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



B. Tech (Sixth Semester - Regular) Examinations, April 2026

23BCSPS36011– Ethical Software Engineering (CSE)

Time: 3 hrs

Maximum: 60 Marks

Answer ALL questions
(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. Define Software Engineering. How it is different from programming?	CO1	K2
b. What is whistleblowing in software engineering ethics?	CO2	K1
c. Differentiate between Function Oriented Design and Object-Oriented Design with examples.	CO3	K2
d. Define accountability in the context of AI systems.	CO4	K1
e. Give one example of a major ethical failure in a corporation.	CO5	K1

PART – B

(10 x 5 = 50 Marks)

Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. Explain and differentiate between the Basic, Intermediate, and Detailed COCOMO models.	5	CO1	K2
b. Explain the concept of Whistleblowing and its ethical importance. Also discuss the different types of Intellectual Property Rights.	5	CO1	K2
(OR)			
c. Write short notes on any two of the following:			
i. Whistleblowing and its ethical significance	5	CO1	K1
ii. Misrepresentation in software development			
d. Explain the main principles and key rights provided under GDPR.	5	CO1	K2
3.a. Discuss the principles of transparency and accountability in MeitY's AI governance guidelines.	5	CO3	K2
b. Describe different software testing techniques and explain in detail.	5	CO4	K2
(OR)			
c. Elaborate on the ethical issues associated with open-source software development and licensing.	5	CO4	K4
d. Explain how SEI CMM improves software reliability across different maturity levels.	5	CO3	K2
4.a. Discuss the software quality measure cohesion and coupling and its types.	5	CO2	K2
b. Explain the significance of global IT laws in addressing cross-border cybercrime.	5	CO5	K2
(OR)			
c. Explain the Activity Diagram with a neat diagram. Describe its elements.	5	CO2	K2
d. How does job displacement due to automation affect an individual's social standing and job security?	5	CO5	K2
5.a. Explain the three levels of Software Design. Differentiate between them.	5	CO1	K2

b.	Discuss the key provisions of the Digital Personal Data Protection Act (DPDP), 2023 in India.	5	CO2	K2
(OR)				
c.	Explain the concept of Transparency (XAI) and its necessity. Give an example of a scenario where a lack of transparency in an AI system could lead to an ethical problem.	5	CO4	K3
d.	Discuss the Therac-25 case study and highlight the ethical failures involved.	5	CO5	K4
6.a.	A software project of 50 KLOC with an Effort Adjustment Factor (EAF) of 1.10 is developed using both Organic mode ($a=2.4$, $b=1.05$, $c=2.5$, $d=0.38$) and Semi-Detached mode ($a=3.0$, $b=1.12$, $c=2.5$, $d=0.38$) under the Intermediate COCOMO model. The total effort is further distributed across different phases of the Software Development Life Cycle (SDLC) based on the following percentages: Planning & Requirements (6%), System Design (16%), Detailed Design (24%), Coding & Unit Testing (38%), and Integration & Testing (16%). Calculate and compare:	5	CO3	K3
	i. Effort			
	ii. Development time			
	iii. Average Staffing			
	iv. Phase-wise effort distribution			
	v. Justify which mode is more suitable			
b.	Discuss the role of Accessibility in ethical software design. What challenges are faced in implementing accessibility?	5	CO4	K2
(OR)				
c.	Explain the responsibilities of software engineers toward stakeholders with suitable examples.	5	CO3	K2
d.	Describe the core components of an organizational ethics framework.	5	CO4	K2

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