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B.Tech DEGREE EXAMINATION, JANUARY 2024

First Semester

21GNH101J - PHILOSOPHY OF ENGINEERING

(For the candidates admitted during the academic year 2022-2023 onwards)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 75**

PART - A (20 × 1 = 20 Marks) — Answer **all** Questions

		Marks	BL	CO
1.	What is one of the non-motivated functions of art? (A) Political commentary (B) Expression of imagination (C) Entertainment (D) Commercialism	1	1	1
2.	Which art movement aimed to use visual images for political change? (A) Impressionism (B) Surrealism (C) Baroque (D) Realism	1	1	2
3.	Art therapy and the Diagnostic Drawing Series are examples of art used for: (A) Entertainment (B) Political activism (C) Psychological and healing purposes (D) Commercial propaganda	1	1	2
4.	What is the primary function of art in the context of the "Avant-Garde"? (A) Entertainment (B) Expression of imagination (C) Bringing about political change (D) Raising awareness for social causes	1	1	2
5.	What is the primary purpose of the Product Life Cycle (PLC) concept? (A) To determine the profitability of a product. (B) To identify stages in a product's market journey. (C) To predict future consumer trends (D) To set product prices	1	1	3
6.	In which stage of the Product Life Cycle (PLC) does a product typically experience a decline in demand and market share? (A) Introduction (B) Growth (C) Maturity (D) Decline	1	1	2
7.	How does the Average Selling Price (ASP) typically change during the Product Life Cycle? (A) It remains constant throughout the cycle (B) It increases during the introduction and growth stages (C) It decreases in the maturity and decline stages (D) It is unrelated to the product life cycle	1	1	2
8.	What is the goal of a closed-loop manufacturing cycle? (A) Maximizing product profits (B) Reducing the number of competitors in the market (C) Minimizing waste and environmental impact (D) Accelerating product development	1	1	1
9.	Design as activity is primarily associated with which of the following fields? (A) Business (B) Medicine (C) Art and engineering (D) Music and literature	1	1	1

10.	Which philosophical question pertains to the worth and value of engineering knowledge in the context of epistemology? (A) Ontological question (B) Epistemological question (C) Methodological question (D) Axiological question	1	1	1
11.	In the context of engineering, what concept is used to derive final and verifiable rigor from apparently unsystematic and random intermediate steps? (A) Abductive reasoning (B) Critical Design Reviews (C) Preliminary Design Reviews (D) Analytical methodologies	1	1	2
12.	What is one suggested approach to innovation when dealing with tight constraints on schedules and finances in engineering? (A) Overcomplicate the design for better results (B) Rely on rigorous design rules (C) Keep the design as complex as possible (D) Make a list of solutions early in the design process	1	1	2
13.	In system design, what is a crucial consideration regarding data? (A) Data privacy (B) Data quantity (C) Data color (D) Data speed	1	1	1
14.	What does "scalability" refer to in system architecture? (A) The color scheme of the system (B) The ability to handle increased traffic or growth (C) The security of the system (D) The deployment process	1	1	3
15.	What is the first step in the engineering design process? (A) Create a prototype (B) Establish criteria and constraints (C) Define the problem (D) Test and evaluate	1	1	2
16.	Why is it essential to research ideas and explore possibilities in the design process? (A) To delay the project (B) To avoid the problems faced by others (C) To reject potential solutions (D) To establish criteria and constraints	1	1	2
17.	What is the role of engineers regarding conflicts of interest, as per the Engineers Code of Ethics? (A) Engineers should not disclose any conflicts of interest. (B) Engineers should avoid any involvement in ethical matters. (C) Engineers should disclose all known or potential conflicts of interest. (D) Engineers should prioritize their interests over those of the public.	1	1	2
18.	How should engineers issue public statements according to the Engineers Code of Ethics? (A) In a subjective and exaggerated manner (B) In an objective and truthful manner (C) In a way that promotes their personal interests (D) In a way that conceals relevant information	1	1	1
19.	According to the Engineers Code of Ethics, engineers should act as faithful agents or trustees for: (A) Themselves (B) Their employers or clients (C) Regulatory authorities (D) Their competitors	1	1	2
20.	What impact has engineering had on transportation and global connectivity? (A) Slower and less efficient travel (B) Decreased international trade (C) Faster and more efficient travel (D) Reduced accessibility to remote regions	1	1	2

PART - B (4 × 10 = 40 Marks) **Marks BL CO**

Answer **any 4** Questions

21.	How do engineers use teamwork, continuous learning, creativity, problem-solving, analytical ability, communication skills, logical thinking, attention to detail, mathematical ability, and leadership to ensure the success of complex projects in a changing technological landscape?"	10	1	2
22.	How does the introduction stage of the product life cycle critically impact the determination of life cycle costs, and what is the relationship between this stage and the implementation of sustainable manufacturing practices?	10	1	2
23.	Summarize the significance of the four dimensions of engineering: basic sciences, social sciences, design, and practical accomplishment. How do they collectively shape the role of an engineer?	10	2	1
24.	What is the fundamental difference between the scientific method and the engineering design process? How do these two methodologies cater to distinct objectives in the fields of science and engineering? Provide examples to illustrate the contrast.	10	3	2
25.	Explore the role of engineering in the rapid growth of technology. Provide examples of how engineering has transformed daily life and various industries.	10	4	2
26.	Explain the key differences between the scientific method and the engineering design process. How do these processes cater to different objectives in the fields of science and engineering?	10	4	1

PART - C (1 × 15 = 15 Marks) — **Marks** **BL** **CO**

Answer **any 1** Questions

27.	Evaluate the challenges engineers face when trying to obtain parts for experimentation in a short time. How do factors like design rules and time constraints impact the engineering process?	15	5	2
28.	Explore the section of the Engineers Code of Ethics that addresses avoiding deceptive acts. Why is it essential for engineers to maintain honesty and integrity in their professional conduct, and how does this benefit their reputation and the profession as a whole?	15	4	2

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