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MAIN EXAMINATION

JANUARY – APRIL 2015 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

REGULAR PROGRAMME

CMT 311: FUNDAMENTALS OF SOFTWARE ENGINEERING

Date: APRIL 2015	**Duration: 2 Hours**
Instructions: Answer Question ONE and any other TWO Questions.	

Q1. a) Provide the meaning of the following items. How will each factor affect maintenance effort?

i) Programming language **(3 marks)**
ii) Module cohesion **(3 marks)**
iii) Module coupling **(3 marks)**
iv) System documentation **(3 marks)**

b) With the help of a diagram, explain the stages through which software goes during its life time. **(8 marks)**

c) In terms of application, differentiate between the following;

i) Fortran and Prolog **(2 marks)**
ii) C and Ms Access **(2 marks)**

d) Explain any three advantages of outsourcing IT services. **(6 marks)**

Q2. a) Why are editor diagnostic facilities of compilers dependent on the language. Justify your answer by comparing two languages known to you. **(8 marks)**

b) Discuss the role of the following in program development

i) Text editor **(4 marks)**
ii) Compiler **(4 marks)**
iii) Application Generator or 4GL. **(4 marks)**

Q3. a) What do we mean by software process model?

(2 marks)

b) The quality of software depends on the standard of its documentation. List and explain any six items of documentation that should be produced for a software product.

(12 marks)

c) Software requires maintenance during its normal life cycle. What do we mean by the following:

i) Corrective maintenance **(2 marks)**
ii) Perfective maintenance **(2 marks)**
iii) Adaptive maintenance **(2 marks)**

Q4. a) A school has developed a program to compile statistics of student attendance using data gathered daily. It is hoped that the system can be used in other schools.

i) How may the software developers build in such portality?

(4 marks)

ii) Why is it important to document the testing of such a system?

(4 marks)

b) Explain Alpha and Beta testing in software validation.

(4 marks)

c) Structured programming improves the quality of programs in several ways. Suggest and explain any four objectives of any program design methodology.

(8 marks)

Q5. a) What do we mean by prototyping?

(2 marks)

b) With the help of a flow chart, explain the four-step prototyping model of software development.

(6 marks)

c) i) Explain any two advantages of the prototyping model.

(4 marks)

ii) Explain any two disadvantages of the prototyping model.

(4 marks)

d) What do we mean by the following items

i) Recursion **(2 marks)**
ii) Malleability **(2 marks)**

END