Total No. of printed pages = 6

Co-603/SE/6th Sem/Comp/2017/M

SOFTWARE ENGINEERING

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No.1 and any *four* questions from the rest.

1. (a) State true or false. 1×5=5

(i) Software verification and validation are synonymous.

(ii) A pure top-down integration testing does not require the use of any stub modules.

(iii) The primary purpose of phase containment of errors is to develop an error-free product.

[Turn over

(iv) Function point metric can be used to easily estimate the size of a software product directly from the problem specification.

(v) A module having high cohesion and low coupling is said to be functionally independent of other modules.

(b) Fill up the blanks : $1 \times 5 = 5$

(i) A module is said to be _____ cohesive, if all elements of the module perform similar operation.

(ii) Function point metric overcomes many of the shortcomings of the _____ metric.

(iii) An _____ requirement is one where some of the requirements have been overlooked.

(iv) In a pure bottom-up testing no _____ are required.

(v) In _____ design approach, a system is viewed as something that performs a set of functions.

2. (a) Explain how a software development effort is initiated and finally terminated in the spiral model. Why is it considered to be meta model ? 6+2=8

(b) What problems will a software development organisation face if it does not adequately document its software process ? 3

(c) What is prototype ? What are the major advantages of first constructing a working prototype before developing the actual product ? 1+3=4

3. (a) What is the primary objective of Integration Testing ? Discuss different types of Integration Testing approach. 7

(b) What do you mean by the term cohesion and coupling in the context of software design ? How are these concepts useful in arriving at a good design of a system ? 8

4. (a) List the major responsibilities of a software project manager. 5

(b) Draw the level 1 DFD and corresponding structure chart for a supermarket which needs to develop the following software to encourage regular customers : 5+5=10

In this software first 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 purchase 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.

5. (a) Discuss the main characteristics of a good software design. Define the term Anomaly, Inconsistency and Incompleteness. 4+3=7

(b) Explain broad categories of organisation structure stating their advantages and disadvantages. 8

6. (a) Who are the different categories of users of SRS document ? What are their expectations from the SRS document ? 6

(b) Represent the processing logic of the following problem in the form of a decision table : 9

A Library Membership Automation System needs to support three functions : add-new-member, renew-membership, cancel-membership. If the user requests for any function other than these three, then an error message is flashed. When an add-new-member request is made, a new member record is created and a bill for the annual membership fee for the new member is generated. If a membership renewal request is made, then the expiry date of the concerned membership record is updated and the bill towards annual membership fee is generated. If a membership cancellation request is made, then the concerned membership record is deleted and a cheque for the balance amount due to the member is printed.

7. Write short notes on any *three* : 5×3=15

(i) Scheduling

(ii) Control Flow Graph (CFG)

(iii) Reliability metrics

(iv) Black box testing

(v) Structure chart

(vi) Object Oriented Design

(vii) Organisation structure.