

# IDENTIFICATION OF CORE JOURNALS IN SCIENCE & TECHNOLOGY : A STUDY BASED ON INSDOC'S DOCUMENT DELIVERY DEMAND PART I - PHYSICS

ARUNA KARANJAI  
USHA MUJOO-MUNSHI  
INSDOC  
New Delhi - 110067

*A survey of the document copy requests received at Insdoc during 1980-1985 was undertaken with a view to identify high use core journals in physics. It was found that the 113 identified journals out of 2093 physics journals could satisfy a majority of requests in physics and that it compared favourably with the rank list of the British Library Lending Division's demand in 1980 and with the rank list of Science Citation Index (JCR 1984) based on citation count.*

## INTRODUCTION

Vital importance of information for development is given due recognition internationally now as modern economic, social, scientific, technological and personal development as well are dependent increasingly on adequate and rapid flow of information and its utilisation. While information may be transmitted in various ways, publications are still the main and popular vehicle. This is very important medium for the support of research and its application to national development to assist in the formulation and implementation of government policy. Inter-library lending and document copy supply have become an inevitable support service because of increasing inadequacies of individual libraries.

Insdoc has been rendering document copy supply service (DSS) for over 30 years now with a fair degree of success. Its vast experience in this field shows that the demand on the DSS has been growing through the years due to the following reasons:

- a) The number of potential users of science and technology is growing.
- b) More and more potential users are appreciating the importance of using the available information.

- c) The total volume of scientific literature is growing at an unprecedented rate and at the same time its bibliographic control is also improving very rapidly in terms of coverage, quality, modes and speed of access.
- d) Increased access to machine-readable data bases furthers the demand for copies of original documents. The use of automation has made the production of new bibliographical tool, possibly thereby adding a new dimension to direct on-line access to computer stored references.
- e) The opportunities of satisfying the information needs is also growing with speed.

A well-equipped and efficient document supply centre is thus a prime need to satisfy this growing need.

## COLLECTION

A well-organised and efficiently managed single collection has always been found to offer better service in terms of satisfaction rate and speed of supply which is very crucial in measuring the effectiveness of any document copy supply service.

But, unless demand is heavy, unit cost of an extensive central collection would naturally be very high. Two major studies of journal use at the British Library Lending Division (now British Library Document Supply Centre) were carried out in 1975 & 1980 to determine the titles receiving heaviest demand with their broad subject content[1]. It was found in a recent study that 80% of serials demand fell on only 7480 out of 54000 current titles in S&T including a few social science journals[2]. It is generally conceded that about 2000-3000 core titles (high demand) would satisfy more than 50% of

the serials demand in any document supply centre. So, it can be safely concluded that with a fair degree of concentration, a limited and well-selected collection (core collection) can satisfy a significant proportion of demand quickly, keeping the cost at a reasonable level.

An efficient core collection can achieve a better performance in terms of:

- a) Satisfaction rate
- b) Speed of supply

There are several ways of compiling a core list of journals:

1. Journals can be ranked by the number of their articles covered by one or more secondary services.
2. Journals can be ranked according to the number of times their articles are cited.
3. Journals can also be ranked according to their demand.

It is generally felt that core lists based on citation analysis would be a poor guide to the establishment of a core collection for document supply purpose. Of the three methods cited above, the most reliable, of course, is the one based on actual demand.

The need to identify journals in each discipline, which are on high demand, has been felt for some time. For this purpose, requests for document copy supply received at Insdoc were analysed in order to determine the titles in heaviest demand and a core list of physics journals was prepared for each year from 1980-1985.

The present study aims at:

- Compiling a list of top 50 core journals in physics.
- Identifying how many of these journals are available in the National Science Library and other places in the country.
- The country of origin of these journals.
- To study the holdings of Indian libraries for these titles as identified from the Union List of Current Scientific Serials in India (1980).

For this purpose the demand for document copies received by Insdoc was analysed from

1980 to 1985 and individual rank lists were prepared for each year. All the titles for which the total demand was less than 3 times in a year were generally ignored, and the 6 years demand was combined and a consolidated list of all journals prepared and physics journals were then identified in this list.

## RESULTS

- a) 113 titles in physics (Table 1) were identified, these journals received at least 10 requests during the period.
- b) The top 50 journals (out of 113) were examined to see what proportion of demand is being satisfied by these journals. It was found that 76.66% of requests for physics papers could be satisfied by these 50 journals.
- c) The country of origin of the 113 journals has been identified (Table 3). It is found that USA is a major producer of high demand journals in physics; followed by U.K. and others. Lesser preference to foreign language journals may be due to the constraint of foreign language barrier.
- d) The National Science Library received 29 out of the 113 core journals (Table 2).
- e) Only 4 Indian journals figure in the list of 113 core journals.
- f) Availability of the 113 core journals was studied from the *Union List of Current Scientific Serials in India* (1980) in 6 metropolitan cities, viz., Delhi, Calcutta, Bombay, Bangalore, Madras & Hyderabad (Table 4). The highest concentration of core journals were found in Delhi (25.61%); followed by Bangalore (18.12%); Bombay (16.92%); Calcutta (16.16%); Madras (14.86%) and finally Hyderabad (8.30%).
- g) The ranked list prepared by the British Library Lending Division (BLLD) in 1980 was compared with the ranked list prepared by us and it was found that 70% of these journals also featured in the BLLD ranked list.
- h) It was also found that all the top 50 journals in our ranked list were included in the list of

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journals totally covered by INSPEC for *Physics Abstracts*. It was further noted that there has been a steep rise in the number of journals being totally covered by INSPEC for inclusion in *Physics Abstracts* since 1984.

The ranked list of 113 core journals was compared with the ranked list of SCI from the JCR of 1984. (Table 5). Though we could find not much correlation between the two rankings, the impact factor of the core journals identified by us were found to be quite good.

### CONCLUSION

From the present study it is obvious that India has still a long way to go to occupy position of significance in the production of high demand physics journals.

The National Science Library (NSL) in Indoc holds only about 26% of the journals in physics figured in the present core list. In view

of this, the acquisition policy of NSL should be geared to the needs of DSS of Indoc so as to establish its credibility and to offer better service to the Indian scientific community.

### ACKNOWLEDGEMENT

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### REFERENCE

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2. Kefford, Brian & Line, Maurice B: Core collection of journals for national interlending purposes. *Interlending Review* 1982, 10(2), 35-43.
3. Fjall-brant, Nancy ed: *Interlending and document delivery*. IATUL Proc, 1984, 16.

Table 1

*Ranked list of Core Journals in Physics  
Based on Demands for the Year 1980-85*

| S.No. | Title of Journals            | 1980 | 1981-<br>1982 | 1983 | 1984 | 1985 | Total |
|-------|------------------------------|------|---------------|------|------|------|-------|
| 1.    | IEEE Trans. (All parts)      | 65   | 201           | 105  | 115  | 120  | 606   |
| 2.    | ASME Trans. (All parts)      | 41   | 83            | 39   | 107  | 62   | 332   |
| 3.    | ASCE Proc. (All parts)       | 45   | 60            | 35   | 60   | 39   | 239   |
| 4.    | ASME Papers                  | 46   | 75            | 40   | 45   | 25   | 231   |
| 5.    | J. Chem. Physics             | 30   | 54            | 33   | 27   | 20   | 164   |
| 6.    | IEEE Proc.                   | 35   | 64            | 31   | 15   | 18   | 163   |
| 7.    | Physical Review (A-D)        | 32   | 55            | 26   | 24   | 23   | 160   |
| 8.    | J. Acoustical Soc. Amer.     | 27   | 64            | 25   | 20   | 11   | 147   |
| 9.    | J. Appl. Physics             | 28   | 52            | 20   | 23   | 15   | 138   |
| 10.   | AIEE Trans.                  | 36   | 49            | 14   | 14   | 6    | 119   |
| 11.   | J. Physics (A-F)             | 29   | 50            | 10   | 13   | 10   | 112   |
| 12.   | Proc. IME                    | 23   | 44            | 15   | 20   | -    | 102   |
| 13.   | Tetrahedron Letters          | 19   | 32            | 20   | 14   | 12   | 97    |
| 14.   | Biochim. Biophys. Acta       | 13   | 35            | 17   | 19   | 12   | 96    |
| 15.   | IEE Proc.                    | 19   | 39            | 10   | 15   | 10   | 93    |
| 16.   | Indian J. Pure & Appl. Phys. | 20   | 16            | 18   | 10   | 8    | 72    |
| 17.   | Bull. JSME                   | 13   | 10            | 8    | 22   | 15   | 68    |
| 18.   | J. Math. Physics             | 16   | 20            | 10   | 14   | 8    | 68    |
| 19.   | Physica Status Solidi (A-B)  | 10   | 27            | 9    | 8    | 14   | 68    |
| 20.   | J. Fluid Mechanics           | 10   | 25            | 8    | 13   | 11   | 67    |
| 21.   | J. Physical Soc. Japan       | 10   | 22            | 15   | 13   | 6    | 66    |
| 22.   | Technometrics                | 7    | 29            | 10   | 14   | 6    | 66    |
| 23.   | Tetrahedron                  | 10   | 22            | 12   | 13   | 7    | 64    |
| 24.   | Acustica                     | 8    | 22            | 13   | 10   | 6    | 59    |
| 25.   | Rev. Scientific Instruments  | 12   | 19            | 10   | 8    | 6    | 55    |
| 26.   | Physical Rev. Letters        | 6    | 18            | 8    | 7    | 11   | 50    |
| 27.   | Sov. Physics-Acoustics       | 6    | 25            | 11   | 5    | 2    | 49    |
| 28.   | Engineering                  | 14   | 15            | 10   | 5    | 4    | 48    |
| 29.   | Sov. Physics-Solid Stat.     | 6    | 15            | 8    | 16   | 3    | 48    |
| 30.   | Physics of Fluids            | 4    | 20            | 9    | 6    | 8    | 47    |
| 31.   | Machine Design               | 17   | 12            | 7    | 5    | 3    | 45    |
| 32.   | J. Vacuum Sc. & Technol.     | 3    | 15            | 5    | 13   | 7    | 43    |
| 33.   | Acta Crystallographica       | 15   | 6             | 6    | 7    | 8    | 42    |
| 34.   | Acta Physica Polonica        | 7    | 17            | 6    | 7    | 5    | 42    |

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| S.No. | Title of Journals                           | 1980 | 1981-<br>1982 | 1983 | 1984 | 1985 | Total |
|-------|---------------------------------------------|------|---------------|------|------|------|-------|
| 35.   | Biochem. Biophys. Res. Comm.                | -    | 10            | 6    | 16   | 10   | 42    |
| 36.   | Jap. J. Appl. Physics                       | 9    | 12            | 10   | 7    | 4    | 42    |
| 37.   | Int. J. Engg. Sc.                           | 3    | 7             | 17   | 7    | 6    | 40    |
| 38.   | Int. J. Heat & Mass Transfer                | -    | 17            | 7    | 8    | 7    | 39    |
| 39.   | J. Geophysical Res                          | 5    | 13            | 7    | 7    | 6    | 38    |
| 40.   | Engg. & Fracture Mechanics                  | -    | 24            | 6    | 5    | 3    | 38    |
| 41.   | Physics Letters (A-B)                       | 4    | 10            | 4    | 12   | 8    | 38    |
| 42.   | Sov. Physics Tech. Phys.                    | 9    | 15            | 8    | 3    | 3    | 38    |
| 43.   | AIAA J.                                     | 7    | 12            | 5    | 7    | 5    | 36    |
| 44.   | Appl. Optics                                | 12   | 6             | 5    | 6    | 7    | 36    |
| 45.   | Zeitschrift fur Physik (A-B)                | 3    | 19            | 3    | 5    | 6    | 36    |
| 46.   | Astrophysical J.                            | -    | 9             | 8    | 16   | 2    | 35    |
| 47.   | Indian J. Physics                           | 6    | 8             | 7    | 6    | 8    | 35    |
| 48.   | J. Sound & Vibration                        | 6    | 10            | 5    | 10   | 4    | 35    |
| 49.   | Problemi Prochnosti (Strength of Materials) | 9    | 12            | 7    | 7    | -    | 35    |
| 50.   | Quart. J. Mech & Appl. Maths                | 5    | 14            | 6    | 4    | 6    | 35    |
| 51.   | Sov. Appl. Mechanics                        | 6    | 16            | 7    | 4    | 2    | 35    |
| 52.   | J. Phys. & Chem. of Solids                  | 3    | 12            | 3    | 6    | 10   | 34    |
| 53.   | J. Atmospheric Sci.                         | 6    | 8             | 13   | 6    | -    | 33    |
| 54.   | Nuovo Cimento (A-B)                         | 7    | 12            | 5    | 6    | 7    | 33    |
| 55.   | J. Optical Soc. Amer.                       | 6    | 14            | 5    | 7    | -    | 32    |
| 56.   | Electronics Letters                         | 3    | 10            | 3    | 10   | 5    | 31    |
| 57.   | Physica                                     | 4    | 18            | -    | 6    | 3    | 31    |
| 58.   | Sov. Physics - Uspekhi                      | 6    | 16            | 5    | 4    | -    | 31    |
| 59.   | Fluid Dynamics                              | -    | -             | -    | 8    | 22   | 30    |
| 60.   | J. Macromol. Sc. Physics                    | 3    | 11            | 8    | 7    | -    | 29    |
| 61.   | Optics & Spectroscopy                       | 7    | 10            | 6    | 6    | -    | 29    |
| 62.   | Appl. Phys. Letters                         | -    | 15            | 6    | 4    | 3    | 28    |
| 63.   | Appl. Solar Energy                          | -    | 13            | 6    | 4    | 5    | 28    |
| 64.   | Biotech. Bioenegg.                          | 3    | 2             | 6    | 12   | 5    | 28    |
| 65.   | Electronic Engg.                            | 7    | 10            | 5    | 3    | 3    | 28    |
| 66.   | J. Terramechanics                           | -    | -             | 10   | 10   | 8    | 28    |
| 67.   | Lubrication Engg.                           | 5    | 10            | 4    | 5    | 3    | 27    |
| 68.   | Acta Mechanica                              | -    | 5             | 8    | 9    | 4    | 26    |
| 69.   | Bell System Tech. J.                        | 6    | 8             | 5    | 3    | 3    | 25    |
| 70.   | Electronic Design                           | 8    | 6             | 5    | 3    | 3    | 25    |
| 71.   | Nuclear Physics                             | 4    | 9             | -    | -    | 12   | 25    |

| S.No. | Title of Journals                     | 1980 | 1981-<br>1982 | 1983 | 1984 | 1985 | Total |
|-------|---------------------------------------|------|---------------|------|------|------|-------|
| 72.   | Sov. Physics Semiconductor            | -    | 10            | 5    | 8    | 2    | 25    |
| 73.   | Can. J. Physics                       | 3    | 7             | 5    | 3    | 6    | 24    |
| 74.   | Civil Engg.                           | 5    | 8             | 3    | 8    | -    | 24    |
| 75.   | Instrument & Control Systems          | =    | -             | 10   | 11   | 3    | 24    |
| 76.   | Microelectronics & Reliability        | 3    | 18            |      | 3    | -    | 24    |
| 77.   | Progress Theor Phys.                  | 4    | 9             | 5    | 3    | 3    | 24    |
| 78.   | Electrical India                      | 7    | 8             | 5    | 3    | -    | 23    |
| 79.   | Electronics & Power                   | 3    | 9             | 5    | 6    | -    | 23    |
| 80.   | Material Sc. & Engg.                  | 3    | 10            | 3    | 4    | 3    | 23    |
| 81.   | Monthly Notices of Royal Astron. Soc. | 5    | 8             | -    | 5    | 5    | 23    |
| 82.   | Solid State Communications            | -    | 12            | 7    | 4    | -    | 23    |
| 83.   | Annalen der Physik                    | 3    | 9             | 3    | 4    | 3    | 22    |
| 84.   | Organic Mass Spectroscopy             | 3    | 7             | 6    | 3    | 3    | 22    |
| 85.   | Sov. Physics-Doklady                  | 3    | 10            | 4    | 3    | 2    | 22    |
| 86.   | Discussions Faraday Soc.              | 4    | 10            | 3    | -    | 4    | 21    |
| 87.   | Int. J. Solids & Structures           | -    | 11            | 6    | -    | 4    | 21    |
| 88.   | J. Strain Analysis for Engg. Design.  | -    | 12            | -    | 5    | 4    | 21    |
| 89.   | Molecular Physics                     | 4    | 9             | -    | 8    | -    | 21    |
| 90.   | Rev. Modern Physics                   | 4    | 12            | 5    | -    | 3    | 21    |
| 91.   | Revue Roumaine Physics                | 3    | 7             | 6    | 3    | 2    | 21    |
| 92.   | Acta Physica Acad Sci. Hungarica      | 5    | 4             | 4    | 3    | 4    | 20    |
| 93.   | Astronomy & Space Sci.                | -    | -             | 8    | 7    | 5    | 19    |
| 94.   | Nuclear Instr. & Methods              | -    | 14            | -    | -    | 5    | 19    |
| 95.   | Physica Scripta                       | 3    | 9             | 7    | -    | -    | 19    |
| 96.   | Elect. Rev.                           | 4    | 10            | -    | 4    | -    | 18    |
| 97.   | J. Mech. & Phys. of Solids            | 5    | 7             | -    | 3    | 3    | 18    |
| 98.   | High Temperature                      | 3    | 5             | 3    | 3    | 3    | 17    |
| 99.   | Sound & Vibration                     | 3    | 7             | 4    | 3    | -    | 17    |
| 100.  | Applied Energy                        | 3    | 5             | -    | 3    | 5    | 16    |
| 101.  | Electric Technol. USSR                | 3    | 8             | -    | 5    | -    | 16    |
| 102.  | Fizika                                | 4    | 6             | 3    | -    | 3    | 16    |
| 103.  | Machinery                             | 3    | 7             | 3    | -    | 3    | 16    |
| 104.  | Amer. J. Physics.                     | 4    | 8             | 3    | -    | -    | 15    |
| 105.  | Appl. Spectroscopy                    | 5    | 2             | 4    | 4    | -    | 15    |
| 106.  | Control Engg.                         | 3    | -             | 4    | 5    | 3    | 15    |
| 107.  | Heat Transfer Sov. Res.               | 5    | 7             | -    | -    | 3    | 15    |
| 108.  | Int. J. Appl. Radiation & Isotopes    | -    | 5             | 3    | 4    | 3    | 15    |

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| S.No. | Title of Journals    | 1980 | 1981-<br>1982 | 1983 | 1984 | 1985 | Total |
|-------|----------------------|------|---------------|------|------|------|-------|
| 109.  | Bull. Math. Biophys. | 9    | -             | -    | -    | 4    | 13    |
| 110   | Geophysics           | 4    | 6             | -    | -    | 3    | 13    |
| 111.  | J. Plasma Physics    | -    | -             | -    | 8    | 3    | 11    |
| 112.  | J. Comput. Physics   | -    | -             | 7    | 3    | -    | 10    |
| 113.  | Microwave J.         | -    | -             | 4    | 3    | 3    | 10    |

Table 2

*Availability of Core Journals in Physics in NSL*

1. Acta Mechanica
2. Acta Physica Acad. Scient. Hungarica
3. Acta Physica Polonica
4. AIAA Journal
5. Appl. Solar Energy
6. Bull. JSME
7. Canadian J. Physics
8. Electrical India
9. Electrical Review
10. Fluid Dynamics
11. Geophysics
12. Heat Transfer Soviet Research
13. Indian J. Physics
14. Indian J. Pure and Appl. Physics
15. Int. J. Engg. Sc.,
16. Int. J. Solids & Structures
17. J. Atmospheric Science
18. J. Physical Soc. Japan
19. J. Sound & Vibration
20. J. Strain Analysis for Engg. Design
21. J. Terramechanics
22. J. Vacuum Sc. & Technology
23. Materials Sc. & Engineering
24. Physica Scripta
25. Probl. Prochnosti
26. Rev. Roumaine de Physique
27. Sov. Appl. Mechanics
28. Sov. Physics - Acoustics
29. Sov. Physics - Doklady.

Table 3

*Country of Origin of the Core Journals*

| S.No. | Country of Origin | No. of Journals<br>in the Ranked List | % of Core Journals<br>Published by different<br>Countries |
|-------|-------------------|---------------------------------------|-----------------------------------------------------------|
| 1.    | USA               | 44                                    | 38.93%                                                    |
| 2.    | UK                | 31                                    | 27.44%                                                    |
| 3.    | Russia            | 11                                    | 9.73%                                                     |
| 4.    | Netherlands       | 7                                     | 6.20%                                                     |
| 5.    | India             | 4                                     | 3.54%                                                     |
| 6.    | Japan             | 4                                     | 3.54%                                                     |
| 7.    | Germany           | 3                                     | 2.66%                                                     |
| 8.    | Switzerland       | 2                                     | 1.78%                                                     |
| 9.    | Italy             | 2                                     | 1.78%                                                     |
| 10.   | Australia         | 1                                     | 0.88%                                                     |
| 11.   | Canada            | 1                                     | 0.88%                                                     |
| 12.   | China             | 1                                     | 0.88%                                                     |
| 13.   | Hungary           | 1                                     | 0.88%                                                     |
| 14.   | Poland            | 1                                     | 0.88%                                                     |

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Table 4

*Availability of Core Journals in Physics in Libraries  
of 6 Metropolitan Cities*

| S.No. | Title of Journal             | Delhi | Calcutta | Bombay | Bangalore | Madras | Hyderabad |
|-------|------------------------------|-------|----------|--------|-----------|--------|-----------|
| 1.    | Acta Crystallographica (AB)  | 5     | 5        | 3      | 3         | 3      | 2         |
| 2.    | Acta Mechanica               | 1     | 1        | 1      | 2         | 1      | -         |
| 3.    | Acta Physica Hungarica       | 4     | 1        | 3      | 2         | 1      | -         |
| 4.    | Acta Physica Polonica        | 2     | 3        | 1      | 2         | -      | -         |
| 5.    | Acustica                     | 3     | -        | -      | 1         | 1      | 1         |
| 6.    | AIEE Trans.                  | 1     | -        | 1      | 1         | 1      | -         |
| 7.    | AIAA Journal                 | 5     | 2        | 1      | 4         | 3      | -         |
| 8.    | Amer. J. Physics             | 6     | 5        | 6      | 6         | 5      | 1         |
| 9.    | Annalen der Physik           | 1     | 2        | 3      | 1         | 2      | -         |
| 10.   | Applied Energy               | 1     | -        | 2      | -         | -      | -         |
| 11.   | Applied Optics               | 6     | 5        | 3      | 6         | 1      | 2         |
| 12.   | Applied Physics Letters      | 6     | 5        | 2      | 4         | 3      | 1         |
| 13.   | Applied Solar Energy         | 4     | -        | 2      | 3         | 2      | 1         |
| 14.   | Applied Spectroscopy         | 3     | 1        | 1      | 2         | 4      | 1         |
| 15.   | ASCE Proc. (All parts)       | 8     | 1        | 3      | 2         | 5      | 3         |
| 16.   | ASME Papers                  | -     | -        | -      | -         | -      | -         |
| 17.   | ASME Trans (Ser. A-H)        | 4     | 1        | 4      | 4         | 3      | 1         |
| 18.   | Astrophysical J.             | 4     | 4        | 3      | 5         | 3      | 1         |
| 19.   | Astrophysics & Space Sc.     | 1     | -        | 2      | 4         | 1      | 1         |
| 20.   | Bell System Tech. J          | 9     | 4        | 5      | 6         | 5      | 4         |
| 21.   | Biochim. Biophys. Acta       | 9     | 5        | 4      | 3         | 5      | 1         |
| 22.   | Biochem. Biophys. Res. Comm. | 7     | 5        | 4      | 3         | 3      | 2         |
| 23.   | Biotech. Bioengg.            | 2     | 3        | 3      | 4         | 3      | 2         |
| 24.   | Bull. JSME                   | 4     | 3        | 3      | 4         | 3      | 2         |
| 25.   | Bull. Math. Biophys          | -     | -        | -      | -         | -      | -         |
| 26.   | Can. J. Physics              | 6     | 6        | 4      | 4         | 5      | 1         |
| 27.   | Civil Engg.                  | 5     | 2        | 3      | 1         | 3      | 2         |
| 28.   | Control Engg.                | 8     | 1        | 4      | 10        | 5      | 5         |
| 29.   | Disc. Faraday Soc.           | -     | -        | -      | -         | -      | -         |
| 30.   | Electric Tech. USSR          | 1     | 1        | 1      | 2         | 1      | 1         |
| 31.   | Elect. India                 | 11    | -        | -      | -         | -      | -         |
| 32.   | Elect. Rev.                  | 4     | 3        | 2      | 5         | 2      | 1         |
| 33.   | Electronic Design            | 3     | 1        | 1      | 3         | -      | 2         |
| 34.   | Electronic Engg.             | 9     | 11       | 5      | 16        | 5      | 7         |

| S.No. | Title of Journal                    | Delhi | Calcutta | Bombay | Bangalore | Madras | Hyderabad |
|-------|-------------------------------------|-------|----------|--------|-----------|--------|-----------|
| 35.   | Electronics Letters                 | 5     | -        | 3      | 6         | 2      | 3         |
| 36.   | Electronics & Power                 | 6     | 5        | 4      | 6         | 4      | 3         |
| 37.   | Engineering                         | 6     | 1        | 3      | 5         | 7      | 5         |
| 38.   | Engg. & Fracture Mechanics          | 2     | 1        | 2      | 4         | 2      | 2         |
| 39.   | Fizika                              | -     | -        | 1      | -         | -      | -         |
| 40.   | Fluid Dynamics                      | 2     | 1        | 1      | 2         | -      | -         |
| 41.   | Geophysics                          | 2     | 4        | 3      | 1         | -      | 4         |
| 42.   | Heat Transfer Sov. Res.             | 2     | -        | 2      | 3         | -      | 2         |
| 43.   | High Temperature                    | 1     | 1        | 1      | 1         | -      | -         |
| 44.   | IEE Proc. (Pt-A-I)                  | 9     | 5        | 5      | 9         | 3      | 2         |
| 45.   | IEEE Proc                           | 13    | 7        | 10     | 12        | 4      | 4         |
| 46.   | IEEE Trans (All Parts)              | 8     | 4        | 3      | 6         | 3      | 3         |
| 47.   | Indian J. Physics (A-B)             | 7     | -        | -      | -         | -      | -         |
| 48.   | Indian J. Pure & Appl Physics       | 18    | -        | -      | -         | -      | -         |
| 49.   | Instrument & Control Systems        | 6     | 2        | 2      | 5         | 4      | 5         |
| 50.   | Int. J. Appl Radiation & Isotops    | 4     | 1        | 2      | -         | 2      | 2         |
| 51.   | Int. J. Engg. Sci                   | 3     | 1        | 1      | 4         | 1      | 1         |
| 52.   | Int. J. Heat & Mass Transfer        | 3     | 2        | 5      | 5         | 1      | -         |
| 53.   | Int. J. Solids & Structures         | 3     | 1        | 2      | 2         | 1      | -         |
| 54.   | Jap. J. Appl Physics                | 4     | 4        | 3      | 3         | 2      | 2         |
| 55.   | J. Acoust. Soc. Amer                | 7     | 3        | 2      | 3         | 6      | 3         |
| 56.   | J. Appl. Physics                    | 8     | 8        | 5      | 5         | 6      | 4         |
| 57.   | J. Atmosph. Sci                     | 7     | 1        | 3      | 2         | 1      | 1         |
| 58.   | J. Chem. Physics                    | 6     | 9        | 5      | 4         | 7      | 1         |
| 59.   | J. Comput. Physics                  | 1     | 1        | 3      | 2         | 1      | 1         |
| 60.   | J. Fluid Dynamics                   | 4     | 3        | 3      | 5         | 5      | 2         |
| 61.   | J. Geophysical Res.                 | 6     | 4        | 3      | 4         | 3      | 3         |
| 62.   | J. Macromol Sc. Physics             | 1     | -        | 1      | -         | -      | 1         |
| 63.   | J. Mathematical Physics             | 5     | 3        | 5      | 3         | 4      | 1         |
| 64.   | J. Mech. Phys of Solids             | 3     | 1        | 2      | 3         | 3      | -         |
| 65.   | J. Opt Soc. Amer                    | 6     | 5        | 3      | 5         | 6      | 1         |
| 66.   | J. Physical Soc. Jap.               | 5     | 4        | 3      | 3         | 3      | -         |
| 67.   | J. Physics (A-G)                    | 6     | 6        | 5      | 3         | 3      | 3         |
| 68.   | J. Phys. & Chem. of Solids          | 6     | 3        | 3      | 3         | 4      | 1         |
| 69.   | J. Plasma Physics                   | 1     | 1        | 3      | 2         | 1      | -         |
| 70.   | J. Sound & Vibration                | 3     | -        | 1      | 6         | 1      | 1         |
| 71.   | J. Strain Analysis for Engg. Design | 2     | -        | 2      | 5         | 3      | 1         |
| 72.   | J. Terramechanics                   | 1     | -        | -      | -         | -      | -         |

# CORE JOURNALS IN PHYSICS

| S.No. | Title of Journal                              | Delhi | Calcutta | Bombay | Bangalore | Madras | Hyderabad |
|-------|-----------------------------------------------|-------|----------|--------|-----------|--------|-----------|
| 73.   | J. Vacuum Sc. & Technol.                      | 2     | 2        | 4      | 3         | 2      | 2         |
| 74.   | Lubrication Engg.                             | 3     | 1        | 2      | 3         | 1      | 1         |
| 75.   | Machine Design                                | 5     | 2        | 6      | 10        | 4      | 6         |
| 76.   | Machinery                                     | -     | -        | -      | -         | -      | -         |
| 77.   | Materials Sc. & Engg.                         | 4     | 2        | 2      | 1         | 1      | 2         |
| 78.   | Microelectronics & Reliability                | 2     | -        | 3      | 3         | 2      | 1         |
| 79.   | Microwave J.                                  | 6     | 1        | 2      | 7         | 1      | 2         |
| 80.   | Molecular Physics                             | 2     | 2        | 4      | 2         | 3      | -         |
| 81.   | Monthly Notices of Royal<br>Astronomical Soc. | 3     | 1        | 2      | 3         | 2      | 1         |
| 82.   | Nuclear Instruments & Methods                 | 1     | 3        | 3      | 2         | 2      | 2         |
| 83.   | Nuclear Physics (A-B)                         | 2     | 6        | 3      | -         | 2      | -         |
| 84.   | Nuovo Cimento (A-C)                           | 3     | 5        | 3      | -         | 3      | -         |
| 85.   | Optics & Spectroscopy                         | 1     | -        | 1      | -         | 1      | 2         |
| 86.   | Organic Mass Spectroscopy                     | 1     | -        | 1      | -         | 1      | 2         |
| 87.   | Physica (A-D)                                 | 3     | 2        | 4      | 1         | 3      | 1         |
| 88.   | Physica Scripta                               | 3     | 3        | 3      | 3         | 1      | 1         |
| 89.   | Physica Status Solidi (A-B)                   | 3     | 2        | 4      | 2         | 2      | -         |
| 90.   | Physical Review (A-D)                         | 6     | 8        | 6      | 2         | 5      | 2         |
| 91.   | Physical Rev. Letters                         | 7     | 7        | 5      | 4         | 4      | 2         |
| 92.   | Physics of Fluids                             | 4     | 5        | 4      | 1         | 2      | 1         |
| 93.   | Physics Letters (A-B)                         | 5     | 5        | 4      | 1         | 2      | 1         |
| 94.   | Prob. Prochnosti                              | 1     | -        | -      | -         | -      | 1         |
| 95.   | Proc. IME                                     | 3     | 2        | 4      | 3         | 1      | 1         |
| 96.   | Progress in Theoretical Phys.                 | 3     | 5        | 4      | 2         | 4      | -         |
| 97.   | Quart. J. Mech. & Appl Maths                  | 2     | 2        | 2      | 4         | 5      | 3         |
| 98.   | Rev. Modern Phys.                             | 6     | 11       | 8      | 4         | 9      | 1         |
| 99.   | Rev. Scientific Instrum                       | 11    | 10       | 5      | 6         | 7      | 4         |
| 100.  | Rev. Roumaine de Phys                         | 2     | 2        | 1      | -         | 1      | -         |
| 101.  | Solid State Communication                     | 3     | 4        | 3      | 3         | 4      | 1         |
| 102.  | Sound & Vibration                             | -     | -        | -      | -         | -      | -         |
| 103.  | Sov. Appl. Mechanics                          | 2     | -        | 1      | -         | -      | -         |
| 104.  | Sov. Phys. Acoustics                          | 5     | 1        | -      | 1         | -      | -         |
| 105.  | Sov. Phys. Doklady                            | 4     | 3        | 2      | 3         | 5      | 1         |
| 106.  | Sov. Phys. - Semiconductor                    | 2     | 1        | 1      | 1         | 1      | 1         |
| 107.  | Sov. Phys. - Solid State                      | 5     | 3        | 3      | 4         | 2      | -         |
| 108.  | Sov. Phys. - Tech. Phys.                      | 4     | 1        | 2      | 2         | 1      | -         |

| S.No. | Title of Journal       | Delhi | Calcutta | Bombay | Bangalore | Madras | Hyderabad |
|-------|------------------------|-------|----------|--------|-----------|--------|-----------|
| 109.  | Sov. Phys. - Uspekhi   | 5     | 3        | 4      | 2         | 2      | -         |
| 110.  | Technometrics          | 6     | 3        | 7      | 4         | 2      | -         |
| 111.  | Tetrahedron            | 4     | 8        | 7      | 1         | 6      | 3         |
| 112.  | Tetrahedron Letters    | 4     | 6        | 7      | 1         | 3      | 1         |
| 113.  | Zeit. Fur Physik (A-B) | 2     | 3        | 2      | 1         | 3      | 1         |

Table 5

*List of 50 Most Cited and 50 Most Used Titles*

| S.No. | Title of Journal              | Citation Rank<br>1984 (JCR) | Use Rank<br>1980-85 |
|-------|-------------------------------|-----------------------------|---------------------|
| 1.    | Physical Rev. Letters         | 6.498                       | 26                  |
| 2.    | Astrophys J.                  | 4.237                       | 46                  |
| 3.    | Biochem. Biophys. Res. Commu. | 3.020                       | 35                  |
| 4.    | J. Chemical Physics           | 2.996                       | 5                   |
| 5.    | Physics Letters               | 2.843                       | 41                  |
| 6.    | Physical Rev.                 | 2.577                       | 7                   |
| 7.    | Biochem. Biophysica Acta      | 2.536                       | 14                  |
| 8.    | J. Geophysical Res.           | 2.393                       | 39                  |
| 9.    | Tetrahedron Letters           | 2.180                       | 13                  |
| 10.   | J. Vacuum Sci. & Technology   | 2.024                       | 32                  |
| 11.   | Tetrahedron                   | 1.993                       | 23                  |
| 12.   | Zeitschrift fur Physik        | 1.776                       | 45                  |
| 13.   | J. of Physics                 | 1.758                       | 11                  |
| 14.   | J. of Appl. Physics           | 1.643                       | 9                   |
| 15.   | Physics of Fluids             | 1.527                       | 30                  |
| 16.   | J. of Fluid Mechanics         | 1.460                       | 20                  |
| 17.   | Applied Optics                | 1.434                       | 44                  |
| 18.   | Technometrics                 | 1.425                       | 22                  |
| 19.   | J. Physical Soc. Japan        | 1.420                       | 21                  |
| 20.   | J. Acoustical Soc. America    | 1.224                       | 8                   |
| 21.   | Acta Crystallographica        | 1.173                       | 33                  |
| 22.   | J. Mathematical Physics       | 1.159                       | 18                  |
| 23.   | Rev. Scientific Instruments   | 0.964                       | 25                  |

# CORE JOURNALS IN PHYSICS

| S.No. | Title of Journal                          | Citation Rank<br>1984 (JCR) | Use Rank<br>1980-85 |
|-------|-------------------------------------------|-----------------------------|---------------------|
| 24.   | Physica Status Solidi                     | 0.734                       | 19                  |
| 25.   | IEEE Trans.                               | 0.732                       | 1                   |
| 26.   | Int. J. Heat & Mass Transfer              | 0.722                       | 38                  |
| 27.   | Engg. & Fracture Mechanics                | 0.609                       | 40                  |
| 28.   | Quart. J. Mech. & Appl. Maths             | 0.565                       | 50                  |
| 29.   | J. Sound & Vibration                      | 0.495                       | 48                  |
| 30.   | AIAA Journal                              | 0.489                       | 43                  |
| 31.   | Acta Physica Polonica                     | 0.486                       | 34                  |
| 32.   | IEE Proc.                                 | 0.462                       | 15                  |
| 33.   | IEEE Proc.                                | 0.452                       | 6                   |
| 34.   | Int. J. Engg. Sci.                        | 0.447                       | 37                  |
| 35.   | Bull. JSME                                | 0.349                       | 17                  |
| 36.   | Proc. Inst. Mech. Engrs                   | 0.317                       | 12                  |
| 37.   | Jap. J. Appl. Phys                        | 0.200                       | 36                  |
| 38.   | Indian J. Pure & Appl. Phys.              | 0.182                       | 16                  |
| 39.   | Soc. Physics Acoustics                    | 0.126                       | 27                  |
| 40.   | Probl. Prochnosti (Strength of Materials) | 0.077                       | 49                  |
| 41.   | Sov. Applied Mechanics                    | 0.028                       | 51                  |
| 42.   | Engineering                               | 0.010                       | 28                  |
| 43.   | *AIEE Trans.                              | -                           | 10                  |
| 44.   | *ASME Trans.                              | -                           | 2                   |
| 45.   | *ASCE Proc.                               | -                           | 3                   |
| 46.   | *ASME Papers                              | -                           | 4                   |
| 47.   | *Sov. Physics Solid State                 | -                           | 29                  |
| 48.   | *Machine Design                           | -                           | 42                  |
| 49.   | *Sov. Physics Tech. Phys.                 | -                           | 47                  |
| 50.   | *Indian J. Physics.                       | -                           |                     |

*\*These Journals did not feature in the JCR 1984*