No. of Printed Pages : **2**

Sl. No.

B33-R4 : SOFTWARE ENGINEERING AND CASE TOOLS

NOTE :

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Total Time : 3 Hours **Total Marks : 100**

1. (a) Explain the generic views of software engineering.
(b) What is the use of a data flow diagram ? Explain the important concepts of data flow diagram.
(c) Differentiate between quality assurance and quality control. Are they synonyms ? Justify.
(d) Explain the term Configuration Management.
(e) What are various types of software maintenance ?
(f) Differentiate between failures and faults.
(g) Differentiate between cohesion and coupling. **(7x4)**

2. (a) Explain throw-away prototyping and evolutionary prototyping. Discuss the differences between the two.
(b) How is software design different from coding ?
(c) "Software maintenance" is a bit of a misnomer since software does not wear out nor require lubrication/adjustment. State and explain three distinct tasks that are part of software maintenance. **(6+6+6)**

3. (a) What is Spiral model ? Explain different phase of spiral model. Spiral model is a realistic approach to the development of large-scale systems & software. Justify & explain the model ?
(b) Explain the purpose and procedures for operating a configuration management system. **(9+9)**

4. (a) What is Data Dictionary ? What are the objectives of data dictionaries ? Explain types of data items in it.
(b) What are the objectives of software design ? How do we transform an informal design to a detailed design ? **(9+9)**

5. (a) Draw an ER diagram for a Banking System. Clearly indicate the entities, relationships, cardinality and the key constraints. The general things needed in a Banking System are: Person Opens an Account and Person uses ATM for Transaction. The person opens an Account in a Bank and gets a account number and ATM card. The person can make transactions in ATM centers. The details of transaction have to be maintained between three entities. i.e. User, Account, ATM.
(b) Explain the concept of software reusability with example ? Explain main steps of reuse model. **(9+9)**

6. (a) In a system designed to work out the tax to be paid: An employee who has an income up to Thai Baht 150,000 has not to pay tax. If the income is Thai Baht 4,000,001 or more, the tax rate is 37%. Additionally there are following tax rates :

- Income Thai Baht 150,001 to 500,000: Income tax rate: 10%.
- Income Thai Baht 500,001 to 1,000,000: Income tax rate: 20%.
- Income Thai Baht 1,000,001 to 4,000,000: Income tax rate: 30%.

(i) How many Equivalence Classes could be identified ?

(ii) Write down all Boundary Values.

(b) Draw Class diagram for Hospital management system which helps in registering information about patients and handles patient's query. A unique ID is generated for each patient after registration. This helps in implementing customer relationship management and also maintains medical history of patient. This system also monitors the doctor appointments, when the ID is generated the patient receives the appointment time and number from the receptionist and accordingly visit the doctor. This system also deals with testing appointments as and when ID is generated the patient receives the appointment time and number and accordingly undergoes the test. It also deals with bed allotments to various patients by checking their ID. It also undergoes various operations by diagnosing the patients. The system identifies whether the person is a doctor or staff and handles various activities such as draw salary and give salary, also it adds doctor/ staff information into database. This system is responsible for handling various other activities like deleting, editing doctor/staff information into the database. As per doctor diagnoses the patient is given treatment and suggestions and prescribed laboratory tests and medicines. This system also takes care of medical equipment, doctor visit, vitals recording, patient case sheet, diet ordering, blood requisition, transfer information and discharge information, maintenance of wards, inter and intra wards transfers also it generates patient's discharge summary which includes patients health at the time of discharge, medical history, various diagnosis and drug prescriptions, history of patients illness and course in hospital. Patient can pay bill through credit card, cash or cheque whose information is maintained by this system. **(6+12)**

7. (a) What is CMM ? Describe its levels & compare it with ISO 9001 ?

(b) List and explain different types of testing done during the testing phase. **(9+9)**

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