



**Dr. D. Y. Patil Unitech Society's
Dr.D.Y.Patil Institute of Technology,
Pimpri, Pune-411018**

ME (Computer Engineering)

510206: Laboratory Proficiency I Assignment List(2023-24)

A. Research Methodology

1. Problem statement:

Use an academic web search to locate a journal paper which describes a design outcome in your field of interest (i.e. your engineering discipline). You must enter several keywords which relate to your topic. Read the paper and, using your own words, demonstrate your understanding of the paper by:

1. Brief Contribution
2. Performance metric, data set, comparative analysis and outcomes
3. Writing out the major conclusions of the paper;
4. Outlining the verification method(s) used to support these conclusions
5. Describing the author's reflective comments on the quality of the design (positive and negative).
6. The positive and negative environmental impacts;
7. After reading a published research paper, write down the research question you think the author have addressed in undertaking this research. Do

2. Consider a journal article in your discipline that was published approximately five years ago.

1. Note the keywords and type them into one of the web-based academic search engines.
2. Does the original article appear in the search results?
3. How many citations does this article have?
4. Have the same authors published further work in this field?

5. Compare the citations of this paper with those from the most highly cited paper in the search results?
6. How many citations does this highly cited article have?
7. If this paper was published before your original article, is it cited in your article?
8. Do you think this high-cited paper should have been listed as a reference in your original article? Give reasons for your decision.

B. Bio-Inspired Algorithms

- 3 .Ant Colony Algorithm: The Traveling Salesman Problem is a problem of a salesman who, starting from his hometown, wants to find the shortest tour that takes him through a given set of customer cities and then back home, visiting each customer city exactly once." Each city is accessible from all other cities.. Use ant colony algorithm for generating good solutions to both symmetric and asymmetric instances of the Traveling Salesman Problem. Use appropriate representation for graph and an appropriate heuristic that defines the distance between any two nodes of the graph. Use parallel approach to optimize solution.
4. Job Scheduling using PSO, Optimization techniques for N-Queen's problem, Management and allocation of resources in a safety division of any pharmaceutical company, To automate the strategic planning process in an industry., Optimize Staff allocation problem in an organization, Railway Transportation/ Air Transportation : A case study of Transportation problem, Time table generation.

C. Software Development & Version Control

5. .Study of any open source system/application software like Version Control in Linux Kernel

D. Embedded and Real Time Operating Systems

6. Simulation/ Design, planning and modeling of a Real-Time / Embedded System for- (any one)
 1. Alarm system for elderly people (Fall detection, Heart attack)
 2. Medication machine for patients in ICU
 3. Smart traffic control

4. Autonomous car
5. Smart home (sound system, temperature, light)
6. Control of an autonomous quadrocopter (e.g. for surveillance tasks)
7. Control of a rail station
8. Video conference system
9. Washing machine

E. Data Mining

7. Implement Apriori Algorithm.