"Investing in Africa's Future"

COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

NCIS 212: SOFTWARE ENGINEERING

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2022

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DURATION: 3 HOURS

INSTRUCTIONS

Answer the question as per the instructions given in the sections
Start **each** question on a new page on your answer sheet.
Calculator is required for the examination.

The marks allocated to **each** question are shown at the end of the section.

Section A (20 Marks)

Q.1 Choose the correct or the best alternative in the following: (2×10)

i. If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, SRS is said to be

A. correct.
C. consistent.
B. unambiguous.
D. verifiable.

ii. The model in which the requirements are implemented by category is

A. Evolutionary Development Model
C. Prototyping
B. Waterfall Model
D. Iterative Enhancement Mode

iii. In the spiral model 'risk analysis' is performed

A. In the first loop
C. In every loop
B. in the first and second loop
D. before using spiral model

iv. In function point analysis, number of general system characteristics used to rate the system are

A. 10
C. 20
B. 14
D. 12

v. The model that assumes that effort and development time are functions of product size alone is

A. Basic COCOMO model
C. Detailed COCOMO model
B. Intermediate COCOMO model
D. All the three COCOMO models

vi. The problem that threatens the success of a project but which has not yet happened is a

A. bug
C. risk
B. error
D. failure

vii. Software consists of

A. Set of instructions + operating procedures
C. Programs + hardware manuals
B. Programs + documentation + operating procedures
D. Set of programs

viii. Which is not a step of requirement engineering?

A. Requirements elicitation
B. Requirements analysis
C. Requirements design
D. Requirements documentation

ix. Software deteriorates rather than wears out because

A. software suffers from exposure to hostile environments.

B. defects are more likely to arise after software has been used often.

C. multiple change requests introduce errors in component interactions.

D. software spare parts become harder to order.

x. What are the three generic phases of software engineering?

A. Definition, development, support

B. What, how, where

C. Programming, debugging, maintenance

D. Analysis, design, testing

Section B (40 Marks)

Q2. Answer any Five questions from Section B. (8×5=40)

a. Software doesn't "wear out"- Explain this comparing with hardware.
b. Explain iterative waterfall and spiral model for software life cycle and discuss various activities in each phase.
c. An application has the following : • 10 low external inputs, • 12 high external outputs • 20 low internal logical files • 15 high external interface files, • 12 average external inquiries and a value of CAF of 1.10. What are unadjusted and adjusted FP counts?
d. Suppose that a project was estimated to be 400 KLOC. Calculate the effort and development for each of the three modes i.e. organic, semidetached and embedded.
e. What do you mean by W^5HH of project management? What is the difference between Verification and Validation?
f. What are reactive and proactive risk in software engineering? Explain with examples.

Section C (40 Marks)

Q3. Answer any two questions from Section C. (20×2=40)

a) Consider a project to develop a full screen editor. The major components identified and their sizes are (i) Screen Edit – 8K (ii) Command Lang Interpreter – 4K (iii) File Input and Output – 3K (iv) Cursor movement – 4K (v) Screen Movement – 6K. Assume the Required software reliability is high, product complexity is high, analyst capability is high & programming language experience is low. Use COCOMO model to estimate cost and time for different phases.

Cost Drivers	Very Low	Low	Nominal	High	Very High	Extra High
RELY	0.75	0.88	1.00	1.15	1.40	--
CPLX	0.70	0.85	1.00	1.15	1.30	1.65
ACAP	1.46	1.19	1.00	0.86	0.71	
LEXP	1.14	1.07	1.00	0.95	--	--

Project	a_1	a_2	b_1	b_2
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

	Planning & Requirement	System Design	Detailed Design	Code & Test	Integration Test
Organic Small μ_p	0.06	0.16	0.26	0.42	0.16
Organic Small τ_p	0.10	0.19	0.24	0.39	0.18

b. What do you mean by requirement engineering? What are the various phase of the requirement engineering?

c. What do you mean by Software Risk? Classify all the risk that may occur in the development of the software. What are the steps to manage the risk if occur?

END OF PAPER