



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)  
Dundigal, Hyderabad-500043

## MECHANICAL ENGINEERING

### TUTORIAL QUESTION BANK

<b>Course Title</b>	RESEARCH METHODOLOGY & IPR				
<b>Course Code</b>	BCSB31				
<b>Programme</b>	M.Tech				
<b>Semester</b>	III	CAD / CAM			
<b>Course Type</b>	Core				
<b>Regulation</b>	IARE - R18				
<b>Course Structure</b>	<b>Theory</b>			<b>Practical</b>	
	<b>Lectures</b>	<b>Tutorials</b>	<b>Credits</b>	<b>Laboratory</b>	<b>Credits</b>
	2	-	2	-	-
<b>Chief Coordinator</b>	<b>B. Santhosh Kumar, Assistant Professor</b>				
<b>Course Faculty</b>	<b>B. Santhosh Kumar, Assistant Professor</b>				

#### COURSE OBJECTIVES:

<b>The course should enable the students to:</b>	
I	Identify an appropriate research problem in their interesting domain.
II	Understand ethical issues
III	Understand the Preparation of a research project thesis report.
IV	Understand the law of patent and copyrights.
V	Understand the Adequate knowledge on IPR

#### COURSE OUTCOMES (COs):

CO1	Understand the research problem and research process.
CO2	Understand research ethics
CO3	Prepare a well -structured research paper and scientific presentations.
CO4	Explore on various IPR components and process of filing
CO5	Understand the adequate knowledge on patent and rights

**COURSE LEARNING OUTCOMES (CLOs):**

BCSB31.01	Understand the characteristics, objects of a good research problem.
BCSB31.02	Understand the selection, approaches of research problem..
BCSB31.03	Understand concepts of data collection, analysis.
BCSB31.04	Understand the principles of ethics and ethical issues in science and engineering.
BCSB31.05	Understand the analysis Plagiarism.
BCSB31.06	Understand research ethic concepts.
BCSB31.07	Understand significance, effective technical writing and report.
BCSB31.08	Paper developing a research proposal and report.
BCSB31.09	Understand writing a research report as per format.
BCSB31.10	Report presentation and assessment by a review committee..
BCSB31.11	Understand the techniques of interpretation, and making scientific presentation. .
BCSB31.12	Understand the patent laws, patent and searching process.
BCSB31.13	Understand International cooperation on intellectual property
BCSB31.14	Understand the patent laws, patent and searching process, patent data base.
BCSB31.15	Understand the patent rights and transfer of technology.
BCSB31.16	Study of new developments in IPR.

S. No	Questions	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcome
<b>UNIT – I</b>				
<b>MEANING OF RESEARCH PROBLEM</b>				
<b>PART – A (SHORT ANSWER QUESTIONS)</b>				
1	What is Research?	Remember	CO 1	BCSB 31.01
2	List the research problems.	Remember	CO 1	BCSB 31.02
3	Explain the concept of research methodology?	Understand	CO 1	BCSB 31.01
4	Define applied research.	Remember	CO 1	BCSB 31.01
5	What is quality research?	Remember	CO 1	BCSB 31.01
6	Define conceptual research?	Remember	CO 1	BCSB 31.01
7	Explain research process.	Understand	CO 1	BCSB 31.02
8	What is the meaning of research problem?	Remember	CO 1	BCSB 31.02
9	What are the types of research problems?	Remember	CO 1	BCSB 31.02
10	What are the Sources of research problem?	Remember	CO 1	BCSB 31.02
11	What is the meaning of good research?	Understand	CO 1	BCSB 31.02
12	What are the good research problems?	Remember	CO 1	BCSB 31.02
13	Write about research approaches.	Understand	CO 1	BCSB 31.02
14	What are the objectives of research problems?	Remember	CO 1	BCSB 31.02
15	Explain how investigate the research problems?	Remember	CO 1	BCSB 31.03
16	Explain data collection	Analyze	CO 1	BCSB 31.03
17	What are the qualities of a good researcher?	Understand	CO 1	BCSB 31.03
18	Explain research design.	Remember	CO 1	BCSB 31.03
19	What is descriptive research?	Remember	CO 1	BCSB 31.03
20	Explain how can identify the problems in research?	Remember	CO 1	BCSB 31.03
<b>PART – B (LONG ANSWER QUESTIONS)</b>				
1	What are the objectives of research and explain research approaches?	Understand	CO 1	BCSB 31.01
2	What do you mean by research? Explain its significance in modern times.	Understand	CO 1	BCSB 31.01
3	Define research and write the importance of research methodology?	Remember	CO 1	BCSB 31.01
4	Explain scope and objectives of a research problem	Understand	CO 1	BCSB 31.01
5	Explain errors in selecting a research problem.	Understand	CO 1	BCSB 31.01
6	Define the research problem? State the components of a research problem.	Understand	CO 1	BCSB 31.02
7	Explain criteria for selection of research problem.	Apply	CO 1	BCSB 31.02
8	What are the techniques involved in defining a research problem?	Understand	CO 1	BCSB 31.02
9	what are the problems encountered by researchers in India and explain in brief ?	Understand	CO 1	BCSB 31.02
10	What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem. Give with suitable examples.	Understand	CO 1	BCSB 31.02
11	Briefly describe the different steps involved in a research process.	Understand	CO 1	BCSB 31.02

12	What you mean by research? Explain its significance in modern times.	Understand	CO 1	BCSB 31.02
13	Explain how can identify the errors in good research	Understand	CO 1	BCSB 31.02
14	What is the necessity of defining a research problem, Explain with suitable example?	Understand	CO 1	BCSB 31.02
15	Enumerate the different methods of collecting data giving one example each.	Create	CO 1	BCSB 31.03
16	Write short notes on research analysis.	Create	CO 1	BCSB 31.03
17	Explain about interpretation?	Understand	CO 1	BCSB 31.03
18	What are the necessary instrumentations to conduct the good research?	Create	CO 1	BCSB 31.03
19	Explain the techniques of interpretation describing both qualitative and quantitative methods.	Apply	CO 1	BCSB 31.03
20	List the solutions for research problem.	Remember	CO 1	BCSB 31.02
<b>PART – C (ANALYTICAL QUESTIONS)</b>				
1	Mention and discuss the various types of research with suitable example. Briefly describe the different steps involved in a research process.	Understand	CO 1	BCSB 31.02
2	“Research is much concerned with proper fact finding, analysis and evaluation. “Do you agree with this statement? Give reasons in support of your answer?”	Analyse	CO 1	BCSB 31.03
3	Distinguish between primary and secondary data. Discuss the various methods of collecting primary data.	Apply	CO 1	BCSB 31.03
4	“Research is much concerned with proper fact finding, analysis and evaluation”. Do you agree with this statement? Give reasons in support of your answer.	Apply	CO 1	BCSB 31.03
5	what are the various sources of primary and secondary data?. Discuss data collection and data analysis in the context of research.	Apply	CO 1	BCSB 31.03
<b>UNIT – II RESEARCH ETHICS</b>				
<b>PART – A (SHORT ANSWER QUESTIONS)</b>				
1	Explain ethics in research.	Remember	CO 2	BCSB 31.04
2	Name the basic principles of research ethics.	Remember	CO 2	BCSB 31.04
3	What is ethical research?	Remember	CO 2	BCSB 31.04
4	What is literature review?	Understand	CO 2	BCSB 31.04
5	What are the techniques to write literature review?	Understand	CO 2	BCSB 31.04
6	Why do we need ethics?	Understand	CO 2	BCSB 31.04
7	Why is ethics important in society?	Understand	CO 2	BCSB 31.04
8	What are the approaches for literature review?	Remember	CO 2	BCSB 31.04
9	List the techniques to prepare literature studies.	Understand	CO 2	BCSB 31.04
10	Explain confidentiality.	Understand	CO 2	BCSB 31.04
11	What is principle of ‘minimising the risk of harm’?	Remember	CO 2	BCSB 31.05
12	What is principle of ‘avoiding deceptive practices’?	Understand	CO 2	BCSB 31.05
13	What is principle of ‘providing the right to withdraw’?	Understand	CO 2	BCSB 31.05
14	What is mean by respect for privacy?	Understand	CO 2	BCSB 31.05
15	What is called Plagiarism?	Understand	CO 2	BCSB 31.05
16	How can analyse the Plagiarism?	Remember	CO 2	BCSB 31.05
17	What is the research ethics?	Remember	CO 2	BCSB 31.06
18	How can you justify the ethics in good research?	Analyze	CO 2	BCSB 31.06
19	Why are ethics important in social media?	Understand	CO 2	BCSB 31.06
20	What are the advantages of ethical communication?	Understand	CO 2	BCSB 31.06

<b>PART – B (LONG ANSWER QUESTIONS)</b>				
1	Ethical standards and procedures for research with human beings	Understand	CO 2	BCSB 31.04
2	Write the principles of ethics in science and engineering research	Remember	CO 2	BCSB 31.04
3	Explain ethical standard of research.	Understand	CO 2	BCSB 31.04
4	What are the effective literature studies approaches?	Understand	CO 2	BCSB 31.04
5	Explain how approach to literature studies	Create	CO 2	BCSB 31.04
6	Write short notes on research ethics	Create	CO 2	BCSB 31.04
7	What are the techniques to approach literature studies?	Remember	CO 2	BCSB 31.04
8	what are the ethical considerations involved in research and explain briefly?	Understand	CO 2	BCSB 31.05
9	Explain briefly avoiding ethical issues in research	Apply	CO 2	BCSB 31.05
10	Write short notes on analysis Plagiarism	Remember	CO 2	BCSB 31.05
11	Explain how to check Plagiarism	Understand	CO 2	BCSB 31.05
12	Explain briefly the types of plagiarism?	Understand	CO 2	BCSB 31.05
13	Write short notes on Plagiarism problems.	Understand	CO 2	BCSB 31.05
14	What are the ethical issues in research and briefly explain them?	analyze	CO 2	BCSB 31.06
15	Why is ethics important in society and discuss briefly.	Understand	CO 2	BCSB 31.06
16	Explain how can follow the research ethics.	Remember	CO 2	BCSB 31.06
17	Compare good research with research ethics.	Understand	CO 2	BCSB 31.06
<b>PART – C ( ANALYTICAL QUESTIONS)</b>				
1	Discuss the applicability of principles of ethics in decision making/	Understand	CO 2	BCSB 31.04
2	what is ethics in research and explain its importance in research?	Understand	CO 2	BCSB 31.04
3	What are the major issues in conducting research? Explain with example.	Understand	CO 2	BCSB 31.04
4	Comment briefly on “Be aware that even if you do nothing illegal, doing something unethical may end your research career”.	Analyse	CO 2	BCSB 31.05
5	Discuss “ avoiding ethical issues in research” with example.	Understand	CO 2	BCSB 31.06
<b>UNIT-III RESEARCH PROPOSAL</b>				
<b>PART – A (SHORT ANSWER QUESTIONS)</b>				
1	Explain significance of report writing?	Understand	CO 3	BCSB 31.07
2	What are steps involved in writing report?	Remember	CO 3	BCSB 31.07
3	write logical analysis of the subject matter/	Understand	CO 3	BCSB 31.07
4	Write three precautions for writing research report.	Remember	CO 3	BCSB 31.07
5	What is mean by rewriting and polishing of the rough draft?	Understand	CO 3	BCSB 31.08
6	Which order the entries in bibliography are made?	Understand	CO 3	BCSB 31.08
7	What is the order entries for magazines and newspapers?	Understand	CO 3	BCSB 31.08
8	Which of the conclusions establishes the technical report	Understand	CO 3	BCSB 31.08
9	A comprehensive layout of research report consists of what?	Analyse	CO 3	BCSB 31.09
10	What is result of a report?	Understand	CO 3	BCSB 31.09
11	What are the implications of the results?	Analyse	CO 3	BCSB 31.09

12	What are the steps involved, once problem is identified with its causes.	Understand	CO 3	BCSB 31.09
13	What is the use of a report?	Understand	CO 3	BCSB 31.09
14	What parameters the report contains?	Remember	CO 3	BCSB 31.10
15	Explain technical report.	Understand	CO 3	BCSB 31.10
16	Explain oral presentation.	Understand	CO 3	BCSB 31.10
17	Explain treatment of quotations.	Understand	CO 3	BCSB 31.10
18	What are the purposes of a footnotes?	Remember	CO 3	BCSB 31.10
19	What is the description order of single volume reference?	Remember	CO 3	BCSB 31.10
20	Explain the preparation of the index.	Remember	CO 3	BCSB 31.10
<b>Part – B (Long Answer Questions)</b>				
1	Explain the significance of a research report and narrate the various steps involved in writing a report.	Understand	CO 3	BCSB 31.07
2	Discuss the characteristics of a good research report?	Understand	CO 3	BCSB 31.07
3	Explain the significance of a research report and narrate various steps involved in writing such a report?	Understand	CO 3	BCSB 31.07
4	Explain the layout of research paper enumerating the various fields in it.	Understand	CO 3	BCSB 31.08
5	Write short notes on following a) Characteristics of good research report b) Bibliography and its importance in context of research	Understand	CO 3	BCSB 31.08
6	Discuss the format of thesis and dissertation.	Understand	CO 3	BCSB 31.09
7	Explain precautions to be taken for writing research report?	Understand	CO 3	BCSB 31.09
8	Mention the deferenttypes of interpretations particular pointing out the difference of a report and the interpretation?	Understand	CO 3	BCSB 31.10
9	Write different points will you keep in mind while preparing a research report? Explain?	Remember	CO 3	BCSB 31.10
10	Mention the deferent types of interpretations particular pointing out the difference of a report and the interpretation?	Analyse	CO 3	BCSB 31.10
11	What are steps involved in making a technical presentation?	Remember	CO 2	BCSB 31.10
<b>PART - C (ANALYTICAL QUESTIONS)</b>				
1	Discuss the various mechanics of writing a research report	Understand	CO 3	BCSB 31.07
2	Briefly explain each section in layout of a research paper with IEEE template.	Understand	CO 3	BCSB 31.08
3	Write the different types of reports, particularly pointing out the difference between a technical report and a popular report	create	CO 3	BCSB 31.09
4	Describe, in brief the layout of a research report, covering all relevant points.	Analyse	CO 3	BCSB 31.10
5	Describe “Discriminate different forms in which a research work may be reported”.	Understand	CO 3	BCSB 31.10
<b>UNIT-IV PATENTING</b>				
<b>PART – A (SHORT ANSWER QUESTIONS)</b>				
1	Define intellectual property?	Remember	CO 4	BCSB 31.11
2	Discuss intellectual property rights?	Understand	CO 4	BCSB 31.11

3	Define trademark?	Remember	CO 4	BCSB 31.11
4	Write few lines about service mark?	Remember	CO 4	BCSB 31.11
5	Enumerate with an example of why intellectual properties need to be protected?	Understand	CO 4	BCSB 31.11
6	Describe how monopoly nature of owner is controlled by Patent Trademark Organization?	Remember	CO 4	BCSB 31.12
7	Explain how long will patent protections for the invention for which application was filed on August 10 and patent was issued on January 28, 2003 last?	Remember	CO 4	BCSB 31.12
8	How long will the copy right last if a novel written by Moby Dick in 1851 and died in 1891?	Understand	CO 4	BCSB 31.12
9	Explain how long will protections for the song composed by bala in1982 last?	Understand	CO 4	BCSB 31.12
10	What is patenting?	Understand	CO 4	BCSB 31.12
11	Define Trade Secrets?	Remember	CO 4	BCSB 31.12
12	What is united states trademark law from which time trademark is considered?	Understand	CO 4	BCSB 31.12
13	Explain the time validity for registered trademark?	Understand	CO 4	BCSB 31.12
14	Explain the condition of purchase a book and make photocopies of it and sell, Is it violation?	Understand	CO 4	BCSB 31.12
15	Give brief explanation about the additional period of protection with trademark renewal?	Understand	CO 4	BCSB 31.13
16	Discuss the protection time period for utility and plant patents?	Understand	CO 4	BCSB 31.13
17	What is the protection time period for design patents?	Understand	CO 4	BCSB 31.13
18	What are the functions of united nations agency for promoting Intellectual property?	Understand	CO 4	BCSB 31.13
19	Explain Paris Convention?	Understand	CO 4	BCSB 31.13
20	Write a short note on Berne Convention?	Understand	CO 4	BCSB 31.13

**PART – B (LONG ANSWER QUESTIONS)**

1	Briefly explain the types and importance of intellectual property.	Understand	CO 4	BCSB 31.11
2	List out the various international organizations, agencies and treaties involved in intellectual property.	Understand	CO 4	BCSB 31.11
3	Discuss about the law of copy rights in detail and write the format of copyright.	Understand	CO 4	BCSB 31.11
4	What is intellectual property right?. Explain the five different types of intellectual property rights.	Understand	CO 4	BCSB 31.11
5	Differentiate Contributory Infringement and Vicarious Infringement?	Analyse	CO 4	BCSB 31.12
6	Device an application for registration of different types of marks in PTO and an Indian IPR organization?	Understand	CO 4	BCSB 31.12
7	What is the law of copy rights and list out the various works that can be copy righted.	Understand	CO 4	BCSB 31.12
8	Explain the features of a trade mark symbol and other marks.	Understand	CO 4	BCSB 31.13
9	Discuss some of the important considerations when commercializing intellectual property.	Remember	CO 4	BCSB 31.13
10	Explain differences between industrial design, copy rights and patents.	Understand	CO 4	BCSB 31.13

**PART - C (ANALYTICAL QUESTIONS)**

1	State the functions of trademark and purpose of trademark. Explain classification of trademark.	Understand	CO 4	BCSB 31.11
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2	State the provisions for procedure of registration and assignment of a copyright.	Understand	CO 4	BCSB 31.11
3	What is an Intellectual Property Portfolio? A well-managed Intellectual portfolio can be valuable explain.	Analyse	CO 4	BCSB 31.12
4	Explain the absolute ground for refusal of registration of trademark.	Understand	CO 4	BCSB 31.12
5	Explain why the International Organization, agencies and Treaties were established? Give any five International agreements and treaties that affect.	Understand	CO 4	BCSB 31.13

**UNIT-V  
PATENT RIGHTS**

**Part - A (Short Answer Questions)**

1	Discuss New Developments in Patent Law?	Understand	CO 5	BCSB 31.14
2	Describe briefly WIPO Treaties.	Understand	CO 5	BCSB 31.14
3	Explain how the International patent protection act is used?	Understand	CO 5	BCSB 31.14
4	Discuss about International Patent protection?	Understand	CO 5	BCSB 31.14
5	Describe the reasons for introducing copyright law?	Remember	CO 5	BCSB 31.14
6	Discuss about copy write law?	Understand	CO 5	BCSB 31.14
7	Define the copy write law is useful?	Remember	CO 5	BCSB 31.14
8	Explain trade secrets Law?	Understand	CO 5	BCSB 31.15
9	Explain about intellectual property audit?	Understand	CO 5	BCSB 31.15
10	Write the duties of IP audit?	Understand	CO 5	BCSB 31.15
11	Write the advantages about trade secrets law?	Understand	CO 5	BCSB 31.15
12	Explain the patent law treaty?	Understand	CO 5	BCSB 31.15
13	Discuss about the International trade mark Law?	Understand	CO 5	BCSB 31.16
14	Discuss about the International patent law?	Understand	CO 5	BCSB 31.16
15	Describe the advantages of International Patent law?	Remember	CO 5	BCSB 31.16
16	When did Paris convention established and for what?	Understand	CO 5	BCSB 31.16
17	Explain why the Paris convention is introduced?	Understand	CO 5	BCSB 31.16
18	Discuss why the trade secrets law is developed internationally?	Understand	CO 5	BCSB 31.16
19	Discuss about patent cooperation treaty?	Understand	CO 5	BCSB 31.16
20	Write about the Digital Millennium Copyrights Act(DMCA).	Understand	CO 5	BCSB 31.16

**Part – B (Long Answer Questions)**

1	Briefly explain the law of patents in detail with respect to 1 patenting.	Understand	CO 5	BCSB 31.14
3	What is a patent? What type of protection does a patent offer?. How long does the patent last.	Remember	CO 5	BCSB 31.14
4	Explain the inventions that are patentable and not patentable in India.	Analyse	CO 5	BCSB 31.14
5	What is a geographical indication and why geographical indication is to be protected?	understand	CO 5	BCSB 31.15
6	Explain the differences between Geographical indication and a trademark and also between Geographical indication and an application of origin.	Understand	CO 5	BCSB 31.15
7	Bring out the provisions of infringement of copyrights and statutory exceptions under copyright act.	Understand	CO 5	BCSB 31.15
8	Discuss new developments in international patent law? How can you understand them?	Understand	CO 5	BCSB 31.16
9	Explain IPR of Biological system	Understand	CO 5	BCSB 31.16



10	Explain biotechnology patents.	Understand	CO 5	BCSB 31.16
11	What are the main provisions of Indian Patent Amendment Act-2005?	Understand	CO 5	BCSB 31.16
<b>PART – C (ANALYTICAL QUESTIONS)</b>				
1	Narrate the steps involved in obtaining protection for a geographical indication? How long does it take to protect a geographical indication through registration?	Understand	CO 5	BCSB 31.14
2	Describe the new development in patent law relating for the: a) Software patents    b)Biotechnology patents	Understand	CO 5	BCSB 31.15
3	Explain about patent law treaty with suitable examples?	Understand	CO 5	BCSB 31.15
4	Explain new developments in the copyright protection following: Computer programs and Videogames.	Understand	CO 5	BCSB 31.16
5	Explain IPR of Computer software .	Understand	CO 5	BCSB 31.16

**Prepared by:**

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