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Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)

B.C.A. (Fourth Semester – Regular/Supplementary) Examinations, April-2026

BCA23404 - Software Engineering



Time: 3 hrs

Maximum: 60 Marks

(The figures in the right hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer ALL questions	CO #	Blooms Level
a. Under what conditions is the V-Model most suitable for software development?	CO1	K1
b. A software team is working on a project with an estimated size of 17,600 LOC. The average productivity of the team is 360 LOC per person-month, and the labour rate (salary) for one developer is \$4,600 per month. Calculate Total Effort, Total Cost of the project & Cost per LOC.	CO2	K2
c. Compare and contrast Functional and Non-functional requirements in software engineering.	CO3	K1
d. What is Software Design Principle?	CO4	K1
e. Write short notes on internal and external views of testing.	CO5	K1

PART – B

(10 x5=50 Marks)

Answer ALL questions	Marks	CO #	Blooms Level
2. a. What is the Incremental Process Model? Illustrate it with a neat diagram showing how software is developed step by step using this model.	6	CO1	K3
b. Explain the different phases of validation in the V-Model of software development.	4	CO1	K2
(OR)			
c. Explain the Prototype Model in detail with a neat diagram. Discuss its phases with advantages & disadvantages.	5	CO1	K3
d. Describe the Classical Waterfall Model in detail with the help of a neat diagram.	5	CO1	K2
3.a. Find out the Effort, time duration & person required for a project for 660 KLOC for all three type of developing mode in the COCOMO Model.	6	CO2	K3
b. List and briefly explain the key activities covered in Software Project Management (SPM).	4	CO2	K1
(OR)			
c. Explain the COCOMO Model in detail. Describe Basic, Intermediate, and Detailed COCOMO models	6	CO2	K2
d. What is Project Estimation in software engineering? Briefly explain its importance and key components.	4	CO2	K2
4.a. Identify various functional and non-functional requirements that may be defined for library management system	8	CO3	K2
b. What is Performance Requirements?	2	CO3	K1

(OR)

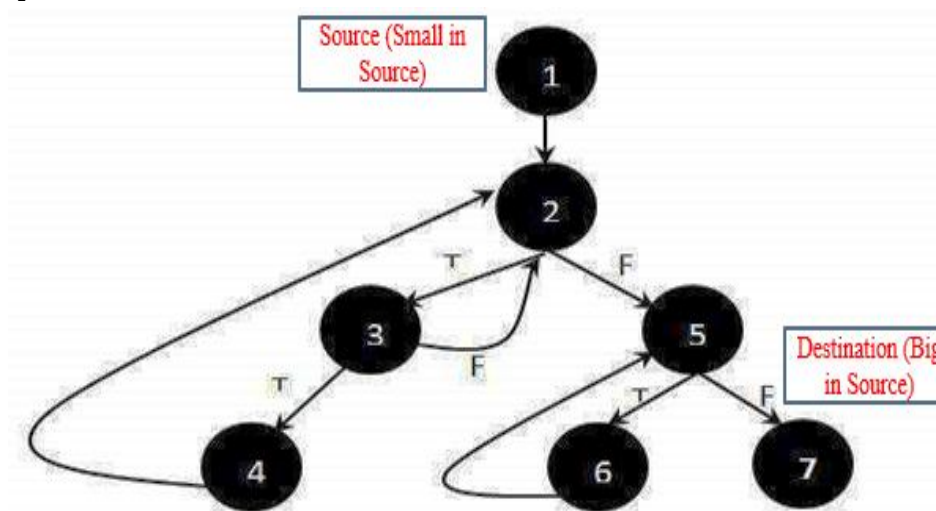
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| c. | Explain the different components of a Software Requirements Specification (SRS) | 10 | CO3 | K2 |
| 5.a. | Describe three different types of Software Design Principles & explain the purpose of each principle. | 5 | CO4 | K2 |
| b. | Explain the concept of coupling in software design, describe the different types of coupling. | 5 | CO4 | K3 |

(OR)

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| c. | What is use case diagram? Design a comprehensive Use Case Diagram for Library Management System. | 5 | CO4 | K3 |
| d. | What is Top-Down & Bottom-up Approach? Explain with an example. | 5 | CO4 | K2 |
| 6.a. | Explain the concepts of Big Bang and Top Down integration testing. | 5 | CO5 | K2 |
| b. | Describe the concepts of Validation Testing and System Testing. | 5 | CO5 | K2 |

(OR)

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| c. | What is Basic-Path Testing? Determine the independent path of the given flow graph from source to destination. | 5 | CO5 | K2 |
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| d. | What is White Box Testing? Write down the advantages of White Box Testing? | 5 | CO5 | K2 |
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