U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

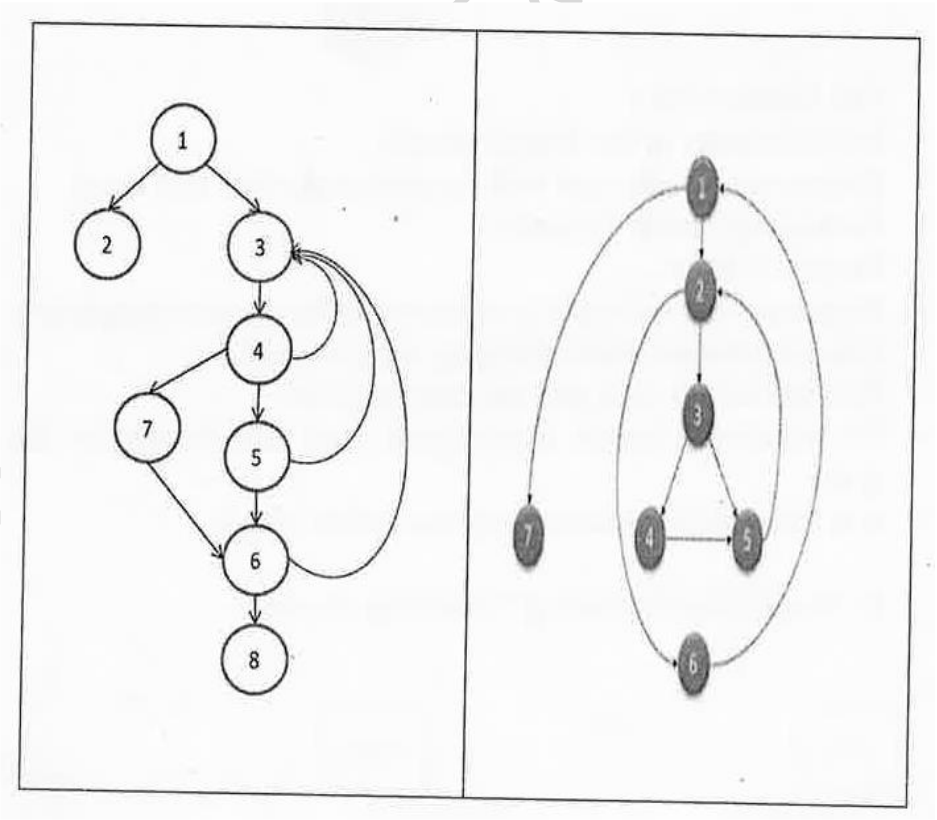
Programme: B.E. **Semester: V**
Branch: Artificial Intelligence and Machine Learning **Duration: 3 hrs.**
Course Code: 22AM5PCSED **Max Marks: 100**
Course: Software Engineering & Design Patterns

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Compare Waterfall Model with V-Model. **6**

b) Predict the values of Cyclomatic complexity for the control flow graph. **4**



c) (i) Consider the Given data below to prepare Gantt chart. **10**
(ii) Identify the difference between Gantt Chart and Pert chart.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

ID	Task
1.	Vision & Strategy
2.	Company Incorporation & Initial Funding
3.	Consider LIMA's IP
4.	Market Research 1
5.	Initial Marketing up to ALCAS open day
6.	2nd Stage Marketing including LVMC
7.	Plan Marketing Strategy
8.	Costing of Services
9.	Initial Cash Flow Analysis - BP1
10.	Market Research 2
11.	Investigate Sources of Funding
12.	Detailed Cash Flow, Profit & Loss etc. - BP2
13.	Finalize Plan with Key Stake Holders
14.	Apply for Funding

UNIT - II

2	a)	Identify the Actors and interpret the Use Cases for a Pay Roll System.	**5**
	b)	Our college hosts Phase Shift with a specific theme every year. Consider the various Events to depict a Class diagram, with suitable notations.	**5**
	c)	Specifying various Functional and Non-functional requirements for forensic cloud Requirements.	**10**

OR

3	a)	Design an Activity diagram that elaborates the details of logging into an E-mail system. Note that entry of the user name and the password can occur in any order.	**5**
	b)	Prepare Sequence diagram for a session with an Online Stock Broker.	**5**
	c)	Consider the purchase of gasoline from an electronic gasoline pump.	**10**

i. prepare a Use-Case diagram. Normally the customer pays cash for a gas purchase. Add extend relationships to handle the incremental behavior of paying by credit card outside or paying by credit card inside. Add an include relationship to represent the optional purchase of a car wash.
ii. list and explain the relevance of each actor.
iii. Summarize the purpose of each use case with a sentence

UNIT - III

4	a)	Compare Alpha Testing with Beta Testing.	**5**

b) Design a Control Flow Graph for the source code provided. Identify the Number of Regions and independent Paths for the same. **5**

```
Procedure TriangleType
 S1  char *returnString = "not triangle\n";
 S2  if (((i + j)> k)&&((j + k)> i)&&((k + i)> j))
 S3     if ((i + j + k) == (3 * i))
 S4        returnString =  "equilateral\n";
        else
 S5        if ((i != j) && (j != k) && (k != i))
 S6           returnString = "scalene\n";
           else
 S7           returnString = "isosceles\n";
           endif
        endif
     endif
 S8  return returnString;
```

c) Peform Boundary Value Analysis for the data mentioned below **10**

1. The Electronic company charges according to the rate schedule

9 cents per kilowatt-hour for the first 300 kilowatt-hour
8 cents per kilowatt-hour for the next kilowatt-hour (upto 600 kilowatt-hour)
6 cents per kilowatt-hour for the next kilowatt-hour (upto 1000 kilowatt-hour)
5 cents per kilowatt-hour for the all electricity used over 1000 kilowatt-hour

Assume that maximym usage can be 2000 kilowatt-hour

a) Which test inputs should be selected using equivalence class partiioning method? Consturct a table showing equivelence paritions the selected input and outputs.
b) Which test inputs should be seelcted using boundary value anyalsis mehtod?

UNIT - IV

5 a) With suitable diagram, describe MVC Architecture Pattern. **5**

b) Discuss Pipes & Filters Pattern. **5**

c) Illustrates the behavior of a Microkernel architecture when an external server requests a service that is provided by an internal server. **10**

OR

6 a) Identify the need to study Design Pattern and discuss Pattern Categories. **5**

b) Define Pattern and list the properties of Patterns. **5**

c) Illustrate the given scenario: Structure distributed systems so that the components communicate via remote service invocation. A broker component coordinates communication of requests from client to server and also coordinates returning the results from server to client. **10**

UNIT - V

7 a) Describe Idioms. Discuss Design patterns and its uses. **5**

b) Provide suitable diagram to explain Publisher-Subscriber in Design Pattern. **5**

c) Explain Structural Decomposition with suitable example. **10**

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