



Scott Christian UNIVERSITY

SCHOOL OF PROFESSIONAL STUDIES

BACHELOR OF INFORMATION COMMUNICATION TECHNOLOGY /BACHELOR OF BUSINESS INFORMATION TECHNOLOGY

UNIT CODE/NAME: BCT 414/BBIT 313: SOFTWARE ENGINEERING

September- December 2019/2020 End Semester Exam - Time: 2 Hours

Instructions: Answer Question ONE (Compulsory) and any other TWO questions.

QUESTION ONE

- a) Differentiate between
 - i. S – type and E – type software (2 Marks)
 - ii. Usability and Reusability (2 Marks)
 - iii. Interoperability and adaptability (2 Marks)
- b) Explain the need of having a project scope (4 Marks)
- c) Software maintenance costs are influenced by a number of technical and non-technical factors. Some of the factors are: module independence, programming style, documentation, staff stability, hardware stability, and software age.
Which of the above factors is a software engineer able to control when developing new software? For each of these 'controllable' factors, explain how a software engineer would attempt to minimize future maintenance costs. (6 Marks)
- d) Explain how a software project manager would estimate and measure the software development productivity of a team. (6 Marks)
- e) Discuss TWO aspects of the requirements engineering process and assess their usefulness in capturing, specifying, and communicating requirements throughout the software lifecycle. (8 Marks)

QUESTION TWO

- a) Software project management is very important. Explain THREE reasons for the importance of software project management (6 Marks)
- b) Discuss and evaluate the Work Breakthrough Structure (WBS) as a method of Time estimation in Software Development (4 Marks)
- c) Describe the following:
 - (i) Software maintenance (1 Mark)
 - (ii) Project scheduling (1 Mark)
- d) Explain the size oriented and functional oriented metrics in context of software development productivity estimation (3 Marks)

QUESTION THREE

- a) A large software house has been asked to supply a computerized solution for a business. The project manager has drawn up a list of activities and their likely duration.

Activity	Description	Predecessor	Weeks to complete
A	Write project specification	None	5
B	Produce program design	A	5
C	Write module code	B	15
D	Module Testing	C	10
E	Integration testing	D	5
F	Alpha testing	E	3
G	Install software and acceptance testing	F, E	5
H	Write end user testing guide	G	5
J	Write technical documentation	J	10
K	End user training	G	4
L	Sign off final system	K	1

The project manager decides to construct a Program Evaluation Review Technique (PERT) chart from this data.

- Implement a network diagram that can help the project manager (5 Marks)
 - Evaluate the project duration (2 Marks)
 - Determine the Critical path (2 Marks)
 - Identify the critical activities in the project (2 Marks)
- b) Describe the four main stages of requirement engineering process and state deliverable under each of the phase (4 Marks)

QUESTION FOUR

- Software design deals with bringing the ideological concept of a software into life. Briefly discuss THREE levels of system design (6 Marks)
- Entity Relationship diagram is one of the tools used in Analysis and Design of a software system. Briefly explain how cardinalities are mapped to define associations between two entities. (3 Marks)
- What is the Objective of Architectural Design? (2 Marks)
- Describe any FOUR CASE building blocks (2 Marks)
- What are the Difficulties in Elicitation? (2 Marks)

QUESTION FIVE

- Differentiate the following concepts in system design
 - Cohesion and Coupling (2 Marks)
 - Encapsulation and Inheritance (2 Marks)
- Briefly describe FOUR user Interface golden rules (4 Marks)
- Briefly discuss the documents a well maintained documentation should involve (7 Marks)