

**Sub Code: AHT-302**

**ROLL NO.**

**Model Question Paper**

**COURSE: M.TECH.**

**BRANCH: MECHANICAL ENGINEERING**

**SEMESTER: 1.**

**SUBJECT: RESEARCH METHODOLOGY and IPR**

**Duration: 3:00 hrs**

**Max marks: 100**

**Note: Attempt all questions.**

**1. Attempt any four parts of the following.**

**5x4 = 20**

- A. Explain the importance of research design.
- B. What are the sources of secondary data and how it differentiates from primary data?
- C. Explain the meaning of Research Hypothesis in context of research design.
- D. Discuss characteristics of a good research report.
- E. Discuss the procedure for grants of patents.
- F. Explain the importance and concept of plagiarism.

**2. Attempt any two parts of the following.**

**10x2=20**

- A. What do you mean by research? Classify different types of research with the help of suitable examples.
- B. Explain various data presentation tools in brief and multiple charts used in the presentation of data with neat sketches.
- C. Explain the inventions that are patentable and not patentable in India and what are the main provisions of the Indian Patent Amendment Act-2005.

**3. Attempt any two parts of the following.**

**10x2=20**

- A. Explain the meaning and significance of a research design. Discuss important concepts related to research design.
- B. What do you mean by Sample Design? Discuss different types of sampling techniques with the help of suitable examples.
- C. Discuss different methods of collecting data with the help of suitable examples. Differentiate between Observation and Interview.

**4. Attempt any two parts of the following.**

**10x2=20**

- A. Discuss the different type of research reports. Elaborate layout of the research report.
- B. Elaborate mechanics of writing a research report. Discuss preparation of final bibliography and explain writing mechanism of bibliography.
- C. What is plagiarism? How can plagiarism be detected using online tools? What are common forms of plagiarism in research reports?

**5. Attempt any two parts of the following.**

**10x2=20**

- A. Explain in brief intellectual property rights and patent law.
- B. What is research ethics and what significance of this? Describe five research ethics principles.
- C. What is a Patent? What are the criteria for patentability? Explain the process of patenting and development in brief.

