(Please write your Exam Roll No.) Exam Roll No. 06721402013

END TERM EXAMINATION

FOURTH SEMESTER [BCA] MAY- JUNE 2015

Paper Code: BCA-208 **Subject: Software Engineering (Batch 2011 onwards)**

Time: 3 Hours **Maximum Marks: 75**

Note: Attempt any five questions including Q.1 which is compulsory. Select one question from each unit.

Q1 Answer the following question briefly: **(2.5x10=25)**

(a) What do you mean by Protyping?
(b) List out requirements elicitation techniques. Which one is most popular and why?
(c) What is more important: Product or process? Justify your answer.
(d) Differentiate between function point and LOC.
(e) What problem are likely to arise if a module has low cohesion?
(f) What is the importance of language level in Halstead theory of software science?
(g) Discuss the limitations of testing.
(h) What is the difference between Alpha and Beta testing?
(i) What are the various categories of maintenance. Which category consume maximum effort.
(j) Define software Re-Engineering.

Unit-I

Q2. (a) Discuss the prototype model. What is the effect of designing a prototype on the overall cost of the software project. **(6.5)**

(b) Draw 1-level DFD and E-R diagram of hospital management system. **(6)**

Q3. (a) List five desirable characteristics of a good SRS document. Discuss the relative advantages of formal requirement specifications. List the important issues, which an SRS must address. **(6.5)**

(b) Consider the problem of railway reservation system and design the following: **(6)**

(i) Problem statement
(ii) Use case diagram
(iii) Use cases

Unit-II

Q4. (a) What are the various factors of management dependency in software development? Discuss each factor in detail. **(6)**

(b) A project size of 200 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project. Refer "Basic COCOMO coefficients" table below: **(6.5)**

Project	a_b	b_b	c_b	d_b
Organic	2.4	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

Q5. (a) Discuss the various types of COCOMO model. Explain the phase wise distribution of effort. **(6.5)**

(b) The value of size of program in KLOC and different cost drivers are given below:

Size=400KLOC, Complexity=0.85, Analyst capability=1.19, Modern in programming Practices=0.82, Required software reliability=0.75 **(6)**
Calculate the effort, development time, average staff size and productivity of the project using COCOMO model.

Project	a_i	b_i	c_i	d_i
Organic	3.2	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	2.8	1.20	2.5	0.32

Unit-III

Q6. (a) What is modularity? Explain different type of coupling. **(6)**
(b) For a program with number of unique operators n_1=20 and number of unique operands n_2=40, Compare the following.
(i) Program volume (ii) Effort and time
(iii) program length (iv) program level **(6.5)**

Q7. (a) Define Data Structures matrices. How can we calculate amount of data in a program? **(6.5)**
(b) Differentiate between Function oriented design and object oriented design. **(6)**

Unit-IV

Q8. (a) What are the various debugging approaches? Discuss them with the help of examples. **(6)**
(b) Consider a program to determine whether a number is 'odd' or 'even' and print the message NUMBER IS EVEN OR NUMBER IS ODD. The number may any valid integer. Design equivalence class test cases. **(6.5)**

Q9. (a) What is software maintenance? Describe various categories of maintenance. Which category Consumes maximum effort and why? **(6.5)**

(b) Write short note on the following: **(2x3=6)**
(i) Configuration Management
(ii) Documentation

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END TERM EXAMINATION

FOURTH SEMESTER [BCA] MAY-JUNE 2016

Paper Code: BCA-208 ***Subject: Software Engineering***

Time : 3 Hours ***Maximum Marks :75***

Note: Attempt any five questions including Q.No.1 which is compulsory. Select one question from each unit.

Q1 Answer the following: **(2.5x10=25)**

(a) Explain software crisis.
(b) What is a requirement? What is Requirement Engineering?
(c) What is a context diagram?
(d) Define risk.
(e) Why are metrics required in software engineering?
(f) Explain why are the scaling factors used in the early Design Model of COCOMO?
(g) Discuss the role of coupling in modules.
(h) What is the meaning of debugging?
(i) Differentiate between Alpha and beta testing.
(j) What is software maintenance?

UNIT-I

Q2 Discuss evolutionary and spiral software development life cycle models explicitly highlighting their merits and demerits. **(12.5)**

Q3 Explain requirements elicitation techniques FAST and QFD in detail. **(12.5)**

UNIT-II

Q4 What are ER diagrams used for? Explain various concepts and steps used in the creation of an ER diagram for an information system. **(12.5)**

Q5 Draw level '0', level '1' and level '2' data flow diagrams for the Library management Information System. **(12.5)**

UNIT-III

Q6 What is a software module? What are the advantages of modular softwares? Discuss various types of cohesions that exist in software modules. **(12.5)**

Q7 (a) What is software measurement? Define the term 'software metric'. Highlight various parameters that need to be measured during the software development process. **(6.0)**

(b) Explain Halstead Software Science Measures. **(6.5)**

UNIT-IV

Q8 Take an example program in 'C' for printing out the greatest of the 3 integers that are input by the user. Show all its 'du' paths as well as those 'du' paths that are not 'dc' paths. **(12.5)**

Q9 (a) What is software maintenance? Explain its various types. **(7.5)**

(b) Explain software configuration. What is its significance? **(5.0)**

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END TERM EXAMINATION

FOURTH SEMESTER [BCA] MAY 2017

Paper Code: BCA-208 ***Subject: Software Engineering***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt any five questions including Q no.1 which is compulsory. Select one question from each unit.

Q1 (a) What is the aim of software engineering? **(10x2.5=25)**
(b) Provide three examples of software projects that would be amenable to the prototyping model.
(c) Describe 'feasibility study'.
(d) What is estimation?
(e) What is the difference between 'Deliverable and 'Milestone'?
(f) What is cyclomatic complexity?
(g) What is the difference between flow chart and structure chart?
(h) Define Data structure metrics.
(i) Differentiate between Alpha and Beta testing.
(j) What is the need for Re-engineering?

UNIT-I

Q2 (a) What is software life cycle? Discuss generic waterfall model. **(6)**
(b) Compare iterative enhancement model and evolutionary enhancement model **(6.5)**

Q3 (a) Draw two level DFD for library management system. **(6)**
(b) Draw E-R diagram library management system. **(6.5)**

UNIT-II

Q4 (a) Describe the role of management in software development with the help of examples. **(4)**
(b) Difference between product, process and project. **(4)**
(c) What are various factors of management dependency in software development? Discuss each factor in detail. **(4.5)**

Q5 (a) Is it possible to estimate software size before coding? If so, how? **(3)**
(b) What are size metrics? How is function point metric advantageous over LOC metric? Explain. **(5)**
(c) What is risk? What are the risk management activities? Is it possible to prioritize the risk? **(4.5)**

UNIT-III

Q6 (a) What are different types of coupling? Give one example of each type. **(4)**
(b) List out the components of 'software Design' document. **(4)**
(c) Discuss different types of object oriented and function oriented design. **(4.5)**

Q7 (a) How does software metric can improve the software process? Enumerate the effect of metric on software productivity. **(4)**
(b) Which one is the most appropriate size estimation technique and why? **(4)**
(c) Define and explain data structure metrics. **(4.5)**

UNIT-IV

Q8 (a) Explain all the steps of cause effect graphing test case design technique with the help of diagram. **(4.5)**
(b) With the help of an example for each, explain following testing- **(8)**
(i) Condition testing
(ii) Loop testing

Q9 (a) What is debugging? Discuss various debugging techniques. **(4.5)**
(b) Discuss various problems during maintenance. Describe some solutions to these problems. **(4)**
(c) Explain boehm's maintenance model with the help of a diagram. **(4)**

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END TERM EXAMINATION

FOURTH SEMESTER [BCA] MAY 2018

Paper Code: BCA-208 ***Subject: Software Engineering***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt five questions in all including Q.no.1 which is compulsory. Select one question from each unit.

Q1 Answer the following questions briefly: **(2.5x10=25)**

(a) What is software crisis? Was Y2K a software crisis.
(b) Distinguish between generic and customized software product. Which one has larger share of market and why?
(c) What are the characteristics of a good SRS?
(d) Describe any two software size estimation techniques.
(e) Define module cohesion and list down various types of cohesion.
(f) What are the various categories of software metric?
(g) What are the crucial process steps of requirement engineering? Discuss with the help of a suitable diagram.
(h) What are the different levels of testing?
(i) What are the various categories of software maintenance?
(j) What do you mean by Regression testing?

Unit-I

Q2 (a) Explain the spiral model of software development with the help of a diagram. What are the limitations of such a model? **(5)**

(b) Consider the problem of University Result Management System and design the following: **(7.5)**
(i) Use Case Diagram
(ii) Level-1 DFD
(iii) ER Diagram

Q3 (a) What is facilitated application specification technique (FAST) and compare this with brainstorming sessions. **(2.5)**

(b) List out the merits and demerits of various SDLS models. **(10)**

Unit-II

Q4 (a) What are the risk management activities? Is it possible to prioritize the risk? **(5)**

(b) Compare the Walston-Felix model with the SEL model on a software development expected to involve 8 person-years of effort. **(7.5)**
(i) Calculate the number of lines of source code that can be produced.
(ii) Calculate the duration of the development.
(iii) Calculate the productivity in LOC/PY.
(iv) Calculate average manning.

Q5 (a) Describe the role of management in software development with the help of examples. **(5)**

(b) Suppose that a project was estimated to be 600 KLOC. Calculate the effort, development time, average staff size and productivity for each of the three modes i.e. organic, semidetached and embedded. **(7.5)**

P.T.O.

Project	a_b	b_b	c_b	d_b
Organic	2.4	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

Unit-III

Q6 (a) Describe the various strategies of design. Which design is most popular and practical? **(6)**

(b) For a program with the number of unique operators $n_1 = 40$ and number of unique operands $n_2 = 60$, compare the followings: **(6.5)**

(i) Program Volume
(ii) Potential Volume
(iii) Program level
(iv) Program Difficulty
(v) Effort
(vi) Time

Q7 (a) Write a short note on the following terms: **(6)**

(i) Liver variables
(ii) Module weakness

(b) Describe the following terms: **(6.5)**

(i) Objects
(ii) Messages
(iii) Abstraction
(iv) Class
(v) Inheritance
(vi) Polymorphism

Unit-IV

Q8 (a) Discuss the structural testing. How is it different from functional testing? **(6)**

(b) Write a short note on the maintenance process with a suitable diagram. **(6.5)**

Q9 (a) Briefly discuss the following: **(6.5)**

(i) Test case design and test suite
(ii) Verification and Validation
(iii) Alpha, Beta and Acceptance testing

(b) Write short note on the following: **(6)**

(i) Re-engineering
(ii) Reverse Engineering

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END TERM EXAMINATION

FOURTH SEMESTER [BCA] JULY 2023

Paper Code: BCA-204 ***Subject: Software Engineering***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.

Q1 Answer the following questions briefly: **(5x5=25)**

a) What are the characteristics of software?
b) What is software re-engineering?
c) Write short notes on DFD and ER diagrams.
d) What is software review and software inspection?
e) What is the difference between validation and verification?

UNIT-I

Q2 a) What do you mean by requirements elicitation? Discuss in brief different requirements elicitation techniques. **(6)**

b) Explain Agile Model with its advantages and disadvantages? **(6.5)**

OR

Q3 a) Draw and label well described Use Case Diagram and level 1 DFD for hotel management system. Make assumptions as required. **(6)**

b) What is SRS? Describe the nature and characteristics of SRS. Why is it important? **(6.5)**

UNIT-II

Q4 a) Explain Halstead Software Science metrics? **(6)**

b) Compute the function point value for a project with the following domain **(6.5)**

Number of user inputs	=	32
Number of user outputs	=	60
Number of user inquiries	=	24
Number of files	=	08
Number of external interfaces	=	2

629.8

Assume that all complexity adjustment values are average. Assume that 14 algorithms have been counted.

OR

Q5 a) For a program with the number of unique operator's n1=40 and number of unique operands n2=60, N1=16 and N2=21 compare the followings: **(6)**

i) Program Volume
ii) Potential Volume
iii) Program Level
iv) Program Difficulty
v) Effort
vi) Time

b) Explain different models of COCOMO Model. **(6.5)**

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BCA-204
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UNIT-III

Q6	a)	Explain different types of coupling.	**(6)**
	b)	Explain software quality assurance and its activities.	**(6.5)**

OR

Q7	a)	Explain different types of Cohesion.	**(6)**
	b)	What do you understand by Configuration Management?	**(6.5)**

UNIT-IV

Q8	a)	What is software maintenance? Describe different categories of software maintenance.	**(6)**
	b)	Explain Functional Testing with example.	**(6.5)**

OR

Q9	a)	Explain maintenance tools and its techniques	**(6)**
	b)	Explain Structural Testing using example.	**(6.5)**

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