

**RESEARCH METHODOLOGY AND IPR  
(AEIE 5103)**

**Time Allotted : 3 hrs**

**Full Marks : 70**

*Figures out of the right margin indicate full marks.*

*Candidates are required to answer Group A and  
any 5 (five) from Group B to E, taking at least one from each group.*

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

**Group - A  
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) Sampling is advantageous as it \_\_\_\_\_  
(a) Helps in capital-saving (b) Saves time  
(c) Increases accuracy (d) Both (a) and (b).
- (ii) \_\_\_\_\_ refers to inferring about the whole population based on the observations made on a small part.  
(a) Deductive inference (b) Inductive inference  
(c) Pseudo-inference (d) Objective inference.
- (iii) Type-I Error is also known as an error of the\_\_\_\_\_.  
(a) first kind (b) second kind  
(c) third kind (d) none of these.
- (iv) Determining the relationship between two or more variables occurs in\_\_\_\_\_.  
(a) correlational research (b) action research  
(c) naturalistic observation (d) survey research.
- (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) Hypothesis relates \_\_\_\_\_  
(a) constant to variables (b) constant to constant  
(c) variables to constant (d) variables to variables.

- (vii) Primary data for the research process is collected through \_\_\_\_\_.  
 (a) experiment (b) survey  
 (c) both (a) and (b) (d) none of the above.
- (viii) Intellectual Property Rights (IPR) protect the use of information and ideas that are of  
 (a) ethical value (b) moral value  
 (c) social value (d) commercial value.
- (ix) Which of these rights isn't generally regarded as part of designs law?  
 (a) registered designs law  
 (b) Copyright  
 (c) trade mark law  
 (d) design right under part III of the CDPA.
- (x) The following can be patented  
 (a) machine (b) process  
 (c) composition of matter (d) all of the above.

**Group - B**

- 2. (a) What are binomial and Poisson distributions?
- (b) The surface defects noticed in each 10m length of cold drawn bar stock in number is given below. What is the probability of being or beyond the specification limit of 3 defects per 10m length?

Defects / 10m	Nos.	Defects / 10m	Nos.
0	40	4	1
1	9	5	1
2	4	6	1
3	2		

**4 + 8 = 12**

- 3. (a) Define median, skewness and kurtosis.
- (b) It is established that the average response of a particular phenomena is 1.250 with standard deviation as 0.002. One experimenter conducted several repeated experiments and found that the average value varies between 1.245 and 1.255. Find what % of results non confirm.

**6 + 6 = 12**

**Group - C**

- 4. (a) What is sample design? What are the aspects that researchers should pay attention while developing a sampling design?
- (b) The observed sample data is given below. Develop the regression equation and also find the correlation coefficient.

X:	0	2	2	3
Y:	1	4	3	5

**(1 + 3) + 8 = 12**

- 5. (a) What is the significance of report writing?
- (b) Write down different steps of report writing.

**6 + 6 = 12**

**Group - D**

- 6. (a) What do you mean by intellectual property? Define intellectual property right (IPR).
- (b) Describe the different forms of copyright with examples.
- 7. (a) State the Semiconductor Integrated Circuits Layout Designs Law (SICLD) Act, 2000.
- (b) Define Trade mark according to the Act, 1999.
- (c) Describe a few popular Trade Marks for different items.

**(3 + 3) + 6 = 12**

**4 + 4 + 4 = 12**

**Group - E**

- 8. (a) How IP can be generated and what can be the benefit?
- (b) Why patent is so important for industrial products? Explain the patent law and practice with the help of a suitable block diagram.
- 9. (a) How can IP be used as a tool to compete with multinationals? Explain with example.
- (b) What are the features on which one can get IPR of the following products:
  - i. Camera
  - ii. mouse.

**4 + (4 + 4) = 12**

**(3 + 3) + (3 + 3) = 12**