
NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCE
COMPUTER SCIENCE DEPARTMENT
JUNE EXAMINATIONS 2004

SUBJECT: SOFTWARE ENGINEERING CONCEPTS
CODE: SCS1205

INSTRUCTION TO CANDIDATES

Answer any five questions
Each question carries 20 marks

Time: 3 hours

QUESTION ONE

- a) Explain the meaning of the following terms as they are used in software engineering;
- i) methodology
 - ii) black box
 - iii) heuristic
 - iv) interface
 - v) model
- [10]
- b) Outline the seven major phases of SDLC. [7]
- c) Briefly describe the COCOMO model , and state its weaknesses. [3]

QUESTION TWO

- a) With the help of diagrams compare and contrast the fountain model, the Waterfall model and the v-process model. [20]

QUESTION THREE

- a) An employee file contains several records of employees. An employee is either female or male. All female employees who are over 50 years and have been with the company for more than 25 years are to be selected and printed.

Draw a JSP data structure for the above narration. [6]

- b) Explain what is meant by functional decomposition. [4]
- c) Write brief notes on "code generators". Give two examples of these. [6]
- d) State any for attributes of a good software product. [4]

QUESTION FOUR

- a) Outline the phases of ;
 - i) top-down tesing
 - ii) bottom-up testing [10]
- b) Explain why analysts prefer top-down over bottom up. [2]
- c) Distinguish between:
 - i) encapsulation and abstraction [2]
 - ii) stub and driver [2]
 - iii) coupling and cohesion [2]
 - iv) fan-in and fan-out [2]

QUESTION FIVE

- a) In structured software development, we can adopt formalized approaches such as phased-implementation.
 - i) Describe the concept of incremental approach and state its phases.
 - ii) Explain why this approach is commonly known as step-wise refinement. [10]
- b) State and briefly explain the general assumptions for software development based on **reusable components**. [5]
- c) Explain briefly what is known as software bottleneck. [5]

QUESTION SIX

a) Define the following terms as they are used in project management:

- i) dummy activities
- ii) slack time
- iii) event
- iv) forward pass rule
- v) backward pass rule

[5]

b) The activities in the following table describe the production of a software product.

ACTIVITY	PREDECESSOR	DURATION
A	-	1
B	-	2
C	A	1
D	C	6
E	B,C	10
F	D	3
G	F	1
H	G	7
I	F	5
J	E,H	2
K	I	1
L	F,J	2
M	F	4
N	L,M	2
O	G,J	2
P	O	1
Q	I,P	7
R	P	7
S	I,N	7
T	S	3

i) Construct the associated project network. [10]

ii) Determine the critical path for the project duration. [5]

END OF QUESTION PAPER



GOOD LUCK!