

CBCS SCHEME

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BRMK557

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Research Methodology and IPR

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
Q.1	a.	Identify the meaning of Research and brief out the objective and motivation in engineering research.	10	L1	CO1
	b.	Explain brief about research cycle and verify with the research flow diagram.	10	L1	CO1
OR					
Q.2	a.	Identify the types of engineering research and briefly explain them.	10	L1	CO1
	b.	Explain about the different types of research misconduct.	10	L1	CO1
Module – 2					
Q.3	a.	Explain about the importance of literature review and technical reading.	10	L2	CO2
	b.	Mention the various benefits of bibliographic databases.	10	L1	CO2
OR					
Q.4	a.	Identify the impact of technical reaction and brief about it.	10	L1	CO2
	b.	Enumerate the impact of title and keywords on citation with example.	10	L2	CO2
Module – 3					
Q.5	a.	Define Intellectual properties and explain about its types.	10	L1	CO3
	b.	Explain about the key aspect of patent law.	10	L2	CO3
OR					
Q.6	a.	Explain about the assessment of novelty.	10	L1	CO3
	b.	Brief about the patent procedure in India.	10	L1	CO4
Module – 4					
Q.7	a.	Mention and brief about the justification for copyright law.	10	L2	CO4
	b.	Explain about the basic concepts of under lying copyright law.	10	L1	CO4
OR					
Q.8	a.	Brief about the various representations of sound recordings.	10	L2	CO5
	b.	Explain about TRIPS agreement in detail.	10	L1	CO5

Module – 5					
Q.9	a.	Explain about the justification of protection designs.	10	L2	CO5
	b.	Brief about the excluded subjected matter in the context of design protection.	10	L1	CO5
OR					
Q.10	a.	What are the rights of the owner of designs? Explain.	10	L1	CO5
	b.	Brief about the Assignment of Design Rights.	10	L1	CO5



Solution and Scheme for award of marks

Examination - Dec 2024 / Jan 2025

AY: 2024-25

Department: Mechanical Engineering

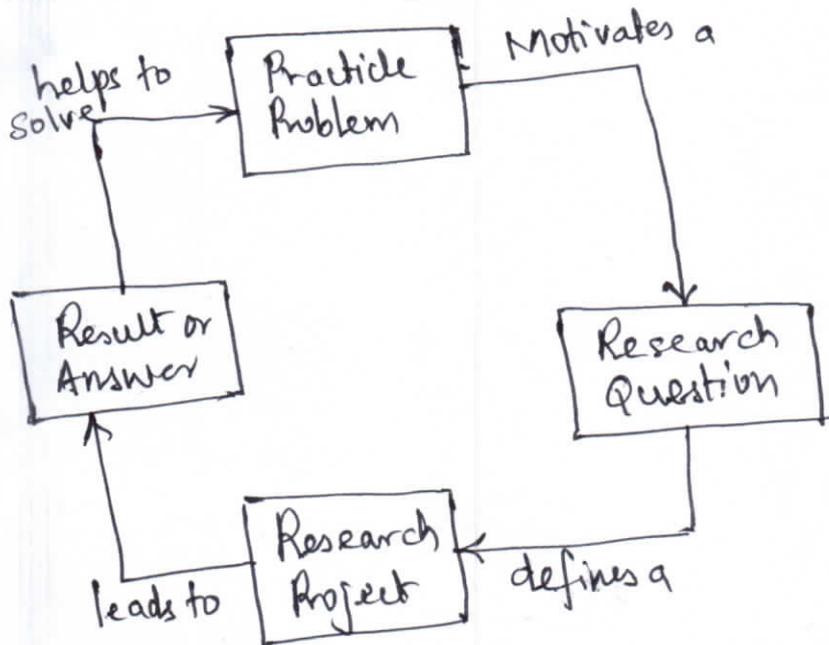
Subject with Sub. Code: Research Methodology and IPR-BRMK557 Semester: 5th

Name of Faculty: Dr. Shylesha Channapattana

Q.No.	Solution and Scheme	Marks
1(a)	<p>Identify the meaning of Research and brief out the objective and motivation in Engineering research</p> <p>Research refers to a careful, well-defined objective and systematic method of search for knowing or formulation of theory that is driven by inquisitiveness for that which is unknown and useful on a particular aspect so as to make an original contribution to expand the existing knowledge base</p> <p><u>Objective of Engineering research:</u> The objective is to solve new and important problems. To develop new theoretical or applied knowledge. To achieve desired results which contributes to ongoing problem solving.</p> <p><u>Motivation in Engineering research:</u></p> <ol style="list-style-type: none">Intrinsic motivation like interest, challenge, learning are linked to strong creative performance.Extrinsic motivation factors like reward for good work, fame, awards, praise and status are strong motivators but lacks creativity.Influence from others like competition, collaboration and encouragement.Personal motivation in solving unsolved problems, intellectual joy, service to community and respectability are driving factors	10 3 4 4

Q1 b) Explain brief about research cycle and verify with the research flow diagram.

The research cycle starts with a practice problem. The problem motivates a research question. The question helps to gather manageable volume of information which defines a research project which sets activities that ultimately leads to result or answer.



Q2 a) Identify the types of engineering research and briefly explain them

The types of engineering research are

- i. Descriptive
- ii. Analytical
- iii. Applied
- iv. Fundamental
- v. Quantitative
- vi. Qualitative.

i. Descriptive research is a fact finding, it uses surveys and fact finding enquiries, It effectively describes the present state of the art, Researcher holds no control over the variables rather can only report what has happened and what is happening,

Q.No.	Solution and Scheme	Marks
	<p>ii. <u>Analytical research</u> has to use facts/information that is already available. Analysis to make critical evaluation.</p> <p>iii. <u>Applied research</u>: It seeks to solve an immediate problem facing the organisation/society.</p> <p>iv. <u>Fundamental research</u>: It is concerned with generalization and formulation of theory.</p> <p>v. <u>Quantitative research</u>: It uses statistical observation of large number of representative cases to draw some conclusions.</p> <p>vi. <u>Qualitative research</u>: It rely on a few non representative cases or verbal narrative in behavioral studies such as clustering effect in intersections in Transportation engineering to make propositions</p>	
Q2.6)	<p>Explain about the different types of research misconduct</p> <p>Different types of research misconduct are:</p> <p>i) <u>Fabrication</u>: It refers to the falsifying data or results creating data set for an experiment that was never usually conducted. Manipulating actual data set to fit some trend or pattern.</p> <p>ii) <u>Falsification</u>: It refers to changing or omitting data or results which does not represent the actual data of experiments.</p> <p>iii) <u>Plagiarism</u>: It using someone's data or result as if it were his/her own without explicit acknowledgement.</p> <p>iv) Submitting same article to two different journals also violates publication policies.</p>	<p>10</p> <p>4</p> <p>2</p> <p>2</p> <p>2</p>
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Q 3(a)
3(a)

Explain about the importance of literature and technical reading

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The primary goal of the literature review is to know the details of the work done by other researchers in the area of research chosen currently. It helps in identifying the gaps, provides the knowledge to draw objectives and methodologies which are novel in nature. Also it protects from repetition of the earlier research.

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Technical reading is the process of extracting and summarising the information from resources like journal papers, technical manuals, magazines and other materials that demands certain level of expertise in the particular field. A strategic and efficient approach to reading research papers is essential for effective research.

5

Both technical reading and literature review are interconnected.

The technical reading of the literature is crucial for collecting comprehensive informations about the existing literature.

Clarifying the variables and its effects in relation to the dependent variables, Also identify the significant parameters are all part of effective technical reading and literature review.

3 b) Mention the various benefits of bibliographic databases.

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Bibliographic databases refer to abstracting and indexing services under reference section, useful for collecting citation related information and possibly abstracts of research articles from scholarly literature and making them available through search.

Bibliographic databases are organised collection of references to published literature, including books, articles, conference proceedings and other types of documents. These databases provides a powerful tools for researchers, students and scholars to access wealth of information in a particular field of study.

Bibliographic databases provides links to full text articles or otherwise provides the resources from where it can be accessed.

Also databases are indexed and abstracted allowing for efficient retrieval of materials.

Search can be done using keywords assigned in indexing improving the accuracy of the search.

Bibliographic database provides detailed citation for each item including author name, title, publication source and publication source.

4 a) Identify the impact of technical reading and brief about it.

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The technical reading is a process of understanding technical content for the purpose of understanding or acquiring knowledge, problem solving and staying abreast in related field.

In technical disciplines information is conveyed through complex documents containing specialised terms, data and mathematical expressions. Effective technical reading is crucial for academic success, performance, professional development and problem solving. It involves extracting meaningful information from various resources.

5

Before technical reading, researcher need to conceptualise research goals and objectives clearly. This allows researcher to approach literature with focused mindset extracting relevant information that align with research goals.

Creative reading encourages thinking beyond the texts, critical reading involves actively analysing and evaluating the contents and assessing the valid arguments.

5

Integrating critical and creative reading approach enhance understanding and enables readers to engage more deeply with technical content.

Taking notes while reading aids in retention of important information. Effective strategy is required for understanding and reading Mathematical equations, algorithms and also Data sheets. The technical informations are usually presented in the form of equations, graphs, diagrams and huge datasets.

Q.No.	Solution and Scheme	Marks
4 b)	<p data-bbox="223 100 1340 235">Enumerate the impact of title and keywords on citation with example.</p> <p data-bbox="207 246 1340 414">The title and keywords of a research paper plays a crucial role in determining its visibility, discoverability and impact in the academic community.</p> <p data-bbox="191 436 1340 851">Title is the first thing readers see and it creates initial impression of the research. Title must be clear, concise and accurately reflect the main focus and contribution of the research. Researchers often uses keywords from title when conducting literature search. So well chosen title can enhance paper's visibility in database and search engines.</p> <p data-bbox="183 862 1340 1512">Keywords plays a vital role in optimising a paper for search engines. Researchers and scholars use keywords when searching for literature in database and papers with relevant to and specific keywords are more likely to appear in search results. Including appropriate keywords improves discoverability by researchers. Many database index papers based on keywords making it wider accessibility to audience. An effective title and keywords enhances citation, discoverability, searchability and appeal to academic community.</p>	<p data-bbox="1364 145 1444 224">10</p> <p data-bbox="1364 604 1412 660">5</p> <p data-bbox="1332 1209 1380 1265">5</p>
5 a)	<p data-bbox="175 1534 1292 1668">Define Intellectual property and explain about its types.</p> <p data-bbox="143 1668 1292 2027">Intellectual property refers to the special category of the property created by human intellect in the field of art, literature, science, trade, etc. Since IP is a novel creation of mind, it is intangible in nature and differs from tangible properties like land, home, car. special rights are given to the inventor and restrict others to use it.</p>	<p data-bbox="1332 1545 1380 1601">10</p> <p data-bbox="1308 1814 1348 1870">4</p>

Q.No.	Solution and Scheme	Marks
	<p>Types of Intellectual property rights are</p> <ol style="list-style-type: none"> i. <u>Patents</u>: It is protecting the invention of creator of some products/process which is visible. ii. <u>Trademarks</u>: These are brand names, symbol, logos. iii. <u>Copyrights</u>: It includes literary and artistic works like books, drama, sound/movies recordings. iv. <u>Industrial Design</u>: It includes shapes, aesthetic aspects of the products. v. <u>Geographical Indications</u>: (GI) It indicates production of products originating from specific locations with unique qualities. vi. <u>Trade Secrets</u>: protects confidential business information. 	6
5 b)	<p>Explain about key aspects of Patent law.</p> <p>The key aspects of patent law are:</p> <ol style="list-style-type: none"> i. The innovation should be new and holds sufficient novelty in order to qualify for patent. ii. The innovation to be patented is being capable of used in industry for benefit of society. iii. The Patent law provides protection to the inventor for 20 years for granted patent. This right prevents others by using it for reproducing it in any form without the prior permission from inventor. iv. The person/organisation who infringes patent law are qualified for the punishment of imprisonment and also fine of quantum of money. v. The inventor has exclusive rights to sale, rent or authorize other person to use a patent with written agreement between them. 	10
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Q.No.	Solution and Scheme	Marks
Vi.	The inventor can sue any person/organisation in the court of law for infringement of patent law, and also can ask for suitable compensation.	4
vii.	The Patent rights are usually enforced by the judicial courts. The court of law has authority to stop patent infringement.	4
6a)	<p>Explain about the assesment of novelty.</p> <p>Everything which comes under the purview of IPR should have sufficient novelty. Its assesment has certain criteria which should be fulfilled :</p> <ol style="list-style-type: none"> i. The innovation should be new and not been found in any part of the world. ii. It should not have been published in any form like journal paper, New paper, magazine, book, etc. iii. It should not represent just modification or rearrangement of already existing thing. iv. It should not be subject of Plagiarianism. v. The novelty of the IP can be assessed by use of various search engines available like googlescholar, IEEE database, Sciencedirect database, etc. If the current research reflects in any of the searches, it loses the status of novelty. vi. The innovation is eligible to be registered under IPR, only if is new and holds novelty. It may be a improvement or some additions in the existing thing, proper justification is needed. 	10
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6 b) Brief about Patent Procedure in India.

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The process of Patent filing in India are:

1. The application of Patent with provisional / complete Specification should be submitted in prescribed forms along with requisite fees of Rs 1600.
2. The controller of Patent verifies for initial scrutiny and after 20 months, patent gets published in official journal of Patent office.
3. The patent is available in public domain, the objection if any may be raised for opposition.
4. Request for examination can be filed within 48 months of filing the application.
5. The examiner who is expert in the relevant field, scrutinize the patent and raises any queries/doubts. These are sent to applicant.
6. The applicant has to submit the response within 6 months.
7. If the responses and the queries are well addressed by applicant, thus if the examiner is satisfied, the patent is granted otherwise it is rejected after final hearing.
8. The granted patent is published in the official journal of Patent office.
9. The applicant can request for the certificate of grant of the Patent.
10. The Patent is valid for 20 years provided it is renewed every year paying requisite fees.

1x10

7 a) Mention and brief about the justification for copyright law.

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Copyright is the legal right to the original creator of the work in the field of literature, dramatics, sound recordings, film/video recordings, paintings and architecture.

To qualify for the copyright following justifications are needed:

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- i. The work must exist in physical form (tangible) which can be viewed or listened.
- ii. The work has to be original.
- iii. The work should involve some level of creativity of the creator of the work.
- iv. Anybody indulged in making, selling or hiring the copyrighted work without prior permission from the original creator, is a criminal offense.
- v. The students, researchers, scholars can use the copyrighted work for academic purpose under fair use doctrine. It should not involve any financial or commercial purpose.

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7 b) Explain about the basic concepts of underlying copyright law.

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The copyright law provides exclusive rights the creator of literature, dramatics, sound recordings, artistic work, music, and cinematographic films. The copyright law protects the work from being copied by somebody and showing that it is his/her own work. Thus it gives protection for the creator of the work.

The copyright owner enjoys two types of rights i.e.

Economic rights and Moral rights.

Economic rights are the financial benefits from sale of copyrights. Copyright owner can authorise or prohibit reproduction in any form, distribution of copies of work, public performance, broadcasting the work to public.

Moral rights include rights of Paternity and integrity. The names of the author remains the same even after transferring copyright to another party. Also any part of the work cannot be modified or altered.

Copyright infringement is a criminal offense, punishable for imprisonment and a fine of money prescribed by law.

8 a) Brief about the various representations of sound recordings.

Sound recordings are protected by copyright, which typically covers underlying composition which covers lyrics and melody, and the actual recorded performance itself. The copyright for sound recordings lasts for 70 years after the death of the creator.

Using and producing the copyrighted work/sound/music in any form and claiming as their own creation by others without prior permission from the creator is a criminal offense may lead to punishment like imprisonment and fine.

Some users may use under fair use doctrine without prior permission for the purpose of education, research, criticism or commentary, news reporting or Research scholar work.

However the copyrighted music/sound can be used with prior permission and agreement for the intended purpose.

8 b) Explain about TRIPS Agreement in detail.

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TRIPS Agreement is international legal agreement between all the member countries of the world.

It sets minimum standards for the protection and enforcement of Intellectual Property Right globally.

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Trade Related Aspects of International Property Rights (TRIPS) came into on 1st January 1995 with the objectives of:

- i. To harmonize the protection of IPR world wide.
- ii. To promote technological innovation and the transfer of technology.
- iii. To ensure that the IPR protection does not create barrier to international trade.
- iv. To balance the rights of inventors/creators and public interest.

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TRIPS Covers 7 types of Intellectual Property

- i. Copyright
- ii. Trademarks.
- iii. Patents
- iv. Industrial Designs.
- v. Semiconductor layout Designs.
- vi. Geographical Indications (GIs)
- vii. Undisclosed Information.

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Significance of TRIPS are:

- i) Created global consistency in IP laws.
- ii) Helped multinational businesses protect their inventions.
- iii) Promoted foreign investment and technology transfer.

Key Provisions of TRIPS are minimum standard, Enforcement mechanism, Dispute settlement, National treatment and most favoured nation treatment.

9 a) Explain about the justification of protection designs.

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Industrial design protection refers to legal rights given to the aesthetic or ornamental aspect of a product.

Justification for design protection are:

- i. Encouragement of creativity and Innovation:
Protecting designs rewards creativity by giving the designer exclusive rights. It encourages industries to invest in developing new and appealing designs.
- ii. Commercial value and Brand Identity:
Good design adds value and gives a product market appeal. Design registration helps in product uniqueness and support brand identity.
- iii. Economic and Business incentive:
Protection helps designers to monetize their creation via licensing, royalties or sales. Boosts sectors like fashion, automotive, electronics, packaging and furniture.
- iv. Prevention of Copying and Imitation:
Legal protection helps prevent unauthorized copying or imitation by competitors.
- v. International trade and market expansion: Design protection enhances competitiveness in global markets. A registered design can be protected internationally through systems like the Hague Agreement.
- vi. Legal certainty and clarity: A clear framework gives businesses and designers confidence to invest in new designs. It Reduces disputes and helps in enforcing rights through courts or legal systems.

Q.No.	Solution and Scheme	Marks
9 b)	<p data-bbox="199 123 1236 257">Brief about the excluded subject matter in the context of designs protection.</p> <p data-bbox="199 257 1284 414">Everything cannot be protected as a design some things are not allowed. These include:</p> <ol style="list-style-type: none"> <li data-bbox="199 392 1316 504">i. Any Industrial Design which is against public moral values. <li data-bbox="199 481 1029 571">ii. Flags, emblems or signs of any country. <li data-bbox="199 548 1029 638">iii. Industrial designs of integrated circuits, <li data-bbox="199 616 1332 750">iv. Industrial designs of books, calendars, certificates, forms, greeting cards, stamps, medals, maps and leaflets. <li data-bbox="199 728 1332 884">v. Paintings, drawings, photographs and work of architecture are defined under copyright Act. <li data-bbox="199 862 1268 952">vi. Industrial design doesnot include any trademark. <li data-bbox="199 929 1045 1041">vii. Designs not visible in normal use. <li data-bbox="199 1019 1189 1108">viii. Computer programs or software interfaces, <li data-bbox="199 1086 917 1176">ix. Designs not new or original. <li data-bbox="199 1153 1284 1310">x. Designs that are only for working properly and not for aesthetic or look. 	<p data-bbox="1356 145 1412 190">10</p> <p data-bbox="1348 604 1436 649">1x10</p>
10 a	<p data-bbox="199 1310 1204 1400">What are the rights of the owner of design?</p> <p data-bbox="215 1400 406 1467">Explain</p> <p data-bbox="199 1422 1316 1668">When a design is registered, the owner gets legal rights to control how it is used. Those rights help the owner protect their creative work and earn from it.</p> <ol style="list-style-type: none"> <li data-bbox="199 1646 1332 1848">i. Exclusive right to use the design: only the owner can use the design on a product. others cannot use, copy or sell that design without permission. <li data-bbox="199 1825 1316 2027">ii. Right to stop imitation or copying: The owner can take legal action if someone copies or imitate the design. They can be sued in court of law. 	<p data-bbox="1364 1299 1420 1344">10</p>

- iii. Right to sell or license the design: The owner can sell the design to another person or company. They also can license it to earn royalty.
- iv. Right to use the design for commercial purpose.
- v. Right to renew the design: Design rights are usually given for 10 years. The owner can renew it for another 5 years making it valid for 15 years total.

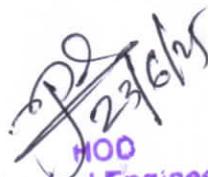
10b) Brief about the Assignment of design Rights.

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Assignment of design rights means the legal transfer of ownership of a registered design from original owner to another person or company. These include following:

- i. Transfer of ownership: The original owners gives up their rights and new owner gets full rights as per their agreement.
- ii. Types of agreements are two, i.e. complete assignment in which all the rights are transferred, Partial rights in which rights are transferred for specific uses or territories.
- iii. Needs written agreement for assignment and it should be registered in design office.
- iv. The assignment of design is usually done for getting money, transfer to a company or license for commercial benefits.


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