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) Research is basically
(a) a methodology of enquiry (b) search of truth
(c) a systematic exploration of facts (d) all of the above.

(ii) A hypothesis is a
(a) tentative statement whose validity is still to be tested
(b) supposition which is based on the past experiences
(c) statement of fact
(d) all of the above.

(iii) A coin is thrown 3 times. What is the probability that at least one head is obtained?
(a) 7/8 (b) 3/6 (c) 1/3 (d) 1/6.

(iv) Which is not a display instance of creativity?
(a) Invention of new technology
(b) Discovery of new knowledge in the field of science and technology
(c) Copying an existing book
(d) Analyzing a situation in new way.

(v) Research through experiment and observation is called
(a) Clinical research (b) Empirical research
(c) Laboratory research (d) Experimental research.

(vi) Which area is not an ethical aspects?
(a) How research is funded (b) How research is carried out
(c) How research is reported (d) How and what information is shared.

(vii) The patent owner shall own patent right for a maximum period of
(a) 10 years and renewed
(b) 15 years from the date of filing of application
(c) 20 years plus life of the patentee
(d) 20 years from the date of filing of application.

(viii) If a person invents a new process/product for recording music, he/she will most likely apply for
(a) Patent (b) Copyright (c) Trademark (d) Trade Secret.

(ix) Which one of the following cannot be protected by Intellectual Property Rights?
(a) A composition of a song (b) A programme code
(c) A book (d) A piece of land.

(x) A short summary of Technical Report is called
(a) Article (b) Research Abstract
(c) Publication (d) Guide.

Group- B

2. (a) What are various types of research? Discuss. [(CO1)(Remember/LOCQ)]
(b) State the main aim and objectives of research. [(CO1)(Remember/LOCQ)]
(c) In a case of classification, 100 numbers of items to be grouped, and the minimum and maximum value in the set is 15 and 91 respectively. Determine the size of class interval. [(CO2)(Evaluate/HOCQ)]

5 + 4 + 3 = 12

3. (a) The surface defects noticed in each 10m length of cold drawn bar stock in number is given below.
Determine the probability of being or beyond the specification limit of 3 defects per 10 m length?

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

[(CO2)(Evaluate/HOCQ)]

(b) What is skewness? Explain positive and negative skewness with graph.
[(CO2)(Understand/LOCQ)]
(c) Write merits and demerits of collection of data (3 points each) through questionnaires. [(CO2)(Analyse/IOCQ)]

4 + (1 + 2 + 2) + 3 = 12

Group - C

4. (a) How literature reviews help in research? Write the steps involved in conducting a literature review. [(CO3)(Understand/LOCQ)]
(b) What do you mean by Plagiarism? [(CO3)(Remember/LOCQ)]
(c) What are different forms of plagiarism and how one can avoid it?
[(CO3)(Understand/LOCQ)]

(3 + 2) + 2 + (3 + 2) = 12

5. (a) What are the objectives in research ethics? [(CO3)(Understand/LOCQ)]
(b) Write the important principles related to ethical consideration in dissertation.
[(CO3)(Understand/LOCQ)]

(c) Mention six code words related to ethical principles. [(CO3)(Remember/LOCQ)]
(d) What is research abstract? [(CO3)(Understand/LOCQ)]
3 + 4 + 3 + 2 = 12

Group - D

6. (a) What is the difference between Copyright law and Patent law? [(CO4)(Understand/LOCQ)]
(b) How have copyright and related rights kept up with advances in technology? [(CO4)(Understand/LOCQ)]
(c) Define the terms: Trade marks, Design registration. [(CO4)(Remember/IOCQ)]
4 + 4 + 4 = 12

7. (a) What is the difference between Trademark law and Trade secrets law? [(CO4)(Understand/LOCQ)]
(b) Illustrate the steps to register copyright by a flowchart. [(CO4)(Analyze/IOCQ)]
(c) Define the terms: Tangible property, Intangible property, Intellectual property. [(CO1)(Remember/LOCQ)]
3 + 6 + 3 = 12

Group – E

8. (a) What role do patents play in everyday life? [(CO4)(Remember/LOCQ)]
(b) How is a patent granted and who grants patents? [(CO4)(Understand/LOCQ)]
(c) What kinds of inventions can be patented? [(CO4)(Analyse/IOCQ)]
3 + (4 + 2) + 3 = 12

9. (a) What is IPR? Why IPR is important? (ii) Examples of IPR. [(CO4)(Understand/LOCQ)]
(b) Write the advantages and disadvantages of IP (Intellectual Property). [(CO4)(Understand/LOCQ)]
(c) Write about copyright pertaining to software. [(CO4)(Analyse/IOCQ)]
(2 + 2 + 1) + 4 + 3 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	72.9	19.8	7.3

Course Outcome (CO):

After the completion of the course students will be able to
1. Understand research problem formulation and its solution approaches.
2. Analyze research related information.

3. Learn how to write report and research proposal following research ethics.
4. Judge importance of intellectual property ant patent rights and learn the process of obtaining them.

*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question.