

PART B : PRESCRIBED FORMAT

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General Instruction for formulation of the project proposal.

Section 101 : Project title

Project title should be within 150 characters (30 characters in each line). A title "Investigations of the Magnetic Properties of certain compounds of Transition metals with Rare Earth" may be sharpened to "Magnetic Properties of Rare Earth Transition Metal Compounds" (Underline the key words).

Section 102 : Broad Subject

Please mark only one of the boxes. In case of projects with inter-disciplinary characteristics, also mark the area towards which it is more inclined.

Section 103 : Sub-Area

A list of the broad subject wise existing PAC has been provided to enable the Investigator to mark the PAC which would be able to peer review the proposal in a justifiable way.

Section 104 : Duration

Expected total duration of the project may be expressed in months. Proposed duration should normally not exceed 36 months.

Section 105 & 106: Total cost & FE Component

Give total cost of the project in rupees. Foreign exchange component, if any, of the total cost may be given in terms of US \$ equivalent. The budgetary projections should take into account the existing norms in case of manpower and should be as realistic as possible in case of equipment costs.

Section 107 : Project Category

The Investigator should indicate the category of the project in order to peer review the proposal in a justifiable way.

Section 111 to 117 : Investigator and Principal Implementing Institution

Indicate the status (Govt./autonomous/private etc.) of the institution. In case of private or registered society a

bond has to be executed after approval of the proposal. However, the copies of the annual activity report and audited annual accounts of the society for the last two years should be enclosed along with a copy of the SIRO certificate.

While writing names write the surname first. Give date of Birth in date, month and year format each consisting of 2 digits.

Section 118 to 138 : Collaborating Investigators/ Institutions

In case a project is to be executed by more than one Institution (which is welcomed) and/or requires regular inputs from other Scientists, the names of collaborating institutions and Scientists are to be recorded.

Section 191 : Project summary

Use separate sheet for sections 191 & 192. Give project title, PI name, name of Institution(s) involved before writing the summary .

Written in telegraphic language. the summary should be a self-contained description of the research activity including (a) research objectives (b) methodology to be adopted and (c) expected outcome of the project. This summary may be published in the list of on-going projects and will be widely circulated amongst scientists! scientific institutions interested in the subject. In order to facilitate the circulation, a list of potentially interested individuals/ institutions (with addresses) is required to be furnished along with the proposal.

Section 192 : Subject Keywords

Please suggest not more than ten keywords that best describe the project. This is to facilitate systematic information storage and retrieval. Your library staff may help in selection of Keywords. Kindly underline these keywords wherever used in project summary .

Section 211 : Origin of the Proposal

Identify the stimuli which prompted preparations and submission of the project proposal to the DST. The source of stimuli could be the National Five Year Plan (S&T Chapter), state-of-art-report or other reports published by the DST, proceedings of a special workshop/ seminar, announcements by DST on Thrust Area Programmes/

Vision Documents, an earlier project etc. in all such cases, give specific details so that the source is clearly identifiable. If the project has no such origin, please state so.

Section 212 : Definition of the Problem

Please give precise technical statement of only those problems which the project is expected to cover within the specified duration (normally 3 years).

A historical or general introduction to the area will not be title appropriate under this like head and should be given under 220. For example, do not include a statement. The problem of utilisation of agricultural wastes is important for national economy... specifically rice bran. Japan has developed technology for edible rice bran oil. Removable of free-fatty-acids is an important problem for making edible rice bran oil... " Instead, a straight forward definition of the problem could be "Stabilisation of fresh rice bran is necessary for preventing rapid rise of free fatty acids. As oils with high FFA are difficult to refine, the problem of stabilisation of rice bran through chemical mode using sodium metabisulphide is to be studied. In addition, its peculiar odour needs to be removed for making it acceptable as edible oil".

Section 213 : Objectives

Instead of an essay, it is suggested that the objectives be spelled out point by point in telegraphic language keeping in view the definition of the problem outlined in Section 212. For example, the objective of the rice bran problem could be written as:

1. To examine alternative chemical modes for stabilisation of rice bran oil.
2. To determine the exact source/cause of odour and to explore methods for its removal.

Section 221 to 222 : State of knowledge

Please indicate the recent development in the proposed field of work, both in the country and in other parts of the world. This should be in 2 separate parts (namely Indian and International situations) and based on literature survey. In the literature survey, inclusion of list of important review articles, if available, is recommended. This section will enable the referees to appreciate the effort that has been put in preparing the project proposal.

Section 223 : Importance of the proposed project/ Justification for subject area

The importance of the Project should be brought out in this section in the light of the international and national state of knowledge on the subject. This could be done in two parts:

- (a) Matters relating to scientific and technical advancement of knowledge.
- (b) Issues concerning application of the new knowledge to socio-economic advancement of the country such as, production of quality commodities for internal consumption leading to better life- style, resource conservation, import substitution, export earnings, employment generation, uplift of economically weaker sections, development of cottage and small scale industries etc.

Section 224 : Review of expertise

The section is essentially to summarise the background (details to be enumerated in section 430 and professional experience (details in section 450) of the investigators to establish credential for undertaking the project and to highlight relevance of the project to the research already going on in the sponsoring institution. Nevertheless, a research venture by the investigators in an entirely new field, will also meet due consideration.

Section 225 : Patent details (domestic and International)

Mention may also be made of any patents being filed in the area along with its brief details including the patent no, title of the patent, assignee details, year of grant, country where granted.

Section 231 : Methodology

It is essential that from this statement the other experts in the field should get a clear understanding of the research technique to be employed in the project as distinct from data/sample collection activities and routine activities. Further, the description should indicate precisely how the stated objectives will be achieved. The history of creation of new knowledge in the area (narrated in sections 221 and 222) should not be repeated here. Discuss different methods of approach in order of priority .

Section 232 : Work elements

In this section the entire project activity is to be broken down to specific work elements in consonance with the objectives and methodology defined in the earlier sections. While doing so, equal emphasis should be given to

- (a) Technical work elements, such as designing the experiment/model, making observations/calculations, etc.
- (b) Administrative work elements e.g. selection of equipment and obtaining quotations, obtaining certificates like NMI, CDE etc., recruitment of staff etc.

Further, for multi-institutional projects, this section should be utilised to indicate the distribution of functional responsibilities between the principal and collaborating institution(s) and the mechanism for coordination.

Section 233 : Time schedule of activities giving milestones

On the basis of work elements identified earlier, the time schedule should be drawn. Here specific indications of milestones would be worthwhile. These milestone will help in periodic evaluation of the progress of the project. It is once again cleared here that lead time for creation of infrastructural facilities be computed on realistic basis.

Section 234 : Utilisation of research results

It is necessary to widely disseminate the research results and to facilitate their use by other teaching and research communities and industries. The intent of this section is to get an idea of how the interaction between researchers and potential users of research results could possibly be initiated, stimulated and maintained.

In this light therefore, a utilization plan is solicited. This may start with identification of the user community i.e. individuals and institutions. The interaction could be promoted in several ways. For example, selected members of the scientific community may be invited to periodic presentations by the instructors for their expert guidance. The investigators may propose to organize workshops

on the subject or to present the results in meetings of professional associations, association of industries, national seminars and the like. However, budget for such activities may not be included in the project proposal since the Department has separate programmes with in-built review mechanism to support such events. Circulation of interim reports to wider audience could be another mechanism. A research leading to development of a process which could possibly be commercialized, should have active involvement of agencies like the Patent Facilitating Cell of DST, the User Industry etc. from the inception of the project. Please list appropriate activities with brief description.

Section 300 : Budget Estimates

Summary of the budget may be prepared after filling Sections 310 to 350. The estimates of costs of different items involved should be as realistic as possible. All costs are to be expressed in Indian rupees only which should be inclusive of the rupee equivalent of any foreign exchange required for equipment or consumable. If foreign exchange is required for purchase of equipment or consumable, it may be shown in terms of US\$ or equivalent separately.

Section 310 & 311: Budget for Research Manpower & Justification for their salaries & wages

It is expected that the major part of the work would be carried out by the PI and the CO-PI. However, some additional scientific and technical manpower may be asked for working full/part time on the project. The manpower requirement may be carefully assessed taking into account the level of personnel required and their likely availability. The salary structure and emoluments etc. will be as prevalent at the parent Institution for that category of personnel.

Salaries payable are to be expressed in lump sum amounts indicating the scale of pay.

Detailed justification for the manpower requirement based on your assessment may be given.

Section 320 & 321 : Budget for Consumable

materials with justification for the use of costly consumable, if any.

The budget should clearly indicate the costly consumable items that would be required on a continuing basis or intermittently during the implementation of the project. It should also indicate those items where Foreign exchange is involved.

Section 330 & 331 : Budget for travel within India and justification for intensive travel on projects, if any.

The Department provides grants under this head to cover the travel requirement of the Investigator, Co-Investigator and the research personnel, working on the project, in connection with the project work like literature survey, monitoring meeting, etc. This travel is within the country. In case of projects involving intensive travel, the requirement may be justified by the PI.

Section 340 & 341 : Budget for other costs and justification for the same

Some projects may have special requirements not covered under sections 310 to 330. These requirements could be of computer time, payments for using specialised instrumentation facilities etc. Costs for such requirements are to be indicated, based on realistic estimates, in this section specifying the item under a & b.

Contingencies are meant to cover incidental and other miscellaneous expenditure.

Section 350 & 351 : Budget for permanent equipment and justification for the same

Specifically list all items of permanent equipment costing Rs.50000/- or above, or requiring import. Other minor items may be clubbed. Include provisions for installation charge, inland transport insurance etc. in the estimated cost.

Be as specific as possible while naming the equipment. Indication of the make and model will help identifying the exact nature of the equipment better. For example,

instead of mentioning "gas chromatograph", a detailed statement like "PYE-Unichems" Model 304 microprocessor controlled gas chromatograph would be appropriate to define the requirement. Similarly, instead of "Infra Red spectrophotometer" , something like "Perkin elmer Model 598" or "Shimadzu Mode IR-408" should be stated. After the project is approved however, the investigators may go in for a different model or make so long as the basic characteristic and costs are comparable to those mentioned in proposal.

In many cases, equipment procured under the project may not be kept occupied full-time studies contemplated. The spare time on equipment could fruitfully be utilized by other researchers engaged in DST sponsored or any other project of the institute. It is the policy of the DST to maximise the use of an equipment. In this light, the investigators are urged to permit the use of spare or idle capacities of an equipment by bonafide users. State the efforts to be made to utilize existing equipment in your department, other departments of the institution, other institutions in the neighbourhood like RSIC, SIF , other National Regional facilities etc.

Justification for each item of equipment (including their accessories, specific characteristics, resolution etc. in relation to specific experiments/measurements/tests) contemplated in the project is to be given.

In case of a demand for import of equipment, give reasons why indigenous models, if available cannot be used.

Section 410 : Time schedule of activities through Bar diagram

The bar diagram should have work elements/activities as row and time in the column. The suggested time interval is three months. After approval of proposal PI will have to submit a PERT chart. The purpose of the PERT chart is to help in evaluation and monitoring.

Section 420 : Existing facilities

Basic infrastructural facilities and equipment that would be extended by the institute to the project should be recorded. Please make sure that these facilities and equipment will actually be available during execution of the project. In part B please list all the available equipment and accessories which will be made use of in executing the

project. Please note that this list is to cover equipment and accessories under these categories:

- a) Equipment within your research group
- b) Equipment in your Department
- c) Equipment in other Departments or Centres of your institution in the region including Regional Sophisticated Instrumentation Centres.

In case equipment required for the project exists at (a), (b) or (c) but cannot be used for project work, give reasons under the remarks column.

Section 430 : Biodata of Investigators

Detailed Biodata of the Principal Investigator and all other Investigators who are already in position and available for the project are to be given here. While providing the list of publications include: (a) names of Journal/publisher etc. The publication list should highlight the publications in the area of the project.

Section numbering should start with 430 for the PI and followed by 431, 432 etc. for other investigators.

Section 450 : Other research projects with investigators

Summary details of the projects (completed/ on-going or proposed) with different investigators may be given. These should also include DST projects as well as projects that are currently being processed/ submitted with other agencies for funding. Each project should come on a separate sheet. Section numbering should start with 450 and could be continued upto 499. Major results achieved should give

- a) brief review of the results achieved and scope for further research in the area;
- b) scientific and technological benefits emerging out;
- c) manpower trained.
- d) patent details, if any.