SOFTWARE ENGINEERING

CS 701

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternative –

i) Which are included in the software requirements specification?

a) Error handling
b) Data description
c) Functional description
d) Performance description

ii) The chain of activities that determines the duration of the project is the

a) duration path
b) critical path
c) linearly independent path
d) none of these

iii) An example of single variable heuristic cost estimation model is

a) Halstead' software science
b) basic COCOMO model
c) intermediate COCOMO model
d) complete COCOMO model

iv) Which of the following life cycle models deals with risks associated with software products?

a) Prototyping model
b) Waterfall model
c) Spiral model
d) Incremental model

v) Different phases of risk management are

a) risk identification
b) risk analysis
c) risk monitoring
d) all of these

vi) Which of the following is not indicated on a DFD?

a) Processing
b) Sources
c) Timing
d) Data storage

vii) Which is desirable?

a) High coupling, low cohesion
b) Low coupling, low cohesion
c) High coupling, high cohesion
d) Low coupling, high cohesion

viii) Alpha testing is done by

a) Customers
b) Testers
c) Developers
d) all of these

ix) Software failure rate is highest during

a) Design phase
b) Testing phase
c) Implementation phase
d) Installation phase

x) An integration testing approach, where all the modules making up a system are integrated in a single step is known as

a) top-down integration testing

b) bottom-up integration testing
c) big-bang integration testing
d) mixed integration testing

xi) If the project size is same then development time is maximum in case of
a) Embedded
b) Organic
c) Semi-detached
d) Impossible to determine

xii) Which is NOT a size measure for software?
a) LOC
b) Function point
c) Cyclomatic complexity
d) Halstead's program length

GROUP – B

(Short Answer Type Questions)

2. a) What is feasibility study?
   b) Explain different types of feasibility study.

3. Compare spiral and waterfall model.
4. There are 50 errors estimated to be present in a program. We have experienced 30 errors. Use Jeleski-Moranda model to calculate the failure intensity with a given value of $\Phi = 0.03$. What will be the failure intensity after experience of 40 errors?
5. a) Define software quality?
   b) Briefly explain McCall's quality factors.

6. What are differences between Black box testing and White box testing?
7. Distinguish between physical DFD and logical DFD with examples.

GROUP – C

(Long Answer Type Questions)

8. a) What are the differences between fault, failure and error?
   b) What is formal technical review (FTR)?
   c) A program is expected to have 50 faults. It is also assumed that one fault may lead to one failure only. The initial failure was 2 failures/CPU Hr. The program was to be released with a failure intensity objective of 5 failures/ 100 CPU Hr. Calculate the number of failures before release.
   d) Why is COCOMO called heuristic estimation technique?

9. Suppose that you are project manager of a software project that consists of the following activities:

Activity no.	Activity name	Duration (days)	Immediate predecessor
1	Specification	15	–
2	Design database part	45	1
3	Design GUI part	30	1
4	Code database part	105	2
5	Code GUI part	45	3
6	Integrate and Test	120	4, 5
7	Write User Manual	60	1

Draw the Activity Network Representation of the project and Gantt chart representation of the project.

10. a) What is COCOMO model?
    b) What are the different categories in which a product can be classified based on its development complexity?
    c) Assume that the size of an organic software product has been estimated to be 32,000 lines of source code. Assume that the average salary of each of software engineers is Rs. 15,000 per month. Determine the effort required to develop the software product and the nominal development time.
    d) Explain when to use PERT chart and when to use Gantt chart.

11. a) What do you mean by E-R diagram? What are the steps to draw an E-R diagram?
    b) Draw an E-R diagram of the following:
    Consider a university database for the scheduling of classrooms for final exam. This database could be moduled as single entity set 'exam' with attributes course name, section_number, room_number and time. Alternatively, one or more additional entity set could be defined, along with relationship set to replace some of the attributes of the 'exam' entity set as
    i) Course with attributes name, department and c-number
    ii) Section with attributes s-number, enrolment and dependent as a weak entity set on course.
    iii) Room with attributes r-number, capacity and building.

12. a) Draw a decision table for the following problem:

    The discount policy has following conditions for the customers:
    If customer is 'book store' : Get a trade discount of 25%, if orders for 6 or more copies per book title. If customer is 'libraries and individuals': 5% allowed on order of 6-19 copies per book title 10% on orders for 20-49 copies per book title and 15% on orders for 50 copies or more per book title.
    Develop a process description in decision table and decision tree.
    b) What are the advantages and disadvantages of decision tree?

13. Write short notes on any three of the following –
    a) Spiral Model
    b) Integration and load testing
    c) Structure chart
    d) Data dictionary
    e) CASE