

BENGAL ENGINEERING AND SCIENCE UNIVERSITY, SHIBPUR

B. E. 7th SEMESTER (IT) FINAL EXAMINATIONS 2012

Software Engineering (IT-701)

Full Marks: 70

Duration: 3 Hours

Answer any five questions. Write to the point answer.

- 1. 3+(3+2)+6**
- a) Explain why it is not prudent to use the iterative model for developing very large software products?
- b) Under what circumstances is it beneficial to construct a prototype? Does the construction of a prototype always increase the overall cost of software development?
- c) Explain how a software development effort is initiated and finally terminated in the spiral model.
- 2. 3+(1+2)+5+3**
- a) Why is the SRS document also known as the black-box specification of a system?
- b) What do you understand by the traceability of requirements? Why is traceability important?
- c) Write properly an SRS document for a drinks vending machine.
- d) What do you understand by the layered design of software? What are the advantages of a layered design?
- 3. 4+3+4+3**
- a) Explain with examples the term data abstraction.
- b) What are the three main features of a good software design?
- c) Is it true that whenever you increase the cohesion of different modules in your design, coupling among these modules automatically decreases? Justify your answer by using a suitable example.
- d) Enumerate the different types of coupling that might exist among the modules.
- 4. 3+6+5**
- a) Why every software system must undergo maintenance or progressively become less useful?
- b) Explain the term reverse engineering and its different activities.
- c) What is legacy software product? Explain with example what difficulties are encountered while maintaining a legacy product.
- 5. (4+4)+6**
- a) A supermarket needs to develop the following software to encourage regular customers. For this, the customer needs to supply his residence address, telephone number, and the driving license number. Each customer who registers for this scheme is assigned a unique customer number (CN) by the computer. A customer can present his CN to the check-out staff when he makes any purchase. In this case, the value of his purchase is credited against his CN. At the end of each year, the supermarket awards surprise gifts to 10 customers who make the highest total purchase over the year. Also it awards a 22 carat gold coin to every customer whose purchases exceed Rs. 10,000. The entries against the CN are reset on the last day of every year after the prize winners' lists are generated.

Draw the DFD up to level 2 together with context diagram.

b) Obtain the structure chart from the above drawn DFD.

6. (3+2+4)+5

a) Write a C function for GCD of two integers and then

i) Build the control flow graph (CFG) for your binary search function.

ii) Design a test suite for testing your binary search function.

b) Design the black-box test suite for a function named quadratic solver. It accepts three floating point numbers (a,b,c) representing a quadratic equation of the form $ax^2 + bx + c = 0$. It computes and displays the solution. Print an error message if roots are complex numbers.

7. 3+(2+3)+3+3

a) Write the principle activities of a modern quality system?

b) What do you understand by the total quality management (TQM)? What are the advantages of TQM?

c) What is software quality control (SQC) and software quality assurance (SQA)?

d) Explain briefly the Jelnski-Moranda Model for reliability growth.

8. 4+3+3+4

a) Compare the relative advantages and disadvantages of command language interface and menu-based interface design.

b) What is the difference between a mode based and modeless user interface? What are their relative advantages? Which one would you use for developing the interface of a software product supporting a large number of commands? Justify your answer.

9. Write short notes on any two of the followings:

2 x 7

a) COCOMO Model

b) Mutation Testing

c) Coding process

d) ISO 9001

e) Software Configuration Management