

E-RESOURCES FOR INDIAN UNIVERSITIES: NEW INITIATIVES

*Rupak Chakravarty** and *Sukhwinder Singh+*

Academic Libraries in India are facing the problem of shrinking/static budgets and simultaneous exponential rise in journal prices. The need of the hour is to find a pragmatic solution to this problem. Something substantial has to be done in order to facilitate access to scholarly resources to research scholars and faculties. UGC-INFONET and INDEST- Consortium are two major initiatives that have come to the rescue of academic libraries so that they can cater to the needs of academia depending upon them. These revolutionary steps are providing scholarly resources including peer reviewed journals, databases, abstracts, proceedings, etc. These efforts will definitely boost the higher education system in our country.

KEYWORDS/DESCRIPTORS: UGC-INFONET, INDEST-Consortium, e-Resources

1 INTRODUCTION

Digital Divide is the gap in opportunities experienced by those with limited accessibility to technology especially, the Internet. This digital divide can be bridged by facilitating access to scholarly e-resources to the people of developing and underdeveloped countries. Apart from the fact that most of the print journals are expensive, there is rise in the subscription price of journals and databases on an exponential rate. Financial constraints because of static/shrinking grants available to higher education institutions have forced them to cut their subscriptions drastically. One important aspect that must be taken care of while bridging the digital divide is to ensure that all parts of the country get the access to e-resources irrespective of their geographic location in it. This will be a significant step towards bridging the "Intra-Digital Divide". In India several initiatives have been taken/are being taken to provide access to online journals and databases. This access is not limited to certain states or metropolitan cities but all parts of the country is being benefited from these initiatives. Among those initiatives, two are proving to be a boon for the academia.

* *Assistant Librarian*, Panjab University Library, Chandigarh 160014, INDIA. E-mail: rupak@library.pu.ac.in; rupak2811@hotmail.com

+ *Library Assistant*, Panjab University Library, Chandigarh 160014, INDIA. E-mail: sukh@library.pu.ac.in; sukh020@yahoo.com

2 UGC-INFONET

UGC-INFONET is an innovative project launched by UGC to facilitate scholarly e-resources to Indian academies through joint partnership of UGC, INFLIBNET and ERNET. This includes interlinking Universities and Colleges in the country electronically with a view to achieving maximum efficiency through Internet enabled teaching, learning and governance. The UGC - Infonet is overlaid on ERNET Infrastructure in a manner so as to provide assured quality of service and optimum utilization of bandwidth resources. The network will be run and managed by ERNET India. The project is funded by UGC with 100% capital investment and upto 90% of recurring costs. UGC and ERNET India have signed the necessary MoU for this purpose. A joint technical and tariff committee, has been setup to guide and monitor the design, implementation and operations of UGC-INFONET. Information for Library Network (INFLIBNET), an autonomous Inter -University Centre of UGC, is the nodal agency for coordination and facilitation of the linkage between ERNET and the Universities.

2.1 The Mission

Indian Universities constitute one of the largest higher education systems in the world. With 294 universities/institutions, 13150 affiliated colleges, 88.21 lakh students and 4.27 lakh teachers, it is a great challenge to ensure effective coordination and communication. Fast changing curricula and frequent introducing of new subjects impose a great demand on the system in general. Indian Universities need to be given the required thrust to enter the third millennium with a leading edge. Technology is a driving force in the contemporary education systems. University Grant Commission has launched an ambitious programme to bring about a qualitative change in the academic infrastructure, especially for higher education. Under this initiative UGC is modernizing the University Campuses with state-of-the-art campus wide networks and setting up its own nationwide communication network named UGC-INFONET.

2.2 Main features of the UGC-INFONET are:

- * Scalable Architecture to grow from Universities to affiliated Colleges;
- * Nation-wide Terrestrial Backbone using Fiber Optic links;
- * Integrated Satellite WAN supporting broadband and SCPC VSAT technology;

- * Comprehensive Network Management Systems for overall monitoring of the network, down to each and every device;
- * Linkage with other Academic and Research Networks all over the world;
- * Data security and virus protection using firewalls and Intrusion Detection Systems;
- * Dedicated Data Center for Web hosting, e-Journals and Mail Boxes;
- * Mirror sites spread all over the country for content hosting; and
- * Broadband Multimedia and Video Channels for Distance Learning.

2.3 UGC-INFONET aims to serve as:

- * Vehicle for distance learning to facilitate spread of quality education all over the country;
- * Tool to distribute education material and journals to the remotest areas;
- * Resources for researches and scholars for tapping the most up-to-date information;
- * An Intranet for University Automation;
- * Encompass entire University Systems for efficient utilization of network resources; and
- * Channel for globalisation of education and for facilitation of the universities in marketing their services.

2.4 Electronic Subscription of Journals

With globalisation of education and competitive research, demand for journals has increased over the years. Due to insufficient funds, libraries have been forced to cut subscriptions of journals. UGC has turned towards the Internet to cover the gap between demand and supply by way of e-journals that can be subscribed online. Most of the journals are available in electronic form. UGC has entered into alliances with publishers for adapting a consortia-based approach for e-subscription of journals. These journals are available over UGC-INFONET to all the universities, thereby, making quality information accessible to a wider academic scholar base spread across the country at an affordable price.

2.5 UGC - INFLIBNET - ERNET: The Trinity

Implementation and operation of UGC-INFONET will be coordinated by INFLIBNET, an autonomous Inter-University Center of the University Grants

Commission of India. INFLIBNET is providing a variety of services to the academic community of the country and is helping libraries in their automation efforts. About 142 University libraries are on the way to computerization.

ERNET India, scientific society under the Ministry of communications and Information Technology, in partnership with the University Grants Commission has setup infrastructure for UGC-INFONET. Under this programme it is proposed to use Information and Communication Technology (ICT) and Internet to transform learning environment from a mono-dimensional one to a multi-dimensional one.

2.6 e-Resources Made Available

2.6.1. *American Chemical Society (ACS)*

The American Chemical Society is a self-governed individual membership organization that consists of more than 163,000 members at all degree levels and in all fields of chemistry. The organization provides a broad range of opportunities for peer interaction and career development, regardless of professional or scientific interests. The programs and activities conducted by ACS today are the products of a tradition of excellence in meeting member needs that dates from the Society's founding in 1876.

Subject Range: Agriculture, Biochemical Research Methods, Biochemistry, Molecular Biology, Biochemistry Biotechnology, Applied Microbiology, Chemistry-Analytical, Applied, Inorganic and Nuclear, Medicinal, Multi-disciplinary, Organic, Physical, Computer Science, Info Systems, Computer Science Interdisciplinary Applications, Crystallography, Energy and Fuels, Engineering- Chemical, Environmental, Environmental Sciences, Food Science and Technology, Materials Science, Pharmacology and Pharmacy, Plant Sciences, Polymer Science, Toxicology. URL: http://pubs.acs.org/about_category.html

2.6.2. *American Institute of Physics (AIP)*

The American Institute of Physics (AIP) is a not-for-profit membership corporation chartered in New York State in 1931 for the purpose of promoting the advancement and diffusion of the knowledge of physics and its application to human welfare. It is the mission of the Institute to serve physics, astronomy, and related fields of science and technology by serving its Member Societies and their associates, individual scientists, educators, students, R&D leaders, and the general public with programs, services and publications- Information that matters(r). URL: <http://www.aip.org>

2.6.3. American Physical Society (APS)

American Physical Society represents actively its more than 40,000 members in the arena of national, international, and governmental affairs. It publishes the world's most prestigious and widely-read physics research journals and aims to develop and implement effective programs in physics education and outreach. APS informs its members of the latest developments through APS News, Physical Review Focus, and articles in Physics Today and communicates with the public and policymakers via the national media and a public web site: www.physicscentral.com. URL: <http://www.aps.org>

2.6.4. Annual Reviews

Annual Reviews offer comprehensive, timely collections of critical reviews written by leading scientists. Annual Reviews volumes are published each year for 30 focused disciplines within the Biomedical, Physical, and Social Sciences. Annual Reviews is a nonprofit organization whose mission is to provide the worldwide scientific community with a useful and intelligent synthesis of the primary research literature for a broad spectrum of scientific disciplines. Annual Reviews publications are among the most highly cited in scientific literature. All Annual Reviews series are ranked within the top ten publications for their respective disciplines. Each year, Annual Reviews critically reviews the most significant primary research literature to help you keep up to date in your area of research. <http://arjournals.annualreviews.org/>

2.6.5. Biological Abstracts(BA)(Key to the World's Life Sciences Journals)

Comprehensive coverage and context-sensitive indexing make the information in BA essential for all life sciences researchers. BA directs users to information on life science topics from botany to microbiology to pharmacology, serving to connect researchers with critical journal coverage. Whether you study botany, pharmacology, biochemistry, or evolutionary ecology, BA has the journal articles that your research depends on.

BA indexes articles from over 4,000 serials each year. This publication also offers: Over 370,000 new citations each year; 90% of new citations include an abstract by the author and 7.7 million archival records are available back to 1969. URL: <http://webspirs3.silverplatter.com/cgi-bin/erl2.cgi>

2.6.6. Cambridge University Press Journals

It is the oldest printing and publishing house in the world. Cambridge Journals Online (CJO) provides full text for over one hundred journals in the sciences,

social sciences, and humanities. Important features includes simultaneous full-text access for all journals subscribed to by a given institution, regardless of whether individuals at the institution choose to register on the site and a powerful search engine, which provides full text searching throughout the database, allows the user to set search parameters, and offers the advantages of boolean searching. Number of journals for which access has been provided: 72. URL: <http://journals.cambridge.org/>

2.6.7. *Encyclopedia Britannica*

<http://search.eb.com/>

2.6.8. *Institute of Physics(IOP)*

The Institute of Physics is a leading international professional body and learned society, established to promote the advancement and dissemination of information in physics. The Institute has a world-wide membership and is a major international player in scientific publishing and electronic dissemination of information in physics It plays a major role in setting professional standards for physicists and awarding professional qualifications and promoting physics through scientific conferences, education and science policy advice. The subject range covers: Condensed Matter and Materials Science, Applied Physics, Applied Mathematics and Mathematical Physics, Measurement Science and Sensors, Plasma Physics, Optical, Atomic and Molecular Physics, High Energy and Nuclear Physics, Medical and Biological Physics, Physics Education, Computer Science. URL: <http://www.iop.org/EJ/>

2.6.9. *JSTOR*

JSTOR is a not-for-profit organization with a dual mission to create and maintain a trusted archive of important scholarly journals, and to provide access to these journals as widely as possible. JSTOR offers researchers the ability to retrieve high-resolution, scanned images of journal issues and pages as they were originally designed, printed, and illustrated. Content in JSTOR spans many disciplines. <http://www.jstor.org/>

2.6.10. *Nature*

Nature Publishing Group (NPG) aims to provide the world's premier information resource for the basic biological and physical sciences. The Nature journals includes Nature Biotechnology, Nature Cell Biology, Nature Genetics, Nature Immunology, Nature Materials, Nature Medicine, Nature Neuroscience

and Nature Structural and Molecular Biology are published monthly. NPG aims to communicate the latest ground-breaking and original scientific discoveries across all disciplines of science. URL: <http://npg.nature.com/>

2.6.11. Project Muse Journals

Currently, Project MUSE(r) offers nearly 250 quality journal titles from 40 scholarly publishers. As one of the academic community's primary electronic journals resources, Project MUSE covers the fields of literature and criticism, history, the visual and performing arts, cultural studies, education, political science, gender studies, economics, and many others. Project MUSE is setting the standard for scholarly electronic journals in the humanities and social sciences. At this time, Project MUSE subscriptions are available only to institutions. URL: <http://muse.jhu.edu/journals/>

2.6.12. Royal Society of Chemistry

The Royal Society of Chemistry (RSC) is the Professional Body for chemists and the Learned Society for chemistry. It is one of the most prominent and influential independent scientific organisations in Britain. Through its 46,000 members, including academics, teachers and industrialists, the RSC promotes the interests of chemists and the benefits of chemical science. URL: <http://www.rsc.org/is/journals/j1.htm>

2.6.13. Science Online

The Collection feature groups all research papers and news stories published in Science from 1995 to the present by broad subject categories. Select a subject category from those listed below to view a citation list of all content published in Science in the selected area. Let us know by email if you find this new feature useful. <http://www.sciencemag.org/>

2.6.14. SciFinder Scholar

SciFinder Scholar is a Z39.50 Windows-based interface that provides easy access to the rich and diverse scientific information contained in the CAS databases including Chemical Abstracts from 1907 onwards. The SciFinder Scholar offers a variety of pathways to explore CAS databases as well as MEDLINE. SciFinder Scholar interface provides the most accurate and comprehensive chemical and related scientific information including: journal articles and patents together in one source, substance data, chemical reactions, chemical regulatory data, chemical suppliers, biomedical literature. SciFinder

Scholar covers Chemistry and also Agriculture, Biology and Life Sciences, Engineering, Food, Geology, Medicine, Physics, Polymer and Material Sciences.

3 INDIAN NATIONAL DIGITAL LIBRARY IN ENGINEERING SCIENCE AND TECHNOLOGY (INDEST- CONSORTIUM)

The Ministry of Human Resource Development (MHRD) set up the "Indian National Digital Library in Engineering Science and Technology (INDEST) Consortium". The Ministry provides funds required for providing differential access to electronic resources subscribed for the consortium to the core members through the consortia headquarters set-up at the IIT Delhi. The total number of members in the consortia has now grown to 115. The INDEST Consortia subscribes to over 4000 electronic journals from a number of publishers and aggregators.

3.1 Membership

The consortium has the following three types of members:

Core Member Institutions

38 centrally funded Government institutions including IITs, IISc, NITs and few other institutions are core members of INDEST Consortium. The ministry provides funds required for providing differential access to electronic resources to these institutions through the consortium headquarters set-up at the IIT Delhi.

Members with Financial Support from the AICTE

The INDEST Consortia has enrolled sixty additional members with financial support from the All India Council for Technical Education (AICTE).

Self-supported Engineering Colleges and Institutions

The consortium, being an open-ended proposition, invites AICTE-accredited and UGC-affiliated institutions to join hands with the leading engineering and technological institutions in India and share the benefits it offers in term of lower subscription rates and better terms of agreement with the publishers. 17 engineering colleges and institutions have already joined the consortium under this proposition.

3.2 Electronic Resources Subscribed by the Consortium

Electronic resources subscribed by the INDEST consortium can broadly be divided into the following two categories:

A) Full-text E-resources

3.2.1. ABI/Inform Complete

The ABI/Inform is one of the world's first electronic databases. It has been a premier source of business information for more than 30 years. The database contains content from thousands of journals that help researchers track business conditions, trends, management techniques, corporate strategies, and industry-specific topics worldwide. It consists of 1800 full-text journals and 2000 journals that are indexed and abstracted. The resource is offered on Web with CD ROM backup.

3.2.2. ACM Digital Library

The ACM Digital Library incorporates digital versions of works published by ACM since its inception. The major components of the resource is an enhanced version of the ACM Digital Library plus an extended bibliographic database, consisting of more than a quarter-million citations of core works in computing. The ACM Digital Library hosts over 103,000 full-text articles from ACM journals, magazines, and conference proceedings and half million bibliographic Records with about 2,50,000 links to full bibliographic information and 70,000 further links to full text resources.

3.2.3. ASCE Journals

The American Society of Civil Engineers (ASCE) is recognized globally for their significant contribution and dedication to the advancement of science and education in the civil engineering profession. The ASCE publishes 29 journals, periodicals and transactions that cover a comprehensive range of the civil engineering profession. ASCE journals are highly cited and are most relevant to the civil engineers for exchanging technical and professional knowledge. Information published in the journals of ASCE forms archival records not only of the technical advances of the ASCE but of the civil engineering profession as a whole.

3.2.4. ASME Journals (+ A M R)

The American Society of Mechanical Engineers is a nonprofit educational and technical organization serving a worldwide community of mechanical engineers. The ASME conducts one of the world's largest technical publishing operations. The society holds more than 30 technical conferences and 200 professional development courses each year. The ASME promote and enhance the technical

competency and professional well-being through quality programs and activities in mechanical engineering, better enable its practitioners to contribute to the well-being of humankind through its publications that include 19 journals

3.2.5. Capitalize

Capitalize 2000 is a corporate database covering more than 10,000 listed and unlisted Indian companies. Capitalize is the foremost Indian corporate database, being used by all leading financial institutions, security firms, commercial banks and educational institutions. Being marketed for the last 18 years, Capitalize has the USP of covering the largest number of data points for every company - as many as 1400.

3.2.6. CRIS INFAC Ind. Information

CRISIL Business Information products and services comprises of accurate and reliable news, information, analysis and forecasts on the Indian economy, industries, companies and financial markets. CRIS INFAC Industry Information Service presents a detailed and comprehensive analysis of the current trends and the long-term performance outlook on 41 industries in India. It includes the evolution of an industry, the regulatory environment, cost structures, nature and extent of competition, global trends along with statistical information on capacities, production, imports-exports, domestic and international prices, consumption patterns. This information is updated on a regular basis and the 3-5 years long term outlook is updated on an annual basis.

3.2.7. EBSCO Databases

Business Source Premier, designed specifically for business schools and libraries, is the world's most comprehensive index of business journals, magazines and other sources. This file contains indexing and abstracts for more than 3,800 business-related periodicals with coverage back as far as the first half of the 20th century for many leading scholarly journals. It also includes the research community's foremost business thesaurus as well as searchable citations (a.k.a. linked, cited references) for more than 1,100 academic journals. In addition, this database provides full text for more than 3,000 periodicals, including nearly 1,000 full text peer-reviewed journals, the most found in any business database.

Business Source Premier is the most comprehensive archive available for business journals, offering hundreds of thousands of peer reviewed business articles in PDF prior to 1985. Post-1985 coverage is also unparalleled with current

full text from leading journals in every area of business, including marketing, management, MIS, POM, accounting, finance, econometrics, economics, international business, and more.

The database also includes other sources such as hundreds of full text country economic reports from eight different providers (including the EIU), hundreds of full text reference books and scholarly monographs, hundreds of industry reports, and thousands of detailed company profiles. This database is updated daily.

3.2.8. Elsevier's Science Direct

ScienceDirect is the web-based interface to the full-text database of Elsevier Science journals and Academic Press (Ideal), one of the world's largest providers of scientific, technical and medical (STM) literature. The ScienceDirect offers a rich electronic environment for research journals, bibliographic databases and reference works. The database offers more than 1500 scientific, technical and medical peer-reviewed journals, over 59 million abstracts, over two million full-text scientific journal articles, an expanding suite of bibliographic databases and linking to another one million full-text articles via CrossRef to other publishers' platforms.

3.2.9. Emerald Full-text

Emerald publishes the world's widest range of management and library and information services journals, as well as a strong specialist range of engineering, applied science and technology journals. Our electronic databases allow instant access to the latest research and global thinking. We provide the information, ideas and the opportunity to gain insight into your key management topics. Emerald established in 1967 by a group of senior academics formed MCB University Press, a publishing house that focused on niche management disciplines including strategy, change management, and international marketing.

3.2.10. Euromonitor (GMID)

The Global Market Information Database (GMID) provides key business intelligence on countries, companies, markets and consumers. It is an integrated on-line information system covering over 350 markets and 207 countries. GMID integrates research across the following categories of information: *Statistics*: Consolidates information on consumer lifestyles, retailing, countries, consumer market sizes and forecasts. *Analysis*: Euromonitor's in-depth market analysis reports, Major Market Profiles and journal articles covering consumer, industrial

and service sectors. Also accessible are reports focusing on consumer lifestyles and the retailing industry. *Companies*: Profiles for leading FMCG companies along with financial, market share and brand information. *Sources*: All information sources stored on Euromonitor's internal databases.

3.2.11. *IEEE / IEE Electronic Library Online (IEL)*

The IEEE/IEE Electronic Library (IEL) covers almost one third of the world's current electrical engineering and computer science literature, providing unparalleled access to publications from the Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Electrical Engineers (IEE). The resource covers more than 950,000 documents from over 12,000 publications, including 120 journals, transactions, magazines, conference proceedings, IEEE Standards. More than 25,000 new pages are added per month. It provides access to more than two million full-page PDF images, including all original charts, graphs, diagrams, photographs, and illustrative material.

3.2.12. *Indian Standards*

The entire collection of 18,000 odd Indian Standards is included in this Database. The database is updated once in two months/six months, as per subscription order. The search engine allows you to identify, view and print Indian Standards by Standards Number, Standards Title, Text in the Scope of the Standards, and search-in-search (Nested search). You can also search for New and Revised standards. Segments of Indian Standards are Civil Engineering, Chemical Engineering, Electrotechnical, Food and Agriculture, Electronics and Telecommunication, Basic and Production Engineering, Medical Equipment and Hospital Planning, Management and System, Mechanical Engineering, Petroleum, Coal and Related Products, Metallurgical Engineering, Water resources, Transport Engineering and Textile.

3.2.13. *INSIGHT*

The J-Gate is an Internet gateway and portal set up nearly two-years ago by Informatics (India) Ltd. It offers affordable access to global electronic journal literature. It provides seamless access to journal articles through database interface of 10,000+ e-journals. Currently J-Gate offers the followings types of products/services:

- * "Directory of e-Journals" that includes more than 10,000 journals listed with link to journal / publishers site
- * Table of Contents (TOC) for an equal number of journals

- * A comprehensive searchable database consisting of more than 10 Lakhs+ articles added every year across all disciplines
- * More than 10,000 journals including 1200+ free journals and 22 Lakh articles across all subjects areas
- * Send e-mail to Authors requesting reprints of articles for journals not subscribed by your library
- * Locate a local library that has the journal
- * Search Database - By Author, Title, Abstract, keywords, Author Address, Broad Subject Categories.

3.2.14. Nature

Nature is a flagship magazine of Nature Publishing Group (NPG). Launched in 1865, it is the World's most popular weekly scientific journal. Genetics was the first Nature research journal. Now, in 2004, NPG publishes nine Nature Research Journals.

3.2.15. ProQuest Science (formerly ASTP)

The Applied Science and Technology Plus (ASTP) is a CD-ROM database (with access to the Web). The database provides indices and full abstracts to more than 556 key science and engineering titles, plus full-image of 160 titles. All titles are indexed from 1994 onward; the database is updated monthly. The resource is offered on Web with CD ROM backup. While IITs and IISc have online access to ASTP, the NITs, SLIET, ISM and NERIST get Web-based access as well as backup on CD-ROM.

3.2.16. Springer Verlag's Link

The Springer's Link is the online e-books and e-journals service from Springer Verlag, one of the world's leading scientific publishers. Key subject areas include: Mathematics, Computer Science, Physics, Astronomy, Geosciences, Chemistry, Engineering and Medicine. The resource includes over 400 current journals of the highest quality, as well as more than 20 book series. Currently over 3,40,000 full-text articles are available on Springer Link.

B) Bibliographic Databases

3.2.17. COMPENDEX on EI Village

The Compendex is the most comprehensive bibliographic database of engineering research available today, containing almost seven million references

and abstracts taken from over 5,000 engineering journals, conferences and technical reports. The broad subject areas of engineering and applied science are comprehensively represented. Coverage includes nuclear technology, bioengineering, transportation, chemical and process engineering, light and optical technology, agricultural engineering and food technology, computers and data processing, applied physics, electronics and communications, control, civil, mechanical, materials, petroleum, aerospace and automotive engineering as well as narrower subtopics within all these and other major engineering fields. Approximately 250,000 new records are added to the database annually from over 175 disciplines and major specialties within engineering. Compendex is updated weekly to ensure access to critical developments in your field.

3.2.18. INSPEC on EI Village

The INSPEC, from the Institute of Electrical Engineers (IEE), is the world's leading database in the fields of physics, electronics and electrical engineering, computers and control, and information technology. It contains citations with abstracts of the worldwide literature in physics, electronics and electrical engineering, and computer fields. Primary coverage is of journal articles and papers presented at conferences, although significant books, technical reports, and dissertations are also included in the database's 7.3 million records. Sources include more than 4,200 journals and more than 2,000 conference proceedings, books, and reports corresponding to the following publications: Physics Abstracts, Electrical and Electronics Abstracts, and Computer and Control Abstracts, as well as to the Online INSPEC database. The INSPEC would be accessible from the EI Village. The EI Village, besides providing access to Compendex Plus and INSPEC, also provides access to US patents, abstracts and links to Web sites, online reference services, standards, etc.

3.2.19. J-Gate Custom Content for Consortia (JCCC)

The J-Gate Custom Content for Consortium (JCCC) is a virtual library of journal literature created as customized e-journals access gateway and database solution for the INDEST consortium. It acts as one-point access to 4,000+ subscribed currently by all the IITs and IISc and available online.

3.2.20. JET

J-Gate Engineering and Technology is an Internet gateway setup by Informatics (India) Ltd. for integrating e-content and e-commerce for journal literature in engineering and technology. It envisages providing seamless access

to journal articles at publisher's site, local sites of the libraries, or at J-Gate archive, through table of content (TOC) and abstract database as the search and link interface. It will also support online subscription to journals, and other related services.

3.2.21. MathSciNet

MathSciNet is a comprehensive database covering the world's mathematical literature since 1940. It provides Web access to the bibliographic data and reviews of mathematical research literature contained in the Mathematical Reviews Database. The MathSciNet has signed reviews, powerful search functionality, and timely updates. It fosters the navigation of mathematics literature by providing links to original articles and other original documents, when available, and by encouraging links from journal article references to MathSciNet. The MathSciNet offers World-wide access to mathematical literature through multiple mirror sites. The MathSciNet offers free access to Featured Reviews, those reviews from the Mathematical Reviews database that were especially commissioned for some of the books and papers that are considered particularly important in the areas that they cover.

3.2.22. SciFinder Scholar

Already described under UGC-INFONET: 2.6.5

3.2.23. Web of Science

The ISI Web of Science provides access to information for all levels of academic, corporate, and government research. It offers a comprehensive, fully integrated platform that empowers researchers and accelerates discovery. It offers citations and cited reference searching. The ISI Web of Knowledge provides a single interface, enabling natural-language searches across multiple content sources: journal articles; proceedings papers; patents; chemical reactions and compounds; and content from preprint, funding information, and research activity Web sites.

Table: e-Resources: Panjab University Library, Chandigarh

SN	Publisher	Price	Price in Rupee	Access through
1.	American Chemical Society (ACS)	\$ 17,058.00	8,25,607.00	UGC-INFONET
2.	Cambridge University	Pnd. 7329.00	5,71,662.00	UGC-INFONET
3.	IEEE Xplore	\$ 6,282.00	3,04,049.00	INDEST-Consortium

SN	Publisher	Price	Price in Rupee	Access through
4.	Nature	Rs.58,400.00	58,400.00	UGC-INFONET
5.	Project Muse (John Hopkins University)	\$ 1,101.20	53,298.00	UGC-INFONET
6.	Royal Society of Chemistry (RSC)	Pnd. 8,247.00	6,43,266.00	UGC-INFONET
7.	SciFinder Scholar(Chemical Abstracts)	\$ 25,955.00	12,56,222.00	UGC-INFONET
8.	Applied Science & Technology Plus (ASTP)	\$ 3,565.00	1,72,546.00	INDEST-Consortium
9.	American Institute of Physics	\$ 10,062.00	4,87,000.00	UGC-INFONET
10.	American Physical Society	\$ 22,215.00	10,75,206.00	UGC-INFONET
Total			54,47,257.00	

Note: Panjab University is getting full-text access to e-resources worth Rs.54,47,257.00 and this figure will increase in near future when access to more databases will be provided. If the print subscription to duplicate (print and online) journals is stopped, the money saved can be utilised for subscribing new journals and/or developing ICT infrastructure for more effective and efficient use of e-resources.

4 CONCLUSION

The efforts of UGC-INFONET and INDEST- Consortium are appreciable and will definitely strengthen higher education system in India. Free/highly subsidised access to scholarly online resources will help educational institutions in translating their mission into reality. The research output will increase manifold. Also all parts of the country will have simultaneous access to some quality resources enabling academia to join the main stream. This is an opportunity for those who were earlier deprived of scholarly resources to utilise these resources in a meaningful way and contribute as much as possible to the nation's development.

5 REFERENCES

1. *UGC-Infonet [a network for Indian Universities]: user guidelines.* New Delhi: ERNET, 2003, p1-100.
2. Arora (Jagdish); Rai (A K). *Using Electronic Resources: a Compendium for INDEST Member Institutions.* New Delhi: INDEST Consortium IIT Delhi, 2004, p1-93, 1-xxii.

3. <http://web.inflibnet.ac.in/info/ugcinfonet/ugcinfonet.jsp>
4. http://pubs.acs.org/about_category.html
5. http://www.biosis.org/products_services/ba.html
6. <http://www.iop.org/EJ/>
7. <http://muse.jhu.edu/journals/>
8. <http://www.rsc.org/is/journals/j1.htm>
9. <http://journals.cambridge.org/>
10. <http://npg.nature.com/>
11. <http://www.aip.org>
12. <http://www.aps.org>
13. <http://www.library.iitb.ac.in/indest/index.html>
14. http://www.ugc.ac.in/newsletter_oct/14.htm
15. <http://www.sciencemag.org/>
16. <http://search.eb.com/>
17. <http://arjournals.annualreviews.org/>
18. <http://www.jstor.org/>