

**RESEARCH METHODOLOGY, BIOETHICS AND IPR
(BIOT 5103)**

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 4 (four) from Group B to E, taking one from each group.*

Candidates are required to give answer in their own words as far as practicable.

Group – A

1. Answer any twelve:

12 × 1 = 12

Choose the correct alternative for the following

- (i) Research can be classified as
(a) Basic, Applied and Action research
(b) Quantitative and Qualitative research
(c) Philosophical, Historical, Survey and Experimental
(d) All of the above
- (ii) Descriptive research studies is a category of research that aims to
(a) achieve new insights of a concept
(b) analyze characteristics of something
(c) determine the frequency with which something occurs
(d) test the relationship between variables.
- (iii) Which of the following regarding hypothesis is true?
(a) Hypothesis relates variables to constants
(b) Hypothesis relates constants to constants
(c) Hypothesis relates constants to variables
(d) Hypothesis relates variables to variables.
- (iv) What is the major attribute of correlation analysis?
(a) Association among variables (b) Difference among variables
(c) Regression among variables (d) Variation among variables.
- (v) _____ is a preferred sampling method for the population with finite size.
(a) Area sampling (b) Cluster sampling
(c) Purposive sampling (d) Systematic sampling
- (vi) Which of the following identifies as a trademark?
(a) Name, Symbol (b) Symbol, Logo
(c) Logo, Name (d) Name, Symbol, Logo.
- (vii) _____ herbal medicinal plant is tried to be patented in India.
(a) Neem (b) Tomato (c) Potato (d) Basmati

- (viii) Which bacterium is used in the production of insulin by genetic engineering?
 (a) Saccharomyces (b) Rhizobium
 (c) Escherichia (d) Mycobacterium.
- (ix) GEAC stands for
 (a) Genetic Ethical Approval Committee
 (b) Genetic Engineering Active Commission
 (c) Genetic Engineering Approval Committee
 (d) Genetic Ethical Active Commission.
- (x) When performing with infectious biological material, the best place to perform the work would be
 (a) in a biological safety cabinet (b) on a laboratory bench
 (c) on a clean bench, covering a dust mask (d) in a fume hood.

Fill in the blanks with the correct word

- (xi) Variables whose values cannot be expressed numerically are called _____ variables.
- (xii) _____ sampling is helpful as it is free from personal biases.
- (xiii) The Four principles of Bioethics _____.
- (xiv) Number of Biosafety Levels _____.
- (xv) In India, how long does a valid patent cover _____.

Group - B

2. (a) Illustrate the different steps of a research process with a flow diagram. [[CO1](Analyze/IOCQ)]
- (b) Discuss the major strategies of sample design in a research problem. [[CO1](Compare/IOCQ)]
- (c) Determine the significance of literature review in a research problem. [[CO2](Understand/LOCQ)]
4 + 4 + 4 = 12
3. (a) Differentiate between Basic and Applied research. [[CO1](Differentiate/IOCQ)]
- (b) Examine the merits and demerits of the major tools of data collection for research work. [[CO2](Analyze/LOCQ)]
- (c) How do you distinguish between Method and Methodology? [[CO1](Understand/LOCQ)]
4 + 4 + 4 = 12

Group - C

4. (a) Comment on the precautions that should be taken during interpretation of data. [[CO2](Analyse/IOCQ)]
- (b) Give a brief idea on the layout of a project report. [[CO2](Remember/LOCQ)]
- (c) Differentiate between a technical report and popular report. [[CO2](Differentiate/IOCQ)]
4 + 4 + 4 = 12

5. (a) How can you examine your hypothesis by measures of central tendency? *[[CO2)(Examine/HOCQ)]*
 (b) What are the tools by which you can measure the relationship between bivariate and multivariate populations? *[[CO2)(Understand/LOCQ)]*
 (c) Mention the precautions needed to take during report writing. *[[CO2)(Analyze/IOCQ)]*
4 + 4 + 4 = 12

Group - D

6. (a) Discuss the Nuremberg code in detail. *[[CO4)(Remember/LOCQ)]*
 (b) Will GM crops feed the world? Argue for or against by using suitable examples. *[[CO4)(Criticize/HOCQ)]*
 (c) Illustrate by a suitable diagram the mode of action of suicide gene therapy. *[[CO3)(Analyze/IOCQ)]*
4 + 4 + 4 = 12
7. (a) Distinguish between cloning and stem cell production techniques. *[[CO4)(Understand/LOCQ)]*
 (b) Discuss the problem associated with gene therapy. *[[CO4)(Understand/LOCQ)]*
 (c) Discuss about HUGO Ethics Committee Statement on Gene Therapy Research – 1999. *[[CO4)(Apply/IOCQ)]*
3 + 3 + 6 = 12

Group - E

8. (a) Distinguish between hazard and biohazard. *[[CO4)(Compare/IOCQ)]*
 (b) Differentiate between selective breeding and genetically modified crops. Which one is better? Justify your answer using suitable examples. *[[CO4)(Justify/IOCQ)]*
 (c) Discuss the steps for granting approval of GMO's in India. *[[CO4)(Remember/LOCQ)]*
4 + 4 + 4 = 12
9. (a) What are the different categories of genetic disorders? *[[CO4)(Analyze/HOCQ)]*
 (b) Explain Hydroxyurea's effect on sickle cell disease/Anaemia. *[[CO4)(Understand/LOCQ)]*
 (c) What are the pros and cons of genetic engineering? *[[CO4)(Apply/IOCQ)]*
4 + 4 + 4 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	41.67	45.83	12.5

