B.Tech/M.Tech(Integrated) DEGREE EXAMINATION, DECEMBER 2023

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. _____ is the discipline and profession of applying technical and scientific knowledge and utilizing natural laws and physical resources in order to design and implement materials — 1, 1, 1
   - (A) Arts
   - (B) Mathematics
   - (C) Engineering
   - (D) Science

2. Engineers apply the sciences of physics and mathematics to find suitable solutions to problems using_____ — 1, 1, 1
   - (A) Philosophy
   - (B) Methodology
   - (C) Marketability
   - (D) Flexibility

3. Engineering is considered a branch of applied _____ — 1, 1, 2
   - (A) Mathematics and science
   - (B) Physics and mathematics
   - (C) Imaginative and creative
   - (D) Art and Technology

4. The_____ mechanism is the earliest known model of a mechanical computer in history — 1, 1, 3
   - (A) Antikythera
   - (B) Pneumatic
   - (C) Phaistos
   - (D) Cosmos

5. Researchers assert that the introduction stage where design takes place determines between _____ and _____ percent of the life cycle costs. — 1, 1, 2
   - (A) 40,60
   - (B) 50,50
   - (C) 70,60
   - (D) 70,90

6. _____ describe concepts depending both on a particular domain and task — 1, 1, 1
   - (A) Application ontology
   - (B) Reference ontology
   - (C) Domain ontology
   - (D) Foundational ontology

7. _____ is natural extension of PLM, and creates a truly full life cycle that takes your obsolete or used products back into raw materials — 1, 1, 1
   - (A) Half loop cycle
   - (B) Semi loop cycle
   - (C) Open loop cycle
   - (D) Closed loop cycle

8. Ontology is sometimes referred as _____ — 1, 1, 3
   - (A) Reference
   - (B) science of being
   - (C) philosophy
   - (D) Metaphysics

9. _____ is creation based on the scientific knowledge put together, and technology is the set of engineered creations put together — 1, 1, 2
   - (A) Engineering
   - (B) Science
   - (C) Mathematics
   - (D) Arts

10. _____ is the preferred modus operandi of this dimension, where the discovery of first principles is seen as the activity leading to higher recognition   1   1   2
   (A) Research   (B) Scientific
   (C) Experimental   (D) Testing

11. Engineering is creating new tools, devices, and processes based on _____ knowledge   1   1   1
   (A) Practical   (B) Scientific
   (C) Experimental   (D) Testing

12. _____ as activity is related to the conceptualization (pre-execution) stages of making new products.   1   1   2
   (A) Design   (B) Implementation
   (C) Creation   (D) Thinking

13. Hypothesis Testing _____ method   1   1   2
   (A) Engineering   (B) Scientific
   (C) ADDIE   (D) CDIO

14. The _____ of the data the system operates on is of the highest consideration when designing a reliable and fault-tolerant architecture.   1   1   3
   (A) Security   (B) Integrity
   (C) Consistency   (D) Reliability

15. An engineer identifies a specific need _____ need(s) _____ because _____ ? And then, he or she creates a solution that meets the need.   1   1   1
   (A) Who,what,Why   (B) Who,Why,What
   (C) What,Why,Who   (D) What,Who,Why

16. The _____ model is the generic process traditionally used by instructional designers and training developers   1   1   3
   (A) ADDIE   (B) CDIO
   (C) Engineering   (D) Scientific

17. In _____ phase the project is reviewed and revised according to any feedback given.   1   1   1
   (A) Development   (B) Requirement Analysis
   (C) Deployment   (D) Testing

18. Good designers _____ possible solutions before opting to start a design, building a list of as many solutions as possible   1   1   3
   (A) Research   (B) Explore
   (C) Identify   (D) Brainstorm

19. Design _____ is distinct from analytic methodologies, which is crucial to develop scientific initiatives.   1   1   3
   (A) Developers   (B) Testers
   (C) Thinkers   (D) Epistemology

20. Design as _____ is more affiliated with management of a wide range of fields from business to military and from hospitals to academy.   1   1   2
   (A) Engineering   (B) Epistemology
   (C) Planning   (D) Activity

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

                                                            Marks BL CO

21. What are the different stages of engineering history? Explain the historical development of engineering with required diagrams.   10   2   2

22. Differentiate Reference ontology and application ontology with an example.   10   3   2

23. Compare the four dimensions of Engineering.   10   4   2

		Marks	BL	CO
24.	With neat sketch explain the engineering design process.	10	3	2
25.	what are the essential engineer role to achieve the sustainable development.	10	4	2
26.	Sketch the STEAM pyramid diagram and explain the most significant aspect of STEAM?	10	4	1

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

		Marks	BL	CO
27.	Classify the desired attributes of an Engineer with a minimum of ten key points.	15	4	1
28.	Explain the four stages of Product Life Cycle with neat sketch.	15	5	1

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