Reg. No

SET B

Faculty of Engineering and Technology — nnai 600026

CYCLE TEST – 03/ APRIL 2025

21GNH101J – Philosophy of Engineering

(For I yr / 02semB.Tech-CSE(E.Tech), ECE & Mechanical)

Date: 23.04.2025 Duration: 90 min. Max.Marks: 50

	COURSE OUTCOMES	PROGRAMME OUTCOMES														
		1 Engg knowledge	2 Problem analysis	3 Design and development	4 Analysis, design	5 Modern tool usage	6 Society & culture	7 Environment	8 Ethics	9 Individual & team work	10 Communication	11 Project mgmt. & finance	12 Lifelong learning	13 PSO-1	14 PSO-2	15 PSO-3
CO-1	Analyze the relation between Arts, Mathematics, Science, Technology and Engineering and desired attributes of an engineer	1	-	-	3	-	1	-	1	3	3	-	3	-	-	-
CO-2	Build ontologies for systems engineering using concept/mind mapping techniques	3	-	-	3	-	-	-	-	3	3	-	3	-	-	-
CO-3	Analyze the knowledge base in engineering, distinctive features of engineering design and RIASEC model	3	-	-	3	-	-	-	-	3	3	-	3	-	-	-
CO-4	Illustrate the engineering design process for the given application, analyze the requirements of CDIO engineers	3	1	2	3	3	-	-	-	3	3	-	3	-	-	-
CO-5	Evaluate designs on their environmental and societal aspects and do organizational analysis on profession engineering organizations	3	3	2	3	-	3	3	3	3	3	-	3	-	-	-

Part – A(11 x 1 = 11 Marks)

Instruction : Answer All

Q. No.	Question	Mark	CO	BL	CL
1	_____ is an instructional Systems Design (ISD) model. A) ADDIE B) Scientific model C) CDIO D) RAISEC	1	4	1	1
2	In _____ phase, instructional problem is clarified, A) the analysis B) the development C) the design D) the implementation	1	4	1	2
3	Enterprise Strategy and regulations is considered in _____ phase of CDIO model. A) Conceive B) Design C) Implement D) Operate	1	4	1	2
4	_____ step can be repeated several times as more prototypes are created and evaluated. A) Refine the design B) develop the design proposal C) Create the solution D) select an approach	1	4	1	4

5	The _____is a series of steps that engineers follow to find a solution to a problem. A) CDIO Engineering B) Operational factors in System design C) Engineering Design Process D) STEAM design	1	4	1	4
6	Creating a prototype comes under which step of ADDIE model A) Analysis B) Design C) Implementation D) Develop	1	4	1	3
7	As members of engineering profession, engineers are expected to exhibit the highest standards of _ _ _ _ _. A) analytical capability B) communication skills C) intellectual capability D) honesty and integrity	1	5	1	6
8	Engineers shall not affix their _ _ _ _ _ to any plans or documents dealing, with subject matter in which they _ _ . A) Name, are competent B) Address, lack competence. C) signatures, lack competence. D) name, are incompetent	1	5	1	6
9	_ _ _ is about our resources and is mostly concerned with environmental issues. A) Diversity B) Inclusivity C) Stability D) Sustainability	1	5	1	7
10	_ _ is the most discussed aspect of sustainability A) Environment B) Economy C) Diversity D) Ethics	1	5	1	7
11	The _ _ aspect of sustainability is not just about being profitable, but also about having good governance within the company. A) Environment B) Ethics C) Economic D) Development	1	5	1	1

	Part – I (3 x 8 = 24 Marks) **Answer ALL questions**				
12.a	Describe with proper example about the ADDIE model.	8	4	2	1
	OR				
12.b	Discuss with neat diagram and explain Engineering Design Process.	8	4	3	1
13.a	A team of five engineers living in a neighbourhood intends to build thief alarm in their locality. Apply CDIO model and illustrate how they fulfil their objectives using each stage.	8	4	3	4

	OR			
13.b	With proper example explain engineer's role to achieve sustainable development.	8	5	
14.a	An engineer discovers that a newly designed bridge may not meet the required safety standards. Their manager insists the report be modified so the project is not delayed.What engineering ethical principles are at stake in this situation? How should the engineer respond to the manager's request?	8	5	
	OR			
14.b	What are the different professional organizations existing in the world? Explain any three of them in brief.	8	5	

	Part – C(1 x 15 = 15 Marks) **Answer any ONE**			
15	An experimental drone crashes during testing. A team of scientists investigates the physics behind flight stability, while engineers analyze and redesign the drone's control system. a) How would a scientist and an engineer approach this failure differently? (10 marks) b) What role do hypotheses and experimentation play in each method? (5 marks)	15	4	
16	An engineer who is a member of a professional organization knowingly signs off on a project with faulty design to meet a tight deadline. The issue is later discovered, and the organization considers disciplinary action.What role do professional organizations play in maintaining ethical standards? Should the organization suspend or expel the engineer? Why or why not? How does membership in a professional organization influence an engineer's behaviour?	15	5	

Course Outcome (CO) and Bloom's Level (BL) Mapping in Question