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Sub: - Establishment of RDCs in GDCs & SOP for Research & Innovation - Reg.

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The National Education Policy 2020 (NEP 2020) emphasizes on the need for development in research in higher educational institutes (HEIs) in India in Chapter 17 of the policy, saying "A robust ecosystem of research is perhaps more important than ever with the rapid changes occurring in the world today, e.g., in the realm of climate change, population dynamics and management, biotechnology, an expanding digital marketplace, and the rise of machine learning and artificial intelligence. If India is to become a leader in these disparate areas, and truly achieve the potential of its vast talent pool to again become a leading knowledge society in the coming years and decades, the nation will require a significant expansion of its research capabilities and output across disciplines. Today, the criticality of research is more than ever before, for the economic, intellectual, societal, environmental, and technological health and progress of a nation".

It has arisen a critical necessity for Government Degree Colleges (GDCs) in the state of Andhra Pradesh to chase such challenging future goals while playing the pivotal role of HEIs, particularly in terms of research, innovation, and incubation. There must be an effective implementation plan to match the expectations of the NEP. The UGC, has released guidelines (enclosed) to establish Research and Development Cell (RDC) in Higher Educational Institutes (HEIs) in March 2022. The guidelines included a clear Vision, Mission, and Objectives of establishing RDCs in HEIs. Most importantly, National Assessment and Accreditation Council (NAAC) assesses Research, Innovation and Extension as a criterion for accreditation; so also "Research and Professional Practice" is a major influential parameter in National Institute Ranking Framework (NIRF) ranking.

Research may be envisaged as a means of acquisition and use of expert skills for the professional development of students, faculty and the HEIs. Innovation is the essential need to inculcate and develop novel skills to match the ever-evolving job market/industry requirement. The following activities are proposed to be undertaken in GDCs as a Standard Operating Procedure (SOP). In this context, the CCE is coming up with this SOP.

In this context, All GDCs are advised to scrupulously go through, adopt, and adhere to the procedures mentioned hereunder. Failing in which shall result in low/nil progression of research-based activities at the HEIs which could have a negative impact on the performance indicators of the HEIs with respect to recognition, accreditation, ranking etc., On the other hand, most importantly, the absolute purpose of HEIs as human resource development centres cannot be fulfilled.

I. ESTABLISHMENT OF RESEARCH AND DEVELOPMENT CELL

The UGC launched an initiative to establish a RDC in each HEI with the mandate for promoting quality research that contributes meaningfully towards the goal of a self-reliant India ("Atma-Nirbhar Bharat"), aligned with the provisions of NEP-2020. The UGC issued guidelines for the establishment of RDCs are extracted and reiterated hereunder to frame within the scope of GDCs.

Vision

“To put in place a robust mechanism for developing and strengthening the research ecosystem within HEIs, aligned with the provisions of NEP-2020.”

Mission

- ❖ To create a conducive environment for enhanced research productivity.
- ❖ To encourage collaboration across industry, government, community-based organizations, and agencies at the local, national, and international levels.
- ❖ To facilitate greater access to research through mobilization of resources and funding.

Objectives

1. To create an organizational structure with role-based functions of RDC, formulate Research Policy for the HEIs, identify thrust areas of research, and form related cluster groups/frontline teams/consortia of researchers.
2. To create enabling provisions in Research Policies for recruitment of research personnel, procurement of equipment, and financial management with adequate autonomy to the Principal Investigator(s) and disseminate research outcomes to stakeholders and the public at large.
3. To establish a special purpose vehicle to promote researchers and innovators, identify potential collaborators from industry, research organizations, academic institutions & other stakeholders for cooperation and synergistic partnerships.
4. To act as a liaison between researchers & relevant research funding agencies, extend guidance in preparation & submission of project proposals and post-sanctioning of the grants to oversee adherence to timelines.
5. To have better coordination among other cells/centres dealing with University-Industry Inter Linkage, Incubation, Innovation and Entrepreneurship Development and Intellectual Property Rights (IPR).
6. To develop an Institutional Research Information System for sharing the status of ongoing/completed research projects/Programmes, expertise & resources, etc., making effective use of Information & Communication Technology (ICT) for preparing the database of in-house experts to provide industrial consultancy and services.

7. To engage & utilize the services of superannuated active faculty/scientists in research capacity building of talented young minds and promote mobility of researchers across institutions and R&D Labs.

8. To serve as nodal centre for ideation and conceptualization of research topics/themes by organizing workshops and training programs and ensuring the integrity and ethical practices in research activities including clearance of bioethical committee wherever required.

ORGANIZATIONAL STRUCTURE & FUNCTIONS

1. Governance

A Research Advisory Council (RAC) is to be constituted with the following composition to function as RDC.

1. Principal as the CHAIRMAN
2. A senior faculty (research experience is preferable but not compulsory) shall be nominated to act as CONVENER, & Committees, with two to three nominated faculty members and student representatives, to function as
3. Finance and Infrastructure Committee
4. Research Program Policy Development Committee
5. Collaborations and Community Committee
6. Product Development Monitoring and Communication Committee
7. IPR, Legal, & Ethical Matters Committee

The RAC shall look after all the research activities of the HEI with clear allocation of functions to respective committees and work as a Single-Window Operating System for effective functioning.

2. Administration

Planning, implementation, and monitoring of research activities in HEIs, formulating rules, regulations, and policy frameworks for utilization of facilities and resources at HEIs. The activities of RDC will be mentored and monitored by above committees for devising research models, technology, appraisal, foresight & review functions, mediating sectoral R&D progress, and IPR protection. RDC should keep a close contact with the Ministry Innovation Cell to make use of various innovative plans for facilitating the researchers.

3. Research Ecosystem/Collaboration

Building a 'Research Ecosystem' which is sustainable and leading to consistent quality research outcomes and enhanced productivity does encourage the students and faculty to take up research-based activities. The HEIs that are relatively new or not so well established should develop a connection with RDCs of already well-known/established HEI. Facilitating all the networking requirements, funding opportunities, faculty/student exchange, academic & industry collaborations, MoU opportunities, conducting FDPs or provision of such opportunities etc., under a single window functioning system helps in bringing up the research prospective of the HEI,

which is otherwise neglected due to existing guideless condition, or the hardships faced by individuals in the due course of taking up research and innovative activities.

4. Information Management System

To establish such an ecosystem as discussed above, a Research Information Management System (RIMS) is essential. RIMS shall maintain research-oriented information related to research databases, publications, research projects, fellowships, collaborations, patents, thrust research areas, innovations, conferences, workshops, publishing houses & publications etc. aligned with the institution's research policies. Also, it shall gather the information pertaining to subject experts, state-of-art research laboratories and sophisticated instrumentation facilities, digital libraries, intellectual property facilitation, quantitative methods, data analysis, analytical and consultancy services etc.,

Each HEI needs to create a blog or portal for Institutional Research Information and Institutional Repository and sign an MoU with UGC- INFLIBNET to access and upload the research information through Shodh Ganga, Shodh Gangotri, Shodh Sindhu, Shodh Shuddhi, and Shodh Chakra.

5. Human Resources for Research and Innovation

Procurement of Human Resources by collaborating and inviting Visiting faculty, Superannuated faculty, Expert Alumni, Scientists, Industry Experts and Emeritus Professors would fetch the HEI ecosystem an expert guidance and mentorship without much financial burden/no financial commitment.

6. Research Promotion

Promotion of research and innovation related activities by encouraging the staff and students by providing awareness of Research Thrust and Clustered Areas, Research Incentives and Recognition Opportunities like various Awards, providing Technology Development and Business Centred Facility to support the conceptualization of start-up ideas, pre-incubation, and guidance to establish start-ups and procure financial grants for such activities and scaling-up of the same.

7. Integrity and Ethics

Sensitizing of and ensuring the implementation of fair research practices like plagiarism check using standard software, fair publishing practices, ensuring that the research work gets published only in peer reviewed journals e.g., UGC-CARE listed journals.

8. Capacity Building

Building the capacity of faculty and students to undertake research problems in line with the latest advances in diverse disciplines to push the boundaries of knowledge through publications and contribute to technological developments relevant to societal needs. It would also pave the way for HEI to attract more research grants under norm-based funding, improve its accreditation ranking and enhance its brand image. Regular events such as refresher courses, workshops, training/internships, group discussions and seminars/conferences may be organized for capacity

building. RDC would play a pivotal role in creating central R&D facilities with the provisioning of associated training/internship thereon.

9. Research Monitoring

The current policy environment in India encourages HEIs to be responsible and accountable for research development and innovation activities through the creation of infrastructure, generation of resources, promotion of business, and facilitation of policy framework to nurture the culture of quality research by adhering to ethical practices. Among the standard functions, the RDC in an HEI needs to monitor and oversee research progress, coordinate program, manage and facilitate optimizing resources, and timely review of research activities for completion of the projects as per schedule. HEIs need to formulate and adhere to specific quality benchmarks for research to meet the global/ international standards. The proposed RDC should conduct a quality review (SWOC Analysis) or internal evaluation of the research papers and suggest Scopus Indexed, Web of Science (WoS), or UGC-CARE recognized journals for appropriate publications. R&D Cell of HEIs must ensure that all the Research Labs in the institution fulfil the norms of Good Laboratory Practices (GLP) and Safety (Bio and Chemical) measures. Getting recognition as a QIP centre would be an added advantage to the HEI.

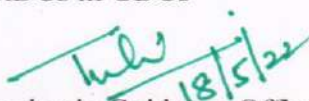
Some important Research and Innovation based activities to be taken up by RDCs, their standard operating procedures, outcome, role of RDC, students, faculty, HEI/Principal are discussed hereunder. Activities that are suggested to be implemented at the level of students must be monitored by concerned mentor/faculty & RDC, likewise, activities to be implemented at the level of faculty/HEI must be monitored and taken care of by RDC and Principal. Apart from the outcomes discussed, a better score in NAAC evaluation, NIRF, ISO certification etc would result. Though the terms used in this document sound sophisticated, the very nature of their functioning is as basic as gathering all the necessary information and disseminating it to the needy staff or students, encouraging them to apply/participate, follow up & maintaining records of the activities for uplifting of the research ecosystem in the college, which eventually help the institution in accomplishing the vision statement. Some web links are also provided to help in better understanding and adopting the activities discussed. HEIs (GDCs) shall strive sincerely to implement the maximum, but not limited to, the activities discussed in the document. Although the roles of student/faculty/in-charges of the departments/Principal are suggested in the document, collective effort of all the stakeholders is required to implement the guidelines. Most important to note is that funding required for any activity may be met from internal resources or external grants.

Sd/- Dr. Pola Bhaskar, IAS.
Commissioner of Collegiate Education

Copy to RJDCEs, Principals of All GDCs, A.P.

ANNEXURE: Important activities to be implemented & monitored by RDCs in GDCs

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Academic Guidance Officer

ANNEXURE - IMPORTANT ACTIVITIES TO BE IMPLEMENTED & MONITORED BY RDCs IN GDCs

II. IMPORTANT ACTIVITIES TO BE IMPLEMENTED & MONITORED BY RDCs IN GDCs						
S#	Activity	Level of Implementation	Description	Possible Outcome	Role of RDC	Standard Operating Procedure (SOP)
1	Student Study Projects (SSPs)	Student	Implementing Regular SSPs ensuring that every student undertakes at least one (1) SSP in all the core subjects with proper study report/ dissertation.	Experience in framing and testing hypotheses, skills in research methodology, understanding results as per research logic /conclusions, and writing research reports.	<ol style="list-style-type: none"> 1. RDC shall collect and keep the list of topics in each subject/course in research thrust areas. 2. Design / Approve convenient formats for Project-log and SSP register. 3. Design / Adapt Evaluation Weightages for SSPs. E.g., Weightages for Project Log, Project Implementation, Project report, Presentation etc., 4. Maintain a database of all the SSPs and their outcomes 5. Encourage the concerned mentor/student to publish, patent, and scale-up the project outcome. 	<ol style="list-style-type: none"> 1. Study mentor with subject expertise must be assigned to each student, so that an SSP will be a 'One on One' project 2. Every student must select a unique topic related to the course/program, and chalk-out timeframe, requirements, and methodology with the help of the mentor. 3. Project-log must be maintained by every student in a convenient format, in consultation with the mentor. It should contain a list of project activities, methodologies used, results obtained/data gathered, documentation done, on a daily basis like a diary. 4. At the end of SSP, students must submit a Dissertation along with the Project log for evaluation; Also, a Presentation or Viva-voce may be conducted according to the SSP weightage. 5. An SSP register with all the details of each SSP, including awarded score/grade must be maintained by the mentors, semester/year-wise.

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2	Internships	Student	Undergoing Internships at Recognized research institutes or R&D departments of various industries.	Fulfilment of program credits and simultaneous research upskilling in the latest industrial need.	RDC, as part of its RIMS, shall maintain a database of available recognized Research Institutes or R&D departments of various industries that offer/accept internships, and make MoUs with them. Database must include Regional/National/International Internships opportunities.	As part of Internship programs intended for UG/PG courses as prescribed by APSCHE Revised CBCS framework, Students must be encouraged to take up internships at recognized Research Institutes or R&D departments of various industries, duly following the procedures prescribed by APSCHE for Internships.
3	Apprenticeships	Student/Institute	Introducing Apprenticeship based programs or obtaining apprenticeship opportunities from R&D departments of various industries.	Increased admissions in the HEI. Assured placements and upskilling in the latest industrial need.	<p>1. RDC, as part of its RIMS, shall maintain a database of the courses offered by skill sector councils, a database of available recognized Research Institutes or R&D departments of various industries that offer apprenticeships, and make MoUs with them.</p> <p>2. RDCs of autonomous colleges may try to start at least one of these courses from AY 2022-23.</p>	<p>1. Introduction of Skill-embedded UG/PG courses by obtaining MoUs with recognized research institutes or R&D departments of various industries, duly following the procedures.</p> <p>2. Advertise/Popularize the program and its benefits through admission campaigning, detailed brochure on the program with program outcomes and attract students.</p> <p>3. Maintain a record of 'Research and Innovation Based Apprenticeships', separately, for each skill embedded course, student-wise with all the details including the stipend particulars.</p>

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4	Inclusive activities	Student	Introduction of research learning platforms like CUBE, Chai & Why (references given below) and such outreach programs offered by prestigious research institutions to students.	Development of curiosity for research, Understanding of science concepts	<ol style="list-style-type: none"> 1. RDC shall identify the inclusive programs like CUBE and Chai & Why and send the information to all the departments. 2. RDC shall track and keep a record of the activities undertaken and try to adopt such programs as part of the college outreach programs. 3. Based on the feedback, RDC shall bring any changes in the implementation of the inclusive activities. 	<ol style="list-style-type: none"> 1. Students shall be sensitized of such programs and be formed into groups as per their interest, from each department. 2. Each group shall choose a supporting Mentor from faculty. 3. With the help of RDC, a schedule for participating in these programs shall be prepared and informed to all the participating students. It is preferable that the schedule is planned beyond teaching hours or on holidays. 4. Mentors must provide links to these inclusive programs as per the schedule and encourage them to participate. 5. After participation, feedback may be received from participated students and record the outcome of participation. 6. With due popularization of these programs in the campus, other students may also get inspired and participate.

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5	Student Exchange Programs	Student	Exchange of students within GDCs nearby or with HEIs under collaboration for a short span.	Exposure to new research and academic environment and acquisition of new skills and academic contacts	RDCs shall identify the research-infrastructure gaps in the college and make MoUs with member DRC colleges, other Academic institutions with such facilities and plan for short term student exchange programs for research training.	<ol style="list-style-type: none"> 1. Students must be encouraged to go on exchange and prepare a list of students who are interested. 2. A detailed SE schedule must be prepared and communicated in advance to the partner HEI. 3. Arrangements must be made for travel & hostel accommodation of students as per the MoU. 4. After completion of the program as per the schedule, feedback must be obtained, and action may be taken accordingly. 5. All records shall be maintained by the department/mentor who sends/hosts the students for exchange.
6	Research Competitions	Student	Conduct of research competitions like Quiz, Article writing, Science Shows etc.,	Assessment of self-skills and interaction with other similar minded students and gets incentivized.	Plan various academic competitions in a Research-oriented way. i.e., Topics for competitions may be chosen from research thrust areas identified by the RDC.	<ol style="list-style-type: none"> 1. All departments shall encourage students to participate in research-oriented competitions as planned by RDC. 2. Organize the competitions like Science shows at college level, Article writing at department/college level. Notifications shall be given in advance which allows the students to prepare for the competitions innovatively. 3. Records of list of participants, evidences of participation, score sheets and award list must be preserved for verification.

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7	Trips to Research Centres	Student	Planning to visit science museums, research centres and interaction with scientists at the place of visit.	Introduction to the new horizons, & scope of research and a means of inspiration.	Ensure that some of the field trips are conducted in a Research-oriented way. i.e., Trips to nearby research centres, R&D departments or nearby University departments that have good potential in research. RIMS maintained by RDC is useful for planning.	<ol style="list-style-type: none"> 1. Convert the regular subject field trips to research-orienting trips, so that students are motivated to take up research activities. It also motivates them in setting their career goals in research. 2. Same procedures followed for field trips are to be followed and records shall be maintained.
8	Academic writing	Student/Faculty	Encouraging and ensuring that the students and staff do take up (or) Implementation of - Academic writing programs either offline in the institute or online via MOOCs.	Skills in writing manuscripts such as articles, columns, chapters, books, dissertations, theses etc.,	<ol style="list-style-type: none"> 1. There are many Academic writing courses available online like Coursera, Udemy, edX etc. Identify, maintain, and circulate such details among the students. 2. With the help of interested faculty, Add-on courses must be planned in coordination with IQAC. 3. Faculty must be encouraged to take up the online courses, so that they can conduct add-on courses in the HEI. 	<ol style="list-style-type: none"> 1. All departments, particularly, Arts, Languages and Commerce departments shall motivate the students to take up Academic writing courses either Online or Offline (if offered by the HEI) 2. List of students/faculty who take up the activity shall be maintained. 3. Follow-up shall be done with respect to timely completion of the courses and records shall be maintained. 4. Interested faculty/departments shall conduct Add-on courses by following the due procedures for the conduct of Add-on courses.

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9	Research Projects	Faculty	Encouraging & ensuring that maximum staff members do write for project grants (Minor/Major Research Projects) offered by various funding agencies like UGC, DST, DBT, CSIR, etc., This can be achieved with the help of RDC of the HEI.	<ol style="list-style-type: none"> 1. Mobilization of research grants, 2. Improvement of research facilities and infrastructure. 3. Scope for high impact publications, 4. Opportunities for students to participate in sponsored research projects. 5. Scholarly recognition for the HEI. 	<ol style="list-style-type: none"> 1. RIMS shall include the funding programs of various funding agencies like UGC, DST, DBT, CSIR, ICMR etc., 2. Regular meetings shall be conducted to identify and motivate the faculty with research interests. 3. Research proposals from the staff shall be invited regardless of the funding opportunities; so that these proposals can be readily submitted when funding windows are open. 4. RDC must monitor the advertisements / notifications issued by the funding agencies, timelines as advertised by the agencies must be circulated among the staff well in advance. 5. Any help required, may be extended to the faculty who apply for funding. e.g., drafting of the proposals. 	<ol style="list-style-type: none"> 1. In-charges of all departments shall identify the scope for the conduct of research with the help of the faculty. 2. Research topics in thrust areas as identified by the RDC must be discussed among the staff members during departmental meetings and identify the topics that match the scope of the department. 3. Research proposals must be prepared in the format of the funding agency to which proposals are intended for and kept ready for submission through RDC. 4. Once sanctioned, Principal investigator must ensure that all due procedures are followed while utilizing the grants as per the sanction guidelines and submit 'utilization certificates' in the prescribed formats with proper auditing. 5. Involve faculty/students of the department in research projects sanctioned wherever possible, which helps to create an active research ecosystem in the department. 6. PI shall submit project reports within the timeframe of the project. 7. PI shall write research articles with the research data obtained in the project and communicate for publications.

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10	Publishing Books/Articles	Faculty	Encouraging the staff to publish their research work, manuscripts as original research articles/review articles/letters/correspondence in peer reviewed research journals that are listed in UGC-CARE.	Increase in 'h' index of the faculty/HEI, attaining National/International recognition.	<p>1. RIMS includes the database of all the journals that are indexed in Scopus, Web of Science, UGC-CARE. Also, a list of potential Publishers (who publish books with ISBN/ISSN no.) and their contact details.</p> <p>2. This list must be circulated among all the departments.</p> <p>3. RDC shall also identify the journals/book publishers who publish research papers/book chapters with no or minimum fee and encourage the staff to publish their research articles in these journals.</p> <p>4. Drafting/Editing help may be provided for the purpose by the RDC with coordination with IQAC;</p>	<p>1. All PIs shall invariably publish their funded-research work in the journals that are indexed in Scopus, Web of Science, UGC-CARE.</p> <p>2. Faculty who did not have research projects can publish review articles, book chapters, letters etc., in coordination with RDC.</p> <p>3. Taking Academic Writing courses helps in writing good articles/chapters with higher acceptability.</p> <p>4. Having collaborations with experienced and already published scholars helps improve the chances of publications getting accepted.</p>

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S#	Activity	Level of Implementation	Description	Possible Outcome	Role of RDC	Standard Operating Procedure (SOP)
11	Presentation of Research Work	Faculty/Students	Presenting the research work of staff/students in various seminars/webinars of National/International level as Papers/Posters/Abstracts	Increase in 'h' index of the presenter or HEI, National/International recognition. Exposure to the concurrent scientific community and exploration of research domains and research opportunities.	<ol style="list-style-type: none"> 1. RIMS shall include the calendar of National/International Symposia/Seminars/Webinars etc., Since this is dynamic, regular updating is essential. 2. RDC shall circulate the schedules well in advance, so that the students and faculty would not miss deadlines. 3. RDC shall follow up the faculty/students who are engaged in the active research to participate in paper/poster presentations 4. Seminars/Webinars that publish their proceedings with ISBN/ISSN numbers must be encouraged to apply for. 	<ol style="list-style-type: none"> 1. With the help of RDC, PIs, interested staff and students shall plan to apply for paper and poster presentations. It is advisable to keep the work prepared and apply as soon as an appealing opportunity arises. 2. Students in groups, with the help of mentors, must work on poster presentations, initially, to nurture their research abilities. 3. Staff/Students must try to collaborate with experienced researchers to increase the chances of successful participation.

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12	Organizing National/International Seminars/Webinars	Faculty/Institute	Applying for seminar grants & conduct of seminars/webinars/workshops at National & International level. (at least one on IPR).	National/International recognition. Institution-wise exposure to the concurrent scientific community and exploration of research domain and research opportunities.	<ol style="list-style-type: none"> 1. RDC shall identify the agencies that offer funding for seminars/workshops/webinars etc. and circulate the list among the faculty. 2. Staff shall be motivated to apply for the grants, which enables the HEI to conduct the activity, which is otherwise a financial burden to the HEI. 3. RDC shall also devise a plan for utilizing District Resource Centre (DRC) funds, when allocated for the purpose. 	<ol style="list-style-type: none"> 1. PIs, interested staff shall apply for grants with the help of RDC. 2. Once sanctioned, Conveners/Co-conveners/Organizing members must ensure that all due procedures are followed while utilizing the grants as per the sanction guidelines and submit 'utilization certificates' in the prescribed formats with proper auditing. 3. Draft and Communicate the Brochure/Invitation for Lectures/Papers/Posters well in advance and scrutinize the applications. 4. Communicate the accepted works well in advance. 5. Involve faculty/students of the department/college in organizing, which helps to create/nurture an active research ecosystem. 6. Publish the proceedings with ISBN/ISSN numbers.

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S#	Activity	Level of Implementation	Description	Possible Outcome	Role of RDC	Standard Operating Procedure (SOP)
13	Collaborations	Faculty/Institute	Obtaining valid MoUs/Collaborations from various research organizations, R&D departments for specific periods particularly with research-goals.	Readily available platforms for research activities like student exchange, conduct of seminars, workshops, opportunities for students to undergo internship and flexibility for the introduction of apprenticeship-based skill embedded programs.	<ol style="list-style-type: none"> 1. RIMS shall include the details of successful MoUs and potential collaborators from the Academia/Research institutes/Universities/R&D departments and circulate that among the staff. 2. Making as many MOUs/collaborations as possible within the scope of the HEI; with the help of individual departments. 3. Services of interested retired faculty can be utilized with collaboration. 	<ol style="list-style-type: none"> 1. As described above collaborations increase the chances of getting research grants, acceptance of publications, etc. It also enhances the research abilities of the beginners. 2. Therefore, All the faculty are advised to find suitable collaborators, communicate with them, visit their workplaces, make proposals for collaborations/MoUs wherever possible. 3. Collaborations within GDCs may be more successful. 4. Once collaboration/MoU is achieved, strict adherence to the MoU or collaboration guidelines must be done; failing to which, prospects of collaborations are affected.
14	Patenting	Faculty/Institute	Filing for grant of the patent for discoveries/inventions made by faculty/students of the HEI in the HEI.	Acquisition of commercially scalable patents for start-ups, industrialization of the patented concept. Recognition and revenue generation for the HEI	<ol style="list-style-type: none"> 1. In consultation with IQAC, RDCs must conduct workshops in IPR, in collaboration with National Intellectual Property Awareness Mission (NIPAM). 2. Patenting manuals, procedures must be kept available in the RDC for reference use of the staff. 	<ol style="list-style-type: none"> 1. All the staff members must acquaint themselves with IPR procedures and participate in the IPR workshops conducted by the HEI. 2. PI/HEI shall obtain the patent rights for novel discoveries/ inventions made as part of the research projects duly following the procedures. Help may be sought from RDC.

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S#	Activity	Level of Implementation	Description	Possible Outcome	Role of RDC	Standard Operating Procedure (SOP)
15	Central Instrumentation Facility (CIF)	Institute (Autonomous Colleges)	Establishment of CIF by pooling instruments from various departments in the HEI, which may be used by any department as a central facility with ensured maintenance and mandatory recording the usage in logbooks. Consumables required may be borne by the using department. Trained lab attendant(s) be assigned to look after the facility.	Universal access to research tools within the HEI and consultancy research/technical services can be offered.	<ol style="list-style-type: none"> 1. RDC shall invite the proposals for contribution of all the departments towards establishing a CIF. 2. Contribution can be in the form of equipment, consumables, chemicals etc., 3. RDC in consultation with IQAC and the Principal, shall arrange for a convenient facility to establish the CIF. 4. RDC shall chalk out the maintenance procedures of the CIF by assigning an I/c with due permission from the Principal. 	<ol style="list-style-type: none"> 1. Principal shall encourage the departments to contribute for the CIF, provide facilities and manpower (maintenance, preferably a lab assistant) for CIF 2. All contributions must be recorded and approved by the RDC, avoiding the custody ambiguity of the equipment. 3. All departments can freely use any of the equipment available with the CIF with prior booking in the booking register and entering the usage in the logbooks (to be maintained at the facility for each instrument). 4. Departments contributed must ensure that the instrument is properly maintained and used. 5. Proper credits must be given to the facility in all the publications which resulted out of using the CIF. 6. ALL AUTONOMOUS HEIs are requested to invariably establish the facility by following the due administrative procedures.

II. IMPORTANT ACTIVITIES TO BE IMPLEMENTED & MONITORED BY RDCs IN GDCs

S#	Activity	Level of Implementation	Description	Possible Outcome	Role of RDC	Standard Operating Procedure (SOP)
16	Consultancy	Institute	Providing consultancy services (research or technical) either through CIF or department-wise for Public/Private sectors by establishing a consultancy division in the HEI; enlisting all the services the HEI can provide. Proper maintenance of records of such services, records on income generated and auditing.	Helpful in good peer perception and inclusivity. Revenue generation.	<ol style="list-style-type: none"> 1. RDC shall identify the departments that can offer consultancy work with respect to research services and publish it on the college website, social media, local media, and popularize them. 2. Charges for each service may be fixed in consultation with the Principal, Department I/c and IQAC. 3. A special account for such funds generated may be maintained for utilization of the funds with prior approval from the principal, staff council. 	<ol style="list-style-type: none"> 1. All department In-charges shall identify whether their departments can offer consultancy and communicate the same to the RDC. 2. Staff/Departments shall devise a plan for offering such services in terms of time frames, expenses, charges etc., and communicate the same to RDC. 3. Maintaining proper record for each service request, approval, details of service provided, reports, income receipts, cashbook must be maintained by the department.

II. IMPORTANT ACTIVITIES TO BE IMPLEMENTED & MONITORED BY RDCs IN GDCs

S#	Activity	Level of Implementation	Description	Possible Outcome	Role of RDC	Standard Operating Procedure (SOP)
17	Outreach	Institute	Extension activities that target the Public.	Helpful in good peer perception, reputation and increase in admissions.	1. RDC shall identify the important research activities that are being undertaken at the institute, particularly, that are conducted in public interest. 2. Event calendar must be prepared with outreach activities like visiting the nearby Jr Colleges, Schools, Hostels, Colonies and Organizing a day or half-a-day camp to explain the target audience about the research activities that are conducted by the HEI. 3. Records of these activities must be maintained by the RDC.	1. Principal, shall arrange for the outreach activities well in advance, with respect to administrative approvals, funding required etc., 2. Such activities must be incorporated in the College calendar and better be consistently organized on the same dates in each year for better outreach.
18	Open day	Institute	Keeping the institute open for the public visit for a day in a year	Helpful in good peer perception, reputation and increase in admissions.	1. RDC in consultation with the IQAC and principal shall declare an Open day for the visitors from the HEI neighbourhood well in advance and announce it on the website, social media and in local media, if possible. 2. RDC shall motivate and ensure that maximum departments do participate in the open-day exhibiting all their research-works and facilities.	1. Principal shall arrange for the Open day well in advance, with respect to administrative approvals, funding required etc., 2. Such activities must be incorporated in the College calendar and better be consistently organized on the same dates in each year for better outreach.

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S#	Activity	Level of Implementation	Description	Possible Outcome	Role of RDC	Standard Operating Procedure (SOP)
19	Internal Funding	Institute (Autonomous HEIs)	Pooling/ maintaining a substantial research fund for the purpose of research by the aspirant faculty, preferably, those starting the research work.	Helpful to start research work by the beginners/ helpful for the pilot projects and Helpful in maintaining a continuous research ecosystem. Also, the experience acquired helps to get external research grants.	<ol style="list-style-type: none"> 1. RDC shall frame the "Internal HEI Funding Policy", Application proforma, Award criteria etc., 2. RDC shall invite research proposals from the faculty for Internal funding, ideally, the proposals should address the research thrust areas identified by the RDC and span for 1 year. 3. After examination of the proposals by the RDC, the Principal may finalize and allocate the grant with help of the staff council's resolution. 4. RDC shall maintain a record of each proposal, comments of RDC on them, award list, utilization certificates and bills duly following all the procedures stipulated for expenditure. 5. RDC shall also devise ways to allocate funds for supporting research publications, presenting papers in high-impact journals and seminars. 	<ol style="list-style-type: none"> 1. Faculty who wish to start their research work, who wish to do pilot research projects, who have little departmental funds and need funds for research etc., may apply to the Internal funding in the prescribed proforma as devised by RDC. 2. Once sanctioned, Principal investigator must ensure that all due procedures are followed while utilizing the grants as per the sanction guidelines and submit 'utilization certificates' in the prescribed formats with proper auditing. 3. Involve faculty/students of the department in research projects sanctioned wherever possible, which helps to create an active research ecosystem in the department. 4. PI shall submit project reports within the timeframe of the project. 5. PI shall write research articles with the research data obtained in the project and communicate for publication. 6. Based on this experience, PI may write for MRPs and Major grants. 7. ALL AUTONOMOUS HEIs are requested to examine the scope of internal funding scheme and implement.

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S#	Activity	Level of Implementation	Description	Possible Outcome	Role of RDC	Standard Operating Procedure (SOP)
20	Use of Virtual Labs	Institution	Procurement and use of Virtual lab technology through purchase or open educational resources (OER) like that of MHRD, Govt. of India, for transferring experimental knowledge without sophisticated set up of actual laboratories.	Demonstration or hands on virtual experimentation of more expensive state of the art techniques without financial burden to the HEI.	<ol style="list-style-type: none"> 1. Every year, RDC shall identify the Virtual lab software packages/facilities which are available on OER platforms or for purchase. 2. Upon consultation with all the departments RDC shall finalize on the procurement of necessary Virtual lab technology with the help of internal resources. 3. RDC shall provide initial training on the usage of VL technology. 4. RDC shall take feedback from students on usage and the results of such technology and update accordingly. 	<ol style="list-style-type: none"> 1. In-charges of all departments shall identify the VL facilities required for the department in consultation with staff and students, the same may be communicated to RDC or seek help from RDC on the availability and usage of VL technology. 2. Procurement of virtual lab software packages and installing/using them on ICT facilities like DC/VC or a PC with appropriate configuration. 3. Design a timetable for the use of VL facilities and popularize among students. 4. Ensure that every student of respective programs use the technology and assess the skills acquired by them regularly. 5. Collect feedback from the students and faculty to renew/upgrade/change the VL packages accordingly. 6. Separate records may be maintained besides regular laboratory records for the use of VL. However, both shall be considered the same while evaluating the performance of students or departments. In fact, using VL adds evaluation credits to the HEIs under ICT enabled teaching and as one of the best practices.

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