



**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**

**FACULTY OF SCIENCES**

**COMPUTER SCIENCE DEPARTMENT**

**2022\_1 EXAMINATIONS**

**COURSE CODE: CIT 308**

**Credit: 3 units**

**COURSE TITLE: FORMAL METHODS AND SOFTWARE DEVELOPMENT**

**TIME ALLOWED: 2½ Hours**

**INSTRUCTION: Answer Question 1 and any other THREE (3) Questions**

1a) User Interface is an important part of any computer system. What are the qualities that make a user interface acceptable? **5 marks**)

b) Identify any six user interface requirement. **(3 marks)**

c) Distinguish between Software Metrics and software measures **(3 marks)**

d) Give six characteristics of a complete Software Requirement Specifications. **(3 marks)**

e) In the context of software development, what do you understand by the term Modularization? **(2 marks)**

g) What are the conditions for a 'formal system' to be considered as a logic? **(5 marks)**

h) If p and q are arbitrary propositions,

i) define the biconditional of p and q. **(2 marks)**

ii) Give the truth table for the biconditional of p and q. **(2 marks)**

2a) Briefly describe any four software metrics. **(8 marks)**

b) State seven reasons for the use of Formal Methods in software development? **(7 marks)**

3a) What is requirement elicitation? **(2 marks)**

b) Depict Requirement Elicitation Process with an illustrative diagram and briefly explain each component of your diagram. **(8 marks)**

c) Define software Requirement Engineering. **(1 mark)**

d) List the steps involved in Requirement Engineering Process. **(4 marks)**

- 4a) What is the goal of requirement engineering? (*1½ marks*)
- b) Software design yields three levels of results. Discuss them. (*7½ marks*)
- c) Interviews as one of the techniques for requirement elicitation are strong medium to collect requirements. Enumerate six types of interviews an organization may conduct. (*6 marks*)
- 5) When a software is modularized, there exist measures by which the quality of a design of modules and their interaction among them can be measured.
- a) Name them. (*1 mark*)
- b) Define each measure. (*5 marks*)
- c) Enumerate three types of each. (*9 marks*)
- 6a)** What is a Data Flow Diagram (DFD). (*3 marks*)
- b) Enumerate the types of DFD. (*4 marks*)
- c) Briefly describe the components DFD (*8 marks*)