**COA 303.1** **Reg.No. ……**

**CREDIT BASED THIRD SEMESTER B.C.A. DEGREE EXAMINATION**
**OCTOBER 2012**
**B.C.A**

**SOFTWARE ENGINEERING**

**Time: 3 Hrs** **Max. Marks: 120**

**PART – A**

**1. Answer any 15 questions from the following: 15x2=30**

a. Give the IEEE definition for a software.

b. Define functionality and portability of a Software.

c. What is data dictionary?

d. What do you mean by work products?

e. Mention any two advantages of Iterative enhancement model.

f. What do you mean by Error report?

g. Write the components of SRS.

h. What is a module?

i. What is corrective maintenance?

j. Mention the two approaches of prototyping.

k. Differentiate between validation and verification.

l. Define Abstraction.

m. What do you mean by single entry and single exit property of a structured programming?

n. What is Black-Box Testing?

o. Define comments.

p. What is Test Oracle?

q. What is the purpose of code inspections?

r. What do you mean by Data Flow diagram?

**PART – B**

**Answer any TWO questions from each unit:**

**UNIT – I**

**2.** a. Explain Software Engineering problem.
b. Explain the Software configuration management process.
c. Explain prototyping model. **(6+5+4)**

**3.** a. Explain the various attributes for quality of a software.
b. Explain the waterfall model with a neat diagram.
c. Explain the activities of project management process. **(4+6+5)**

**4.** a. Explain the characteristics of a software process.
b. Explain the spiral model.
c. Explain the phased development process. **(6+4+5)**

**UNIT – II**

**5.** a. Explain the need of an SRS.
b. Explain the several levels of cohesion.
c. List and explain the different symbols used in DFD. **(4+6+5)**

**6.** a. Explain the characteristics of an SRS.
b. What is coupling? What are the factors affecting coupling?
c. Explain the Structure Charts. **(6+5+4)**

**7.** a. With a neat diagram, explain the activities in the Requirement process.
b. Explain PDL with the help of an example.
c. Write a note on Validation of SRS.
**(6+6+3)**

**UNIT – III**

**8.** a. Explain the rules to be followed in writing a program.
b. Explain the cause-effect graphing with the help of an example.
c. Explain Data Flow based Testing **(5+6+4)**

**9.** a. Explain the concept of structured programming.
b. Explain the significance of Symbolic Execution.
c. Write a note on Equivalence class participation. **(5+5+5)**

**10.** a. Define Error, fault and failure.
b. Explain the information hiding.
c. Describe the static analysis as a technique for verification. **(6+3+6)**

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CREDIT BASED THIRD SEMESTER B.C.A. DEGREE EXAMINATION
OCTOBER 2013
B.C.A
SOFTWARE ENGINEERING

**Time: 3 Hrs** **Max. Marks: 120**

## PART – A

**1. Answer any 15 questions from the following:** **15x2=30**

a. Give the IEEE Definition of software.

b. Define corrective mentainance and adaptive mentainance.

c. What is prototyping?

d. Define architectural design and high level design.

e. What do you mean by predictability of a process?

f. Mention any four software quality attributes.

g. Mention four types of errors with respect to SRS.

h. Define transaction analysis.

i. Which are the two types of prototyping approaches?

j. Define process with respect to Data Flow Diagram. What is the symbol used to represent it?

k. What is PDL?

l. Define factoring. What do you mean by completely factored system?

m. What is Test oracle?

n. What is Black Box Testing?

o. Define comments.

p. Define the terms fault and failure.

q. What do you mean by information hiding?

r. What is the purpose of code inspections?

## PART – B

**Answer any TWO questions from each unit:**

### UNIT – I

**2.** a. Explain any three software engineering problems.

b. Write a note on Spiral Model.
c. Explain process management system. **(6+5+4)**

**3.** a. Explain the different levels of Capability Maturity Model.
b. Write the desired characteristics of a software process and explain.
c. Write any four advantages of water fall model. **(6+5+4)**

**4.** a. Explain the different steps involved in phased development process.
b. Which are the different steps involved in change development process.
c. Differentiate between student software and industrial strength software.
**(6+5+4)**

## UNIT – II

**5.** a. Which are the three basic tasks involved in Requirement Process? Explain.
b. Explain the different levels of cohesion.
c. Differentiate between DFD and flowchart. **(6+5+4)**

**6.** a. Explain the four major steps involved in structure methodology.
b. Why is the validation of SRS required? Explain.
c. Compare cohesion with coupling. **(6+5+4)**

**7.** a. Explain any three characteristics of an SRS.
b. Write a short note on structure of DFD.
c. What are the four design constraints? Explain. **(6+5+4)**

## UNIT – III

**8.** a. Write a short note on unit testing.
b. Compare White Box Testing with Black Box Testing.
c. Explain control flow based criteria. **(6+5+4)**

**9.** a. Explain any six commonly used programming practices.
b. Describe the static analysis as a technique for verification.
c. Explain data flow based testing. **(6+5+4)**

**10.** a. Write a note on White Box Testing.
b. Explain bottom-up programming approach with the help of an example.
c. Explain Boundary Value Analysis. **(6+5+4)**

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COA 303.1 Reg.No. .....

CREDIT BASED THIRD SEMESTER B.C.A. DEGREE EXAMINATION
OCTOBER 2014
B.C.A
SOFTWARE ENGINEERING

Time: 3 Hrs Max. Marks: 120

PART – A

1. Answer any 15 questions from the following: 15x2=30

a. Give the IEEE definition for a software.

b. Define two types of metrics.

c. What do you mean by software maintenance?

d. What is capability maturity model?

e. Define Design Methodology.

f. Mention any four software quality attributes.

g. What is Data Dictionary?

h. Differentiate between throwaway and evolutionary approaches of prototyping.

i. What does a DFD represent?

j. Define structured analysis.

k. Explain stepwise refinement technique.

l. Define most abstract input data elements and most abstract output data element.

m. What are the two limitations of static analysis?

n. Define the terms fault and failure.

o. What is the drawback of equivalence class partitioning?

p. Define comments

q. What do you mean by Error Report?

r. What is the purpose of Code Inspections?

## PART – B

**Answer any TWO questions from each unit:**

### UNIT – I

**2.** a. Explain any three software engineering challenges.
b. Write a short note on Iterative model.
c. Explain the different steps involved in change management process. **(6+5+4)**

**3.** a. Differentiate between waterfall model and spiral model.
b. Explain the different attributes of software quality.
c. What are the different components of software process? **(6+5+4)**

**4.** a. Explain the activities of project management process.
b. What is the functionality that a project requires from CM processing?
c. Explain software configuration management process. **(6+5+4)**

### UNIT – II

**5.** a. What are the needs for SRS? Explain.
b. Explain the different symbols used in DFD, with their notation.
c. Explain the structure chart with the help of an example. **(6+5+4)**

**6.** a. Which are the basic tasks involved in Requirement process?
b. Explain the different steps involved in developing an algorithm.
c. Explain two modularization criteria. **(6+5+4)**

**7.** a. Explain PDL with the help of an example.
b. What is coupling? What are the factors affecting coupling?
c. "An SRS establishes the basis for agreement between the client and the supplier. Justify the statement. **(6+5+4)**

### UNIT – III

**8.** a. Mention and explain any six common coding errors.
b. Write a short note on Black Box Testing.
c. Explain Boundary Value Analysis. **(6+5+4)**

**9.** a. How is the Data flow based Testing performed? Explain.
b. Explain the technique used in Equivalence class partitioning.
c. What are the major points to be considered while selecting the test cases for a system? **(6+5+4)**

10. a. Explain the mechanism involved in Test Oracles.
    b. Explain the significance of Symbolic Execution.
    c. What do you mean by information hiding? **(6+5+4)**

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COA 303.2 **Reg.No.** .....

CREDIT BASED THIRD SEMESTER B.C.A. DEGREE EXAMINATION
OCTOBER 2015
B.C.A
OPERATING SYSTEMS

**Time: 3 Hrs** **Max. Marks: 120**

PART – A

1. **Answer any 15 questions from the following:** **15x2=30**
    a. Define operating system.
    b. Differentiate between a process and a program.
    c. Mention any two activities with respect to process management.
    d. Define context switch.
    e. Define spooling. Mention its benefits.
    f. Write the major problem in priority scheduling.
    g. Define critical section.
    h. Mention two advantages of round robin scheduling.
    i. What is a deadlock state?
    j. Define a binary semaphore.
    k. What is a wait-for graph?
    l. What do you mean by fragmentation?
    m. What is thrashing?
    n. Define execution time.
    o. What do you mean by compaction?
    p. What is a thread?
    q. Differentiate between text file and executable file.

r. Define segmentation.

## PART – B

**Answer any TWO full questions from each unit:**

### UNIT – I

**2.** a. Explain multi-programmed system.
b. Explain the following components of OS
i) I/O system management
ii) File management **(5+10)**

**3.** a. What is a process? Draw the process state diagram and explain the various states of a process.
b. Explain the different multi-threading models.
c. Explain any five operating system services. **(7+3+5)**

**4.** a. Describe the concept of time sharing system.
b. Explain process scheduling with queuing diagram.
c. Explain the benefits of multi-threading. **(5+5+5)**

### UNIT – II

**5.** a. Explain SJF scheduling with an example.
b. What are the necessary conditions for deadlock situation to occur? Explain.
**(10+5)**

**6.** a. Explain briefly preemptive and non-preemptive scheduling.
b. Explain the critical section problem.
c. Explain Resource-Allocation graph with an example. **(5+5+5)**

**7.** a. Explain the following (i) Throughput (ii) Response-time (iii) Turn-around time
b. What is a scheduler? Explain the following
(i) Long term scheduler (ii) Short term scheduler
c. Consider the following set of processes with the length of CPU burst time given in milliseconds.

| Process | Burst Time |
|---|---|
| $P_0$ | 15 |
| $P_1$ | 4 |
| $P_2$ | 10 |
| $P_3$ | 8 |
| $P_4$ | 5 |

**(6+5+4)**

Draw the Gantt chart using Round Robin scheduling with time quantum of 5 milliseconds and find the average waiting time.

## UNIT – III

**8.** a. Explain the tree directory structure with a diagram.

b. Consider the following page reference string:

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

How many page faults would occur for the LRU replacement algorithm assuming three frames.

c. Explain swapping with a neat diagram. **(5+5+5)**

**9.** a. Write a note on file access methods.

b. Explain briefly the concept of paging.

c. Explain first-fit, best-fit and worst-fit storage allocation. **(5+5+5)**

**10.** a. Explain the FIFO page replacement algorithm with an example.

b. Explain any five attributes of a file. **(10+5)**

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COA 303.2 Reg. No. .....

CREDIT BASED THIRD SEMESTER B.C.A. DEGREE EXAMINATION
OCTOBER 2016
B.C.A
OPERATING SYSTEMS

Time: 3 Hrs. Max. Marks: 120

PART – A

1. **Answer any FIFTEEN questions from the following:** 15×2=30
   a. Differentiate between job scheduling with CPU scheduling.
   b. What is a real-time system?
   c. Define race condition.
   d. What is PCB? Mention any four fields of PCB.
   e. Distinguish between a program and a process.
   f. List any two disadvantages of contiguous allocation.
   g. Define context switch.
   h. List out any two services of operating system.
   i. What is deadlock? Give an example for deadlock condition.
   j. Draw a resource allocation graph with a cycle and no deadlock.
   k. Define throughput and turnaround time.
   l. What do you mean by safe state?
   m. Define binary and counting semaphores.
   n. What is circular wait?
   o. Distinguish between a text file and a executable file.
   p. What do you mean by demand paging?
   q. Write the major problem in priority scheduling.
   r. Define virtual memory.

PART – B

**Answer any TWO full questions from each unit:**

UNIT – I

2. a. Explain batch processing system.
   b. Define thread and explain different multithreading models.
   c. What is co-operating process? Write the reasons for allowing process co-operation. **(5+5+5)**

3. a. Explain the following components of OS.
      i) Main memory management
      ii) File management
      iii) Networking
   b. With a neat diagram explain the different states of a process. **(10+5)**

4. a. Explain process scheduling with queuing diagram.

b. Explain the benefits of multithreading.
c. What is multi programmed system? What are the advantages of multi programmed system. **(5+5+5)**

## UNIT – II

**5.** a. Explain priority scheduling with an example.
b. Write note on ay two classical problems of synchronization. **(7+8)**

**6.** a. Consider the following set of process the length of CPU-burst time given milliseconds.

| Process | Burst time | Arrival time |
|---|---|---|
| $P_1$ | 6 | 2 |
| $P_2$ | 8 | 1 |
| $P_3$ | 7 | 0 |
| $P_4$ | 3 | 3 |

Draw gantt chart and find average waiting time using SJF scheduling.
b. What are the necessary conditions for deadlock situation to occur? Explain.
c. Explain the following;
i) Long term scheduler
ii) Short term scheduler **(6+5+4)**

**7.** a. Explain deadlock recovery technique.
b. Explain the use of wait for graph in deadlock detection. What is its limitation?
c. Write a short note on preemptive and non-preemptive scheduling. **(5+5+5)**

## UNIT – III

**8.** a. Explain contiguous memory allocation technique.
b. Explain the advantages and disadvantages of paging and segmentation.
c. Consider the following page reference string.
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 6, 1, 7, 0, 1
How many page fault would occur for the above using LRU replacement algorithm, by considering 3 frames? **(5+5+5)**

**9.** a. Explain swapping with a neat diagram.
b. With the help of an example, explain FIFO page replacement algorithm. **(5+10)**

**10.** a. Explain various mechanisms used to protect files.
b. Explain first-fit, best-fit and worst-fit storage allocation.
c. Write a note on demand paging technique. **(5+5+5)**

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