Reg. No

# B.TECH/ M.Tech (Integrated) DEGREE EXAMINATION, MAY 2025

First & Second Semester

## 21GNH101J - PHILOSOPHY OF ENGINEERING

*(For the candidates admitted during the academic year 2021-2022 to 2024-2025)*

**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. | The word "engine" has its origin from Latin _____ meaning "innate quality, especially mental power, hence a clever invention<br>(A) Imhotep (B) ingenium<br>(C) saquarra (D) scientia | 1 | 1 | 1 |
| 2. | What is the significance of the Antikythera mechanism in engineering history?<br>(A) It was the first mechanical engine used in automobiles<br>(B) It was an ancient Greek mechanical device that demonstrated early knowledge of gear systems<br>(C) It was a steam engine used during the Industrial Revolution<br>(D) It was the first recorded use of pulleys in construction | 1 | 1 | 1 |
| 3. | What does ECPD stand for?<br>(A) Engineering Council for Professional Development<br>(B) Electrical Council for Professional Development<br>(C) Engineers' Committee for Project Development<br>(D) European Council for Process Design | 1 | 1 | 1 |
| 4. | What does STEAM add to STEM?<br>(A) Sociology (B) Arts<br>(C) Astronomy (D) Antropology | 1 | 1 | 1 |
| 5. | What is the primary factor affecting the average selling price (ASP) in the product life cycle?<br>(A) Material cost (B) Demand & competition<br>(C) Advertising (D) Manufacturing time | 1 | 1 | 2 |
| 6. | What is the main characteristic of an application ontology?<br>(A) Theoretical focus (B) Metaphysical realism<br>(C) Pragmatism and computational efficiency (D) Purely philosophical reasoning | 1 | 1 | 2 |
| 7. | What is the key difference between traditional and closed loop manufacturing?<br>(A) Traditional systems use recyclable materials<br>(B) Closed-loop focuses on sustainability and waste reduction<br>(C) Traditional systems have lower costs<br>(D) Closed-loop has a shorter product life cycle | 1 | 1 | 2 |
| 8. | What is the most significant challenge in the decline phase of the product life cycle?<br>(A) Increased demand (B) Rising manufacturing costs<br>(C) Market shrinkage (D) Higher competition | 1 | 1 | 2 |
| 9. | Research is the preferred modus operandi of _____ dimension among the 4 major dimensions of Engineering | | | |

(A) Social sciences (B) Basic sciences
(C) Design (D) Practical realization

1 1 3

10. In RIASEC model, the Enterprising personality type are
(A) Doers (B) Organizers
(C) Persuaders (D) Thinkers

1 1 3

11. Design as epistemology is related to
(A) conceptualization (B) systematic mental processes
(C) synthetic methodologies (D) pre-execution

1 1 3

12. Identify the Holland typology for investigative personality
(A) inquistive (B) imaginative
(C) empathetic (D) concern for rules

1 1 3

13. Which phase of the ADDIE model involves establishing instructional goals and identifying learner characteristics?
(A) Analysis (B) Design
(C) Develop (D) Implementation

1 1 4

14. In CDIO framework ,using the implemented product to deliver the intended values happens in the ---- stage
(A) C (B) D
(C) I (D) O

1 1 4

15. The prototype creation is involved in _____ phase of ADDIE model.
(A) Evaluation phase (B) Implementation phase
(C) Development phase (D) Design phase

1 1 4

16. What role do Application Performance Monitors (APMs) play in system design?
(A) They improve system scalability without affecting performance
(B) They provide detailed insights into application issues and failures
(C) They eliminate the need for security monitoring
(D) They replace traditional debugging tools

1 1 4

17. What do the 3Es of sustainability stand for?
(A) Energy, Efficiency, and Economy
(B) Environmental, Economic, and Ethical
(C) Engineering, Education, and Experimentation
(D) Ethics, Energy, and Evolution

1 1 5

18. According to the Engineers' Code of Ethics, engineers should issue public statements that are
(A) Based on financial incentives
(B) Objective, truthful, and well-founded
(C) Influenced by external corporate interests
(D) Focused solely on theoretical knowledge

1 1 5

19. An international organization renown for its collection of publications and conferences with 420,000 members spanning 160 countries is
(A) National society of Professional Engineers
(B) IEEE
(C) Society of Women Engineers
(D) International enginnering consortium

1 1 5

20. What is the role of engineers in sustainable development?
(A) To work in isolation without considering social impact
(B) To integrate environmental, social, and economic factors into their work

| | | | | |
|---|---|---|---|---|
| (C) To focus only on financial growth and economic efficiency | (D) To prioritize short-term solutions over long-term sustainability | 1 | 1 | 5 |

**PART - B (4 × 10 = 40 Marks)**
Answer **any 4** Questions

| | | Marks | BL | CO |
|---|---|---|---|---|
| 21. | Briefly discuss any 5 desired attributes of an Engineer | 10 | 3 | 1 |
| 22. | Analyze the different stages of a Product life cycle with suitable examples | 10 | 4 | 2 |
| 23. | Write a short note on the four dimensions of Engineering and outline its significance | 10 | 3 | 3 |
| 24. | Compare and contrast scientific method and engineering design | 10 | 3 | 4 |
| 25. | Explain the role of Engineers in promoting sustainable development | 10 | 4 | 5 |
| 26. | Briefly describe the stages in CDIO process | 10 | 3 | 4 |

**PART - C (1 × 15 = 15 Marks)**
Answer **any 1** Questions

| | | Marks | BL | CO |
|---|---|---|---|---|
| 27. | Break down the components of the STEAM pyramid and analyze the role of art within the STEAM framework | 15 | 4 | 1 |
| 28. | Explain RIASEC model and Holland's personality theory in career selection and Professional growth. | 15 | 4 | 3 |

* * * * *