiling (n/k) C) n-k D) n-k+1
   (v) Let G be a complete undirected graph on 6 vertices. If vertices of G are labeled, then the number of distinct cycles of length 4 in G is equal to A) 15 B) 30 C) 90 D) 360

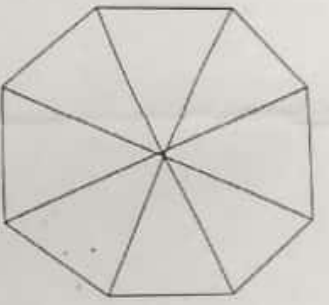
2. (a) Let V = {a, b, c, d, e, f}, E = {ab, af, ad, be, de, ef} and G = (V, E). Determine all the subgraphs of G of order 4 and size 4. [3]
   (b) Prove that the size of a bipartite graph of order n is at most n 2/4. [2]

or

Determine and explain which pairs of following graphs are isomorphic . [5]







3. Find out whether the complement of a regular graph is regular. If so, prove it; if not, give a counterexample.[5]

or

(a) Construct two graphs that have the same degree sequence but are not isomorphic. [2]
(b) What is decomposition of a graph? Show the decomposition of K_5 [3]

4. Model the following situations as (possibly weighted, possibly directed) graphs. Draw each graph, and give the corresponding adjacency matrices. [2.5 +2.5]
   (a) Ada and Bertrand are friends. Ada is also friends with Cecilia and David. Bertrand, Cecilia and Évariste are all friends of each other.
   (b) It is well-known that in the Netherlands, there is a 2-lane highway from Amsterdam to Breda, another 2-lane highway from Amsterdam to Cappele aan den IJssel, a 3-lane highway from Breda to Dordrecht, a 1-lane road from Breda to Ede and another one from Dordrecht to Ede, and a 5-lane superhighway from Cappele aan den IJssel to Ede.

or

Maria and her partner organize a party together with 4 other couples. There are a number of greetings but, naturally, nobody says hello to their own partner. At the end of the party Maria asks everyone how many people did they greet, and she receives nine different answers. How many people did Maria greet and how many people did her partner greet? Hint: Describe a graph that models the situation. Find out how many people did each member of a couple greet. [5]

Veer Surendra Sai University of Technology, Burla (Univ.)

Mid-Semester Examination 2017

Subject: **Operating System (CS15-026)**	Time: **2hr**
Branch: **CSE/IT (5th Semester)**	Full Mark: **20**

*Answer **Any four**-question **including question number 1.***

[1X5=05]

1.	A.	What is starvation?
	B.	What are the differences between parallel system and distributed system?
	C.	What is starvation and how to overcome from it?
	D.	What is multiprocessor ? What are the main advantage of multiprocessor?
	E.	Differentiate between pooling, buffering and spooling?

[2X2.5]

2.	A.	What is operating system? Describe various component of operating system ?
	B.	What is PCB? What is the need of PCB during context switching explain with diagram?

[2X2.5]

3.	A	What is process? Describe the state diagram of process?
	B.	What is thread? How thread is different from processor?

[2X2.5]

4. A. What is scheduler? Explain different types of scheduler?

B. Consider following set of processes with burst time in millisecond.

Process	Burst time	Arrival Time
P1	20	6
P2	15	4
P3	5	0
P4	10	20

Find out average turnaround time and average waiting time using RR scheduling with quantum time= 4ms?

[2X2.5]

5. A. What is deadlock? Explain the necessary condition for deadlock?

B. Consider the following snapshot of a system:

1. Find the safe sequence using banker's algorithm?

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Mid-Semester Examination 2017

Subject: **Microprocessor and Microcontroller (CS15-021)**			Time: 2hr
Branch: **CSE/IT (5th Semester)**			Full Mark: 20
*Answer **Any four** question **including question number 1.***			
1.	A.	What is the function of IO/M signal in the 8085?	[1X5=05]
	B.	What are the differences between microprocessor and microcontroller ?	
	C.	What is bus? What are the different types of bus?	
	D.	What is LDA, LDAX, STA, RAR?	
	E.	What is T state? Find number of T state for an instruction MVI B, 88H?	
2.	A	Describe the pin diagram of 8085 microprocessor?	[2X2.5]
	B.	Draw a timing diagram for MOV A, D?	
3.	A	Explain different types of addressing mode with suitable example?	[2X2.5]
	B.	What is interrupt? What are the different types of interrupts?	
4.	A.	What is PSW? Explain various flag of PSW?	[2X2.5]
	B.	Write an assembly language program to find 2's complement of a number using 8085? Define PSW after the completion of 2's compliment?	
5.	A.	Write an assembly language program to two 8-bit number and store the result as 16-bit number if there is a carry?	[5]

All The Best