





#### RESEARCH AND DEVELOPMENT POLICY

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1.INTRODUCTION

M.Kumarasamy College of Engineering (MKCE) was established with a vision, 'to emerge as a

leader among the top institutions in the field of technical education'. The Institute has

developed excellent facilities, both in terms of infrastructure and scholastics. MKCE encourages

faculty members and students to undertake sponsored research projects with a commitment to

serve the society. Research and development is carried in several areas like Structural,

Environment, Image Processing, Networking, Computation, Sensor Networks, Communication,

Nanotechnology, Soft Computing, Energy, Materials, Manufacturing, Artificial Intelligence and

Simulation studies. Six departments of MKCE have been recognized as research centers by Anna

University, Chennai. Regulations relating to the Degree of Doctor of Philosophy (Ph.D.) and MS

(By Research) in the related Faculties of Engineering, Technology and in Science and

Humanities of MKCE are as per the Regulations for Ph.D. and MS (By Research) prescribed by

the Anna University, Chennai.

2. OBJECTIVES

This Research and Development Centre was established in 2012 as per the policy decisions taken

by the Governing Council meeting to achieve high quality research ambience in the Institute.

The Research & Development Centre was set up with the objective of developing the strategic

plan for scientific and technology research and ensuring the implementation of such plans.

The R&D Centre provides specialized administrative and managerial support for the operation of

academic research, sponsored research, consultancy, patent and other R&D related activities of

the Institute.

> The Research Center serves the large public and the professional researchers.

> To Encourage the faculty members to involve in the Interdisciplinary projects.

> It aims at being a platform for Research, Debate, and Dissemination of information.

3. SCOPE

The research activities shall include Supervision, Execution of new research, Inter disciplinary

and Multi-disciplinary research, Academic and Research Collaborations with National and

International Institutions/Universities, Government/Private Industries, Consultancy Assignments,

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Government and Private Funded Projects that might result in development of New or Existing Products, Process of Theories thereby Publications, Outright sale of Technology, Intellectual Property Rights and Transfer of Technology.

## 4. RESEARCH AND DEVELOPMENT CELL

The Research & Development (R & D) Cell of MKCE facilitates and encourages research culture among the faculty members, research scholars and students. Its prime role is to create contacts with the real world and promote research through a range of publications. It enables a congenial environment for technological development and monitors the research activities of the college. The R&D Cell takes up the responsibility of creating a work place to attract the best talent and strives continuously in pooling of skills and internal resources, creating strategy, overcoming limitations and making the College proud to be amongst the best institutions around the Globe. The R&D Cell aims to reach the Vision and Mission of the college and is functioning under the Chairmanship of Mr.M.Kumarasamy since 2000. Under his able-guidance and advice, the college is able to submit research proposals for grants of different agencies like DST, DRDO, MNRE, AICTE, TNSCST etc., The publication statistics and citations are creditworthy. Obtaining patents is one of its priorities.

- ➤ Identification of thrust areas of research in each department
- ➤ Advise and encourage the faculty to carry out research in-house and in collaboration with other organizations
- Visit various departments and meet the faculty to encourage and motivate them to undertake research projects and to scrutinize the proposals before submitting to funding agencies
- > Identification of physical and human resources to carryout research
- > Identify the budgetary requirements and resources for funding the research
- > Review the progress of research and offer necessary guidance whenever required
- > Monitor and propose the funding from college budget for promotion of research activities
- Identify different organizations/ industries to undertake collaborative research on current topics of mutual interest
- > Scrutinize minor and major research project proposals for submission to funding organizations such as UGC, AICTE, DST, DRDO etc.
- Monitor and assess the progress of sponsored research projects.

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- > Review and monitor academic progress of candidates registered for Ph.D. /M.S.
- > Advise and arrange Seminars / Conferences / Workshops.
- > Promote and encourage interdisciplinary research.
- ➤ Establish technology incubation centre/ Research centre/ Centres of excellence.
- Advise the faculty and find the suitability of research results for journal publication/ patenting/ product generation/ solve societal problems.
- Encourage young faculty members to register for Ph. D. in the College or at various reputed academic institutes.

#### 5. PLANNING THE RESEARCH ACTIVITIES

#### 5.1. ACADEMIC RESEARCH

- a) Doctor of Philosophy (Ph.D.) and Master of Science (M.S.) by research
- A candidate should register at MKCE research Centre on getting provisional registration letter from Anna University.
- ➤ Ph.D./M.S. candidates should present their research progress before the review committee constituted by the concerned department once in six months.
- Faculty members with Ph.D. are advised to get Research supervisor from Anna University, Chennai.
- > As per university norms scholars are permitted to do research under a supervisor.
- > The Research scholars are encouraged to publish their research works in reputed SCI indexed journals after getting the approval from their supervisors.
- > Research Supervisors are advised to submit the research articles to the journal only after checking the Plagiarism.

#### b) Institution Fellowship

The enrollment of full-time research scholars plays a vital role in enhancing the quality of research in the institute. In support of our vision and to strengthen the quality of research and development in all our research centers, Institution Fellowship Scheme is implemented exclusively for full-time Ph.D. Scholars. The institutional research fellowship of Rs.10,000/- per month is given to the Ph.D. Scholars. The institutional fellow has to abide by the Research policies of MKCE.

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#### 5.2. SPONSORED RESEARCH

### a) Recruitment of a project staff

- ➤ All the appointments related to projects (Junior research fellow/Senior research fellow/Research Assistants/Institutional Fellow) will be contractual and on the basis of consolidated monthly emoluments prescribed by the Sponsoring Agency or the institute.
- > The tenure of appointment of a project staff will be for the duration of the project.
- The Project staff shall execute a contract agreement on non-judicial stamp paper of value at least Rs. 100/- at the time of joining. The contract may be terminated by either side (Staff or R&D Unit) by giving three months' notice or three months consolidated emoluments in lieu of the notice.
- The selection of project staff shall normally be made as per the guidelines provided by the sponsoring agency and with the approval of Principal through the R&D Head.
- The project staff may be allowed to register for Full-time M.S. (By Research)/Ph.D. programme, if he/she fulfills all the requirements prescribed by the Institute.

#### b) Salary and Allowances

- > A separate book of accounts shall be maintained for each project.
- > Overhead charge of the project will be transferred to the 'Funded Project' account.
- Accounts for sponsored projects shall be maintained under five broad budget heads. They are: Salary, Equipment, Contingency & Consumables, Travel and Institutional Charges (Overhead). Minor adjustment in approved budget heads may be permitted by the Principal without violating the norms of funding agency.
- Principal Investigators (PIs) shall arrange to maintain Procurement-cum-purchase Registers and Stock/Asset Register.
- Cash advance shall be drawn in the name of PI/Co-PI of the project.
- ➤ All expenditures shall normally be made within the proposed date of completion of the project. Exception may be permitted with the consent of the sponsor.

#### c) Incentives for Publications

In order to motivate the faculty members towards research and publishing their research findings in reputed journals (SCI/SCIE) with impact factor, incentives are given to faculty members.

S. No	Impact Factor	Amount (Rs.)
1	Without impact factor	5000
2	Upto 1	7000
3	1.1 to 3	9000
4	3.1 to 5	12000
5	Above 5	20000

#### d) Accounting and Financial Supports

#### Benefits to PI/CoI:

- Within the framework of a sponsored project, PIs shall be permitted to have consultancy fee/honorarium, if the sponsor so approves.
- Depending on availability of funds under Travel head and with the approval of the Principal, expenses (TA, DA, Registration Fee, etc.) for presenting papers in National Conferences in fields relevant to the project shall be given to PIs/CoIs from the project fund.
- > On recommendations of PIs and with the approval of Principal, project staff and students in the projects may be permitted to present papers in conferences. If funds are available under Travel head, then TA, DA and Registration Fee support may be provided.

#### e) Incentives for Projects Funded by Sponsoring Agency

In order to promote research environment and activity of the Institute and motivating the researchers, incentives are given to the faculty members who have Projects sponsored by sponsoring agencies. 30% of the Overhead charge defined by the Agency is given as Incentive to the PI and CoI of the project.

#### 5.3. FACULTY RESEARCH & DEVELOPMENT INTERACTIONS

To get expertise in specific domain and promote the research interest, MKCE is providing full financial help (Registration/course Fee and TA/DA) to faculty members attending International Conference/Seminar abroad and in India. A faculty can avail these benefits once in an academic year. TA/DA and Honorarium is allowed for the experts coming to MKCE for Research Interactions and Collaborative Research works.

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#### 5.4. CODE OF CONDUCT

The following are the codes of conduct which express the ethical values to be practiced by all staff engaged in academic and/or sponsored research activities at MKCE.

- > To abide by all the appointment related terms and conditions as approved by Principal.
- To maintain secrecy of the research findings/technical information and to avoid communication of any official document or information to others without permission.
- To commit no form of plagiarism during preparation and dissemination of reports and research articles.
- ➤ To practice and promote fairness in research.
- > To uphold the values of freedom, democracy, equality and respect for diversity. In case of any breach of code of conduct by any project employees, the Principal may constitute committee of enquiry to initiate disciplinary proceedings against those employees.

#### 6. CONDUCTING THE RESEARCH

- Legal and ethical requirements regarding human participants, animals, and personal information should be known to everyone involved in the study, and whom to contact for advice. Men, Material and topics to be used for research as required by specific regulations.
- Equipment to generate data should be fit for the purpose, appropriately designed and have sufficient capacity. It should be calibrated and serviced regularly by trained personnel so that performance is optimal and results are trustworthy.
- A standard operating procedure should be retained for each device. There should be easily accessible instructions for safely shutting down devices in an emergency.
- > Standard operational procedure should be documented for all routine methods to ensure that the data is recorded consistently. It should be written in simple language, easily accessible, and in standardized format.
- > There should be clarity about the ownership and use of wherever relevant to society at the beginning of the research program.
- > Data and samples used or created in the course of the research.
- > The results of the research are recorded where available.

7. PROFESSIONAL GUIDANCE AND LEGISLATION

The Institute expects all researchers including students and trainees to observe the standards of

research practice set forth in the guidelines published by scientific societies and other relevant

professional bodies. All Researchers must be aware of the legal requirements that govern their

work as well as health and safety legislation and data protection.

8. LEADERSHIP AND COOPERATION

Head of the institute, Deans, Heads of the department and Senior professors must ensure that a

research atmosphere of mutual cooperation is created with encouragement for open exchange of

ideas.

9. SUPERVISION

The institute provides appropriate guidance for research activities and examines whether

research managers are trained in supervisory skills. Research supervisor, guiding researchers

and funded projects supervises all stages of the research process carried out by laboratory

technicians, researchers and research fellows, in addition to sketching or developing a

hypothesis, preparing the grant and aid applications, protocol design, data recording and data

analysis.

10. TRAINING

The R & D Cell shall plan periodic training programs to enable faculty members, research

scholars and students to understand and adopt the best practices in research.

Supervisors shall encourage research scholars, faculty members and students to attend relevant

training programs whenever offered as part of their overall career development.

11. PRIMARY DATA/SAMPLES/EQUIPMENT

Data generated in the course of the investigation will be kept securely in written, printed or

electronic format, appropriately. Backup records will always be maintained for data stored on a

computer or equipment connected to computers.

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Researchers must report any changes in the direction of sponsored research to the sponsoring agency or any other relevant body. It is expected to discuss any changes in the direction of the investigation with the sponsoring agency prior to implementation.

## 12. INTELLECTUAL PROPERTY RIGHTS

Intellectual property rights refer to creations of the mind: inventions; literary and artistic works; and symbols, names and images used in commerce.

#### **12.1. PATENT**

A patent is an exclusive right granted for an invention, which is product of a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem.

#### 12.2. COPYRIGHTS

Copyright is a legal term used to describe the rights that creators have over their literary and artistic works.

#### 12.3. TRADEMARK

A trademark is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises.

#### 12.4. INDUSTRIAL DESIGNS

An industrial design constitutes the ornamental or aesthetic aspect of an article

#### 12.5. INVENTOR

The inventor is the creator of the invention.

Researchers shall inform the intellectual property cell regarding any developments related to intellectual property rights that may arise from the research work/consultancy assignments.

#### a) Filling a patent application in India

Intellectual property office of India gives an online tool to "e File patents applications" easily and effectively with following details to be furnished through college IPM Cell only.

- > Applications for grant of patent
- Provisional specifications
- > Abstract of the invention
- Declaration of the Inventorship

> Power of attorney. If your patents are filed by a patent agent then this form is necessary, otherwise not.

➤ E-filling fees

Illustrations/drawings of the invention

#### b) Ownership

To strengthen the R & D activities of the institution, it is proposed to motivate our faculty and students to publish patents in their individual names with college affiliation.

As per direction of the principal, approximately 50 patents are to be published in this Academic year 2020-21. To meet out above said activities the expected budget is as follows:

1. For patent filing = Rs.1750

2. For Early publication = Rs. 2750

3. Total cost per patent = Rs. 4500

4. For 50 patents =  $50 \times 4500 = Rs.2,25,000$ 

MKCE jointly shall own all the intellectual properties produced by the MKCE employees with or the without the support of funding agencies. MKCE reserves the right to apply IP protection in India/throughout the world/specific countries for suitable protection of the IP generated, in case if it is financially supported by MKCE.

#### c) Disclosure

MKCE encourages the timely disclosure of all potential inventions / innovations created by faculty members in the course of institute related activities.

#### d) Licensing and agreements

MKCE understands the commercial needs and the security required in the form of IP especially in the case of breakthrough technologies/ products / processes or any other form of invention. The licensing is done by MKCE through R & D cell and IPM Cell, which handles the evaluation, marketing, negotiations and licensing of the MKCE owned IP. In certain cases, MKCE might use the services of a third party for licensing the technology developed, under mutually agreed terms and conditions.

#### e) Technology license/ Transfer options

Technology License / Transfer Options would be as per the current policy and the revenues earned shall be shared with the inventors and MKCE in a 75:25(Inventor: MKCE) ratio, as per the separate inventor's agreement.

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## 12.6. INCUBATIONS THROUGH TECHNOLOGY BUSINESS INCUBATION (TBI)

MKCE inventors and community interested to incubate the technologies and business ideas developed have an opportunity to develop such ideas through MKCE-TBI. Outcome of such ideas shall be governed by the rules and regulations of TBI, in such cases.

## 12.7. INVENTIONS RELATED TO IPR

- MKCE shall be a co-owner of the IP generated from the research projects funded by Government, Private Agencies or Organization.
- In the case of a collaborative based IP generation, the IP terms of agreement is to be considered along with the policy. Collaborators terms and conditions shall be followed in case if there is any conflict.
- MKCE can assign the IP generated to the funding agency based on the nature of the technology, funding and specific applications.

## 12.8. INTELLECTUAL PROPERTY ORIGINATED FROM STUDENTS

MKCE shall co-own intellectual property created by students where:

- The student's supervisor or any other staff member has made a substantial contribution to the creation of the intellectual property.
- The intellectual property is partly or fully, created using facilities/infrastructure available at MKCE.

## 12.9. INTELLECTUAL PROPERTY ORIGINATED FROM FACULTY MEMBERS

Except as otherwise provided in this policy or in a separate agreement, MKCE owns all intellectual property originated from Faculty members, staff or affiliates.

- ➤ In the course of employment with the MKCE
- As part of a project of program supported by funds obtained or provided by/through the MKCE

#### 12.10. THESIS

- The student is the original creator of the thesis, fine -tuned with relevant contribution of the supervisor and the copyright authorship rests with MKCE.
- The ownership is jointly held by the students and the supervisor concerned. The supervisor can waive off their joint ownership if desired. Relevant forms will be made available for such waivers.

## 12.11. BOOKS, ARTICLES AND RELATED LITERARY WORKS

- MKCE encourages its personnel to disseminate and assimilate the knowledge in the form of books, technical articles and reports. In this respect, MKCE does not claim ownership of copyright on books authored by MKCE personnel.
- ➤ In case of institute designated works and other works like the contents development programme, the ownership rests with MKCE.
- ➤ Use of MKCE logo on any personal publications by the faculty/staff/student is prohibited, unless and otherwise it is required by design.

#### 13. CONSULTANCY

#### 13.1. OBJECTIVE

To establish a framework to support consultancy activities at MKCE

### 13.2. GENERAL PRINCIPLES OF CONSULTANCY

- > A consultancy work may be undertaken by the faculty members in their area of expertise.
- > The consultancy services should be undertaken only with prior permission of the institute.
- > It should not interfere with the discharge of prime duties of the faculty member or the department.
- > Consultancy services should not be in conflict with the interest of the Institute.
- > In the context of consultancy services, the consultant should not directly or indirectly get associated with any activity which may be unethical or inappropriate.
- The two types of consultancy are Individual Consultancy and Institutional Consultancy. Individual Consultancy is offered by a faculty member in his/her individual capacity. Institutional Consultancy is offered by a team of faculty members from the same discipline or different disciplines of the Institute.

## 13.3. CIRCUMSTANCES UNDER WHICH CONSULTING ACTIVITY MAY BE PERMITTED

- The organization requiring consultancy services from faculty members or the department shall write to the Principal indicating the expertise required, alternatively faculty could also seek the permission of Principal of the Institute.
- In considering whether or not permission will be given for consulting activity, the Principal will take into account such factors as the compatibility of the activity with the responsibilities

and commitments of the faculty member(s), potential conflicts of interest and the use of institution resources.

- ➤ A MoU may be signed between the organization and the institute towards the nature of consultancy work and the commercials involved.
- ➤ The faculty or a group of faculties engaged in the consultancy work shall periodically report the progress of the consultancy work to the HoD.
- For any outside visits leave as due is to be availed by the concerned staff members. Special Casual leave or duty leave may be permitted at the discretion of the Principal.

#### 13.4. PUBLICATIONS

Publication arising from consultancy work shall include the faculty affiliation of the college and the acknowledgement for the facilities used from the college.

### 13.5. INTELLECTUAL PROPERTY RIGHTS

Patents arising from consultancy work if applicable shall be jointly published in the name of the authors and the institute.

### 13.6. OTHER COMMERCIAL RULES

- > Institute facilities and resources may be used for the consultancy work.
- Meeting related to consultancy work with the organization(s) may be conducted in Institute and acknowledge the facilities used from the Institute.
- Revenue sharing between faculty and Institute shall be as given below, after deducting all actual expenses incurred for it:

In order to promote Industrial Consultancy activities in the Institute, the following Institutional charges shall be applicable:

Category	Activity	Institute's Share as a % of Revenue Generated through Consultancy cost	PI and CoI Share as a % of Revenue Generated through
I	Projects requiring use of Laboratory and other facilities of the Institute	50	Consultancy cost 50
II	Projects that do not use Institute facilities	30	70

On completion of the work, the honorarium on approval of the Principal may be distributed on a case by case basis or periodically.

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14. DISSEMINATION AND PUBLICATION OF RESULTS

A research project often culminates in publication or dissemination of the findings. This passes

on the potential benefits of research to a wide range of individuals and organizations including

other researchers, consumers, industry, policy makers and the wider community. It also fulfills

obligations to funding bodies. Dissemination includes reporting of research in academic journals

or books, conference presentations, creative works, web pages, and professional and institutional

repositories.

MKCE researchers act in accordance with the Anna University code for the Responsible

Conduct of Research, which include the following responsibilities related to publication and

dissemination of research outputs:

> Adopt methods appropriate to the aims of the research and ensure that conclusions are

justified by the results.

> Disseminate research findings responsibly, accurately and broadly. If necessary, take action

to correct the record in a timely manner.

> Cite and acknowledge other relevant work appropriately and accurately

For others to benefit from the results of research they must be able to trust the accuracy of

reporting. The responsible publication and dissemination of research outputs also involves:

Provision of a complete account of the research findings

> Adherence to criteria for authorship, acknowledgement and affiliation

Accurate disclosure of research support and conflicts of interest

> Appropriate protection of confidential and sensitive information

Careful evaluation of the credibility of the publisher and journal

In choosing an outlet for their work, researchers must consider funding requirements related to

Open Access and the MKCE Research Publications Policy and Procedures.

15. PREVENTION OF RESEARCH MISCONDUCT

Academic researcher is expected to follow a few ethical codes; violation of any of them will be

considered as research misconduct. The major research misconducts are as follows:

Fabrication: reporting faked data or results

> Distortion: manipulation of data and results

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- > Plagiarism: claiming others' content or language, diagrams, figures, tables, etc. to be their own work.
- > Breach of confidentiality: publication of confidential data without permission.
- Interference: deliberate creation of hurdles for co-researchers, destruction of equipment, etc.
- > Violation of copyright or patent: dealt as per law of the land.

Plagiarism in an educational institution is the most common form of academic misconduct. Common misconceptions are as follows:

- > Copying from Internet without citation / approval
- > Changing a few words in the texts
- > Copying from published work without citation
- > Copying from other's unpublished works.

It is one of the most serious academic offences. Sufficient checks and measures in institutional systems are needed to be adopted as follows:

- > Growth of awareness about plagiarism amongst researchers, students and faculty members.
- > Check research articles using Plagiarism software before submission to journals, conferences, symposiums, workshops.
- > Declaration by researcher that the work is free from plagiarism.

# 15.1. PENALTIES INTRODUCED FOR MAINTAINING ACADEMIC INTEGRITY IN THE INSTITUTE

#### a) Students

- No credit awarded for the portion of work where plagiarism is detected

Authority: Academic Committee of the Department (for B. Tech / M. Tech)

- Awarding lowest grade if partial work is copied from others' works

Authority: Academic Committee of the Department (for B. Tech / M. Tech)

- For serious act of plagiarism
- Warning along with penal action on grades.

Authority: Academic Committee of the Department (for B. Tech / M. Tech)

Loss of semester

Authority: Recommendation to the College by Academic Committee of the Department (for B. Tech / M. Tech) through College.

> Expulsion from the college

Authority: College Administration on receipt of report from Academic Committee of the Department through College Academic Committee (for B. Tech / M. Tech) and the recommendation from the duly constituted investigation / the Disciplinary Committee of the College.

#### b) Faculty and Staff

- To be decided mainly by the College Authority.

Penalty may include

- ➤ Cautioning by the Departmental Academic Committee for false certification of a work based on plagiarism.
- > Penalty related to service conditions.

#### 16. PROMOTION OF RESEARCH

The promotion of research is the backbone to sustain the research environment in the campus. The purpose of this policy is to establish procedures for the conduct of research and scholarly activity and to promote applied research and innovation. The composition of research committee is as follows:

- ➤ Chairperson (Principal)
- Observer (Executive Director)
- > Research & Development Cell Head
- ➤ External Members of Research Advisory Committee
- ➤ Internal Members of Research Advisory Committee

Research committee meets twice a year and reviews various research activities in the institute and suggests a plan of action to improve R&D activities. It guides on various ways and means to create a research culture in the institute. In addition, it identifies thrust areas, current research directions and research funding opportunities.

Research policy of the institute is intended in a way that faculty can carry out research effectively as they are guaranteed certain freedom and are required to accept corresponding responsibilities. The following policies are in place to achieve excellence in the fore front of research.

Faculty members are encouraged to enroll in a Ph.D. program and to avail seed money to carry out their research work.

- Faculty members are motivated to present and publish papers in reputed conferences and journals with financial support.
- Faculty members are encouraged to apply for research funding to different agencies such DST, DRDO, UGC, AICTE, MHRD etc.,
- > To augment the research, faculty members are provided with excellent computational facilities to carry out simulation study.
- Publications in reputed journals are rewarded with attractive cash incentives to motivate the faculty members
- > Budget allocated to carry out the research work.
- Work load can be curtailed for those who are working as Principal invigilators in Funded Projects and Consultancy Projects
- Faculty can avail 11 days ON DUTY in an academic year for attending seminars, workshops, FDPs and conferences. The Faculty members can avail maximum of 4 days continuous ON duty for external participation.
- Faculty members pursuing Ph.D. with external Supervisor can avail 12 days ON DUTY in an academic year.
- Faculty members pursuing Ph.D. with Internal Supervisor can avail 9 days ON DUTY in an academic year.

#### 17. OUTCOME OF RESEARCH

Outcomes are normally categorized as furnished below.

- Funded Projects
- Consultancy Projects
- Journal Publications
- Patents
- Book Publications
- Conference Publications

## 18. SCOPE FOR THE FUTURE DEVELOPMENT

MKCE Encourages M.E., /M.Tech. and Ph.D. holders to pursue their higher studies in reputed Indian/Foreign Universities.