BLDE (DEEMED TO BE UNIVERSITY)

Pre – Ph.D. Course Work Examination

[Time: 1 ½ Hours]   [Max Marks: 50]

Paper I: RESEARCH METHODOLOGY

QP CODE – 6007

I.   Answer ANY TWO of the following   **2 x 10 = 20 Marks**

1. Define Variables. Describe dependent and independent variables with suitable examples.

2. What are types of data? How do you present data? Add a note on impact of computer on data analysis

3. Discuss interpreting 'p' values and statistical significance.

II.   Answer ANY FOUR of the following   **4 x 5 = 20 Marks**

4. Statistical Softwares used in research.

5. Advantages and disadvantages of animal experimentation in research.

6. Describe the types of hypotheses used to address a research problem

7. RCT

8. Steps in research process

III. Answer the following   **5 x 2 = 10 Marks**

9. ANOVA

10. Copyright

11. What is informed consent?

12. Define Footnotes and bibliography.

13. What is feasibility report?

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Pre – Ph.D. Course Work Examination

Paper II: BACKGROUND PAPER (Physiology)

QP CODE - 6002

I.   Answer ANY TWO of the following   **2 x 10 = 20 Marks**

1. Define Lung Compliance? Mention factors affecting it, what is specific compliance?

2. Describe the physiological changes in autonomic functions due to Meditation?

3. Explain neural regulation of respiration?

II.   Answer ANY FOUR of the following   **4 x 5 = 20 Marks**

4. Explain Ventilation perfusion ratio

5. Describe transport of oxygen in the body

6. Define hypoxia, give its types? Explain any one type.

7. Describe Mechanism of acclimatization

8. Explain the changes in Lung function tests in Asthamatic patients

III.   Answer the following   **5 x 2 = 10 Marks**

9. What are different types of Pranayama

10. Physiological Dead space- Types

11. Vehicles for CO_2 transport

12. Periodic breathing significance

13. Role of HIF 1 alpha in Asthma

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Paper III: Research & Publication Ethics

QP CODE - 6009

I.   Answer ANY TWO of the following   **2 x 10 = 20 Marks**

1. Write briefly on 'Conflict of interest' (COI) issues in research and publication.

2. What is h-index? Write briefly about h-index of author, institution and journal

3. What is predatory? Mention in details about predatory journals, publishers and predatory research awards

II.   Answer ANY FOUR of the following   **4 x 5 = 20 Marks**

4. Write a note on Impact factor including cumulative impact factors

5. Committee on Publication Ethics (COPE)

6. Institutional Ethics Committee (IEC)

7. World Association of Medical Editors (WAME)

8. Intellectual property

III. Answer the following   **5 x 2 = 10 Marks**

9. What do you mean by ethics?

10. How ethics is different from moral?

11. Name two part of the integrity of a researcher

12. What is WOS?

13. What do you mean by citation?

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Pre – Ph.D. Course Work Examination

Paper II: BACKGROUND PAPER (Microbiology)

QP CODE - 6011

I.   Answer ANY TWO of the following   **2 x 10 = 20 Marks**

1. What are the primary virulence factors of Mycobacterium tuberculosis, and how do they contribute to the bacterium's ability to evade the host immune response, persist in the human body, and cause tuberculosis?

2. Describe the molecular mechanisms involved in the drug resistance of Mycobacterium tuberculosis, focusing on the role of genetic mutations in the development of resistance to first-line and second-line antitubercular drugs. How can these mechanisms be addressed through novel treatment strategies?

3. Explain the principles, applications, and limitations of Polymerase Chain Reaction (PCR) and quantitative PCR (qPCR) in the detection and quantification of pathogens.

II.   Answer ANY FOUR of the following   **4 x 5 = 20 Marks**

4. Describe antigens of Mycobacterium tuberculosis

5. Explain the role of the Bacillus Calmette-Guérin (BCG) vaccine in tuberculosis

6. How does Next-Generation Sequencing (NGS) differ from traditional sequencing methods?

7. Difference between primary and secondary pulmonary tuberculosis

8. What is Koch's phenomenon?

III.   Answer the following   **5 x 2 = 10 Marks**

9. Name risk factors associated with the development of active tuberculosis.

10. What is the significance of the tuberculin skin test (TST) in diagnosing Tuberculosis?

11. Mechanism of action of Isoniazid

12. Mechanism of action of rifampicin

13. Enlist liquid culture medium used for isolating Mycobacterium tuberculosis

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Pre – Ph.D. Course Work Examination

Paper II: BACKGROUND PAPER (Biochemistry)

QP CODE - 6016

I.   Answer ANY TWO of the following   **2 x 10 = 20 Marks**

1. Enumerate the markers based on ROS-induced modifications.

2. What is Chemiluminescence? Explain the Instrumentation, operation and applications of Chemiluminescence.

3. What are the recent advances in molecular diagnostics?

II.   Answer ANY FOUR of the following   **4 x 5 = 20 Marks**

4. What are the mental health effects of problematic screen time?

5. Obsessive–compulsive disorder

6. Markers of DNA Oxidation

7. Post-translational modifications and their clinical significance.

8. Applications of Recombinant DNA Technology

III.   Answer the following   **5 x 2 = 10 Marks**

9. What is problematic screen Time?

10. What are restriction endonucleases? Give two examples.

11. What is transcriptomics?

12. What is chromatography? Give its applications.

13. What is the mitochondrial DNA Copy number? Give its significance.

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Pre – Ph.D. Course Work Examination

Paper II: BACKGROUND PAPER (Biotechnology)

QP CODE – 6022 (S & T)

I.   **Answer ANY TWO of the following**   **2 x 10 = 20 Marks**

1. Outline the entire methodological workflow from sample collection to bioinformatics analysis.

2. Define tumors and its types.

3. Describe the pathogenesis and hormonal influences in uterine leiomyomas.

II.   **Answer ANY FOUR of the following**   **4 x 5 = 20 Marks**

4. Explain the significance of using RNA-Seq.

5. Discuss the importance of ethical clearance and informed consent in biomedical research.

6. What is the purpose of statistical significance in interpreting gene expression?

7. How are tissue samples collected and their respective preservation methods?

8. Describe the types of fibroids based on uterine location.

III.   **Answer the following**   **5 x 2 = 10 Marks**

9. What tool is used for RNA quality assessment?

10. Write the full form of FDR in gene expression studies.

11. What is the confidence level in sample size?

12. Define "adjacent normal myometrium."

13. What type of tumor is a uterine leiomyoma?