COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

NCSE 105: INTRODUCTION TO SOFTWARE ENGINEERING

END OF SECOND SEMESTER EXAMINATION

APRIL 2022

LECTURER: DR. YOGESH AWASTHI

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 (60 Marks)

Q1. Answer any six questions from Section A. (10×6=60)

a. The software doesn't "wear out"- Explain this compared 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. Difference between functional and non-functional requirements.

e. 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.

f. What do you mean by W^5HH of project management? What is the difference between Verification and Validation?

g. What is reactive and proactive risk in software engineering? Explain with examples.

Section B (40 Marks)

Q2. Answer any two questions from Section B. (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 phases of requirement engineering?

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

END OF PAPER