

Reg. No. :

Name :

Ph.D. ENTRANCE EXAMINATION 2023

FACULTY OF APPLIED SCIENCES AND TECHNOLOGY

FUTURES STUDIES/TECHNOLOGY MANAGEMENT

Time : 3 Hours

Max. Marks : 100

Instructions :

- 1) Answer **any ten** questions each from Section **A** and Section **B**.
- 2) Each question carries **5** marks.
- 3) No additional Answer sheets will be provided.
- 4) Candidates should clearly indicate the section, Question number in the answer booklet.

Section – A

Research Methodology

- I. Answer any **ten** questions. Each question carries **5** marks.
 1. What are the fundamental differences between positivism and post-positivism in terms of their approaches to knowledge and research methodology?
 2. How does idealism as a philosophical perspective influence the way individuals perceive and interpret reality?
 3. How have advancements in technology and data collection methods influenced the application of rationalism, idealism, positivism, and post-positivism in contemporary research practices?
 4. What are the key objectives and benefits of conducting a comprehensive survey of research methodologies within a specific field of study?

5. Illustrate instances of research methodologies that effectively balance subjectivity and objectivity in data collection and analysis.
6. What ethical considerations arise when conducting research from the perspective of realism or antirealism, and how are they addressed in research design and implementation?
7. Differentiate between scientific evolution and scientific revolution within the context of the history and philosophy of science.
8. How do researchers formulate and refine hypotheses within the context of the hypothetical deductive method, and what criteria do they use to evaluate their validity?
9. What criteria do researchers use to evaluate the accuracy and reliability of predictive models in various fields and disciplines?
10. What are the key conceptual differences between continuity and discontinuity as theoretical perspectives in futures studies and how do they shape research methodologies in the field?
11. How is Principal Component Analysis (PCA) applied to uncover underlying patterns and structures within datasets?
12. What are the fundamental principles and objectives of intellectual property rights, and how do they promote innovation and creativity in various fields?
13. What are the key characteristics and assumptions that distinguish deterministic research designs from probabilistic research designs?
14. How does the selection of ontological perspectives impact the framing and interpretation of qualitative and quantitative research findings?
15. Discuss the role of data collection and interpretation in uncovering potential opportunities and challenges stemming from research findings.

(10 × 5 = 50 Marks)

Section – B

Futures Studies/Technology Management

- II. Answer any **ten** questions. Each question carries **5** marks.
1. How does the role of a futurist differ from that of a trend analyst?
 2. Describe strategies for evaluating the accuracy and impact of predictions made by futurists, particularly in cases where long-term outcomes are involved.
 3. Discuss advanced technologies and data analytics tools used in environmental monitoring and scanning.
 4. How do organizations and decision-makers use the insights and findings from environmental monitoring and scanning to inform sustainable development and resource management practices?
 5. What methodologies and frameworks are commonly used for assessing the technological readiness and capabilities of an organization for effective technology management?
 6. Discuss different methodologies and tools used for knowledge mapping. How do they contribute to informed decision-making and strategic planning?
 7. How do organizations balance the need for short-term technological innovation with long-term strategic planning to ensure sustainable growth and adaptability?
 8. How does technology management contribute to an organizations ability to proactively shape its technological future rather than merely reacting to external changes?
 9. What are the primary methodologies and data sources used for technology forecasting?
 10. Discuss the role of historical data in the choice and effectiveness of different forecasting methods.
 11. What are growth curves' key characteristics and components? How do researchers determine the most appropriate curve type?

12. Explain how modeling and simulation can be used to gain insights into complex real-world systems and phenomena.
13. What strategies and methodologies are employed to assess the validity of mathematical models?
14. How do researchers select and justify the choice of econometric models based on the characteristics of the data and the research objectives?
15. What is the role of statistical inference in econometrics, and how does it facilitate the estimation of population parameters from sample data?

_____ **(10 × 5 = 50 Marks)**