RESEARCH METHODOLOGY AND IPR
(REEN 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)   In a PhD Dissertation Assay Technique is a part of
           (a) Materials & Methods   (b) Aims & Objectives
           (c) Introduction   (d) nomenclature

   (ii)   You are composing your SOP for applying in an institution abroad. Identify the point you should not highlight
           (a) your academic achievements
           (b) your ability to have excellent teamwork
           (c) your family income
           (d) your inquisitiveness

   (iii)   Acceptance Sampling method is used for
           (a) R-chart   (b) 100% inspection
           (c) Destructibility test   (d) All of the above

   (iv)   p chart belongs to
           (a) Variable control chart   (b) Attributes control chart
           (c) Both (a) & (b)   (d) None of these.

   (v)   Identify the personality who was not associated with Quality Management.
           (a) Taguchi Geneichi   (b) Deming
           (c) Shewhart   (d) Chomsky

   (vi)   Cause-Effect diagram is another name of
           (a) TQM diagram   (b) Network diagram
           (c) Fish-bone diagram   (d) Pareto diagram

   (vii) Control Chart in SQC is invented by
           (a) Dodge- Romig   (b) Shewart
           (c) Peter Drucker   (d) Aris

(viii) Identify the type A technique among the following:
    (a) Brainstorming   (b) Stratification
    (c) Pareto Analysis   (d) SWOT Analysis

(ix) In an organization the designation "President" signifies the organization follows
    (a) British paradigm of management
    (b) Japanese paradigm of management
    (c) American paradigm of management
    (d) Indian paradigm of management

(x) Type I error is synonymous to
    (a) Consumer's Risk   (b) Producer's Risk
    (c) Quality Practitioner's Risk   (d) Government's Risk

Group- B

2. What is the role of a Leader in a Quality Circle? A Q.C. was formed in a production unit of a Renewable Energy Industry. In the first meeting an effective brainstorming was conducted and the circle identified a problem pertaining to the same work area. In a next meeting the members identified 25 causes of the selected problem under four sub-heads. Considering you to be the leader of the circle present this case study and draw an Ishikawa diagram.   [(CO2) (Evaluate/HOCQ)]

(3 + 9) = 12

3. (a) Analyze the status of bottom line of a TQM centric organization.
    [(CO1) (Analyze/IOCQ)]
   (b) What is the vision of Heritage Institute of Technology?
    [(CO1)(Remember /LOCQ)]

7 + 5 = 12

Group – C

4. (a) Find out mean, median, mode & range for the weights of 9 people. Their weights are 65, 83,91,78, 80 83, 75, 85, 87 kilograms.   [(CO2)(Evaluate/HOCQ)]
   (b) Enumerate the four characteristics of Research. [(CO1) (Remember/LOCQ)]

8 + 4 = 12

5. Shipments of Metal Castings arrive in batches of 500 pieces each. The inward inspection involves testing which could be destructive and therefore, a sample of 10 items is taken.
A batch is accepted only if one or nil of the items in the sample is found to be below the desired quality.
Under this sampling plan, what are the probabilities of:
Rejecting a shipment that has two per cent defectives, and
Accepting a shipment that is bad enough to contain 10 per cent defectives?
[(CO2) (Evaluate/HOCQ)]

(6 + 6) = 12

Group - D

6. Formulate a two-factor Design of Experiment model without interactions and calculate degrees of freedom at each level.   (CO4) (Evaluate/HOCQ)]

12

7. Sarita Electronics uses a single sampling plan of (256,4) for the purchase of connectors. Using the Poisson formula of approximation, calculate the AOQL for Sarita.
[(CO4) (Evaluate/HOCQ)]

12

Group - E

8. (a) What are the salient features of IPR? Discuss how a researcher will obtain benefits from the Patent Law. [(CO1) (Analyze/IOCQ)]
   (b) Analyze the Step by step procedure of filing a patent in India.
   [(CO3) (Analyze/IOCQ)]

(2 + 3) + 7 = 12

9. You are to prepare a 3'x4' poster from a ppt. Discuss the steps you should follow stating the characteristics of the proper software.   [(CO4) (Analyze/IOCQ)]

(6 + 6) = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	09.4	32.3	58.3

Course Outcome (CO):
After the completion of the course students will be able to
1. The students will be able to understand research problem formulation and analyze the same.
2. The students will be able to Follow research ethics.
3. The students will be able to carry out research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.
4. The students will be able to understand that when IPR would take such important place in growth of individuals & nation and its protection would provide an incentive to inventors for further Research and Development.

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

Department & Section	Submission Link
RE	https://classroom.google.com/c/NDE3NjQ4MTczMjM1/a/NDc3NzQ3OTg3MzA3/details