**Criterion 4 - Infrastructure and Learning Resources**

TSEC has an effective policy in place for creating and enhancing the infrastructure that facilitates effective teaching and learning. For successive years, we are succeeding in attaining zero deficiency by AICTE norms (reflected in AICTE portal against our account).

**4.1 Physical Facilities**

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The college is situated in the heart of Mumbai city and is affiliated to Mumbai University. The institute currently offers five under graduate and three Ph.D. courses. TSEC has an effective policy in place for creating and enhancing the infrastructure that facilitates effective teaching and learning. The institute has taken measures to offer air-conditioning and internet bandwidth throughout the buildings. We are equipped with excellent computational facilities numbering around 927 with at least core i5 level configuration in networks and matching software tools.  We are serious about providing an academic ambience with ergonomically designed physical infrastructure to build efficiencies in teaching and learning. Our empirical experience shows that air-conditioned classrooms create an optimal learning ambience. The institute has succeeded in creating all the 26 classrooms and 46 laboratories (except 3 laboratories) air-conditioned. The classrooms are equipped with computer embedded podiums connected with light projectors. We are also having a central computing facility that houses around 130 personal computers out of 927 computing systems. This central computing facility is also embedded with audio-visual instrumentation approximating smart classrooms. We are also having elaborate facility in terms of administrative office, examination control rooms and placement office. As we are located in the metro city, we hire (need based) stadium, playground and open auditorium located near the campus periodically.    **Fig. 4.1:** Instructional Facilities   |  |  |  | | --- | --- | --- | | **Sr. No** | **Instructional Facilities** | **Instructional Area Count** | |  | Classroom | 26 | |  | Tutorial Room | 06 | |  | Laboratory | 46 | |  | Seminar Halls | 02 | |  | Auditorium (Shared) | 01 | |  | Drawing Hall | 01 | |  | Workshop | 02 | |  | Library | 01 | |  | Language Lab | 01 |   **Classrooms/ Tutorial Rooms**  Classrooms at the Institute are air-conditioned, well-furnished, spacious, well-ventilated, and well-illuminated. All lecture rooms are equipped with LCD projectors, whiteboards, raised platforms, and a podium with computer system and internet connectivity. Each room can accommodate seventy students. TSEC has sufficient number of tutorial rooms. Tutorial classes are conducted as per university curriculum. The area and number of classrooms are as per AICTE norms.  **Central Computing Facility**  To cater to the needs of aspiring graduates, the central computing facility is equipped with robust instrumentation, control panels, intelligent board with high end internet connectivity. Many seminars, workshops, hackathon and technical events have been successfully executed in this lab. There are about 130 client nodes with robust internet connectivity.  **Laboratories**  To provide a complete Learning Management System, TSEC has maintained well-equipped laboratories with up-to-date and cutting-edge instruments and systems to support syllabus-driven experimentation and academic research. The laboratories have various licensed software and simulation tools to make students industry ready. Adequate administrative and support facilities are also available to foster an academic requirement. Some of the laboratories are transformed into centres of excellence to facilitate research and studies in emerging areas. Modernization of some of the laboratories have been funded by AICTE. All non-computer departments are equipped with at least one computer room which is equipped with matching software in addition to central computing facility.   1. **Computational Laboratories for Number Crunching**   Every department has adequate facilities where students can practice their programming skills, database skills, computer-aided analysis & design and other hands-on experimentation.   1. **Electrical/Electronics & Telecommunication (Digital & Analog) Laboratories**   We have laboratories which are equipped with modern electrical, electronic and communication devices. These laboratories are also equipped with all-encompassing trainer kits.   1. **Chemical/Biomed/Biotech/Chemistry Laboratories**   Institute is having well equipped chemical engineering laboratories sufficient enough to even undertake consultancy projects. Biomedical laboratories are created separately with electronic devices and devices for robotic experimentations. They are also equipped with devices which are having real time capabilities. Biotechnology laboratories are with facilities to carry out organic and plant-based experimentation and there exists synergy between chemical engineering laboratories, chemistry laboratories and biotechnology laboratories.   1. **Language Lab**   The institute is having well equipped language laboratory consisting of computing systems and software for language training with multimedia devices.   1. **Seminar Rooms**   Students and staff can host seminars, conferences, guest lectures, and workshops in two seminar halls equipped with audio-visual technology and seating for 125 people each. The seminar rooms are equipped with LCD projectors, whiteboards, raised platforms, and a video-audio system with internet connectivity.   1. **CCTV Cameras**   To secure the college building and resources and to monitor the examinations around 115 CCTV cameras are installed.   |  |  |  | | --- | --- | --- | | **Sr. No.** | **Particulars of equipment** | **No. of units available** | |  | Desktop Computers | 927 | |  | Servers | 03 | |  | Printers | 35 | |  | Routers | 50 | |  | Firewall | 04 | |  | Switches | 98 | |  | Laptops | 15 | |  | Projectors | 35 | |  | Scanners | 12 | |  | CCTV Camera | 115 | |  | Reprographic Devices | 05 | |  | Web Cameras | 18 |   **Workshops and Drawing Hall**  TSEC has well equipped workshop and drawing hall that fulfill the needs of the curriculum. We are having central workshop and drawing hall facility to accommodate 60 students at a time, which are also getting used for project and consultancy work.  **Library**  TSEC Library manages knowledge, both in print and digital formats. The number of volumes and titles are getting added every year with contemporary publications essentially to match with syllabus requirement. We are also subscribing to electronic databases, journals and reference books for facilitating learnings of higher order. The reading room facility attached also offers a platform for cross functional interactions of students of various studies and which in-turn leads to collaborative academic efforts. Our facilities including e-books and online resources are getting used for research and publications even at undergraduate level.  There are up to 25 computers in the digital library for students and staff to access the online resources and e-content seamlessly. In addition to learning facilities available in various departmental computer laboratories and limited department libraries.   |  |  | | --- | --- | | **File** | **Description** | | **Additional Information:** Infrastructure facilities | [View Document](https://drive.google.com/file/d/1D5AVygIUXnJmQ-Fr7g-AqQBRAiM3l7CN/view?usp=sharing) | | |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | **4.1.2 The institution has adequate facilities for cultural activities, sports, games (indoor, outdoor), gymnasium, yoga center etc.**  **Cultural activities**  Students of TSEC are encouraged to participate in extra-curricular activities throughout their academic tenure. The institute provides adequate facilities for sports, games, cultural and technical events. Cultural activities are held in the auditorium, seminar halls and the open space at the institute. The institute has hosted many stellar events and has encouraged students to participate for the same at national and international level. The student council of the institute organizes various events under the guidance of the principal and faculty coordinator. The inter-collegiate cultural festival “Trifles” is celebrated every year where students all over the city participate with a lot of zeal and enthusiasm.  The students of TSEC have won many awards in street play, dance, singing and fashion show. The student council also organizes Freshers Day, Avalanche, Teacher’s Day, Women’s Day, Traditional Day, International Matrubhasha Diwas, Innovation Day and International Yoga Day  **Sports and Games:**  **Indoor games:** The institute offers various indoor games facilities in the gymkhana. It has games like Table Tennis, Chess, Carom and pool.  **Outdoor games:** The institute encourages students to participate in sports by renting grounds on timely basis.  Students actively participate in indoor and outdoor games like chess, carrom, table tennis, cricket, football, volleyball, badminton and many more. The institute inculcates the love of sports and caters to the need of sports enthusiasts on campus. For indoor games, students play in the in-house gymkhana and for the outdoor games, grounds are hired from time to time. The Student Council organizes our flagship event ‘**TSEC Marathon’** which is an event held annually, actively participated by all Mumbaikars.    **Fig 4.2:** Ways and means of channelizing ‘juvenile impatience’ to do something spectacular  **Yoga:**  The institute started adapting practices which improve spiritual quotient of pupils in addition to intellectual and emotional integrity. Historically, we were practicing yoga without any direction and occasionally. Currently the political/educational establishment also nudges institute to undertake yoga practices starting with students getting admitted in the first-year level as part of induction program. We also experienced the positive outcome of yoga practices getting introduced and popularizing among youngsters. We undertake to take these practices to the next level even to influence families and ecosystems around the learners. Yoga sessions are conducted for students and faculty to channelize their focus and expand their energy to train and sharpen the body, mind and spirit in the right direction. All Yoga sessions are conducted by trained professionals.  There is a system in place to facilitate initiation of students to extra-curricular and co-curricular activities. We find lots of virtues associated with collaborative and group activities and which is the foundation of all sports and cultural activities. The institute incorporates these understandings in their regular discourses and students are prompted to undertake these activities with maximum inclusiveness. Sports and other extra-curricular activities essentially succeed in eliminating barriers preventing synergies of collaborative effort. These activities essentially sensitize all concerned about transcending to sports persons’ emotional and physical integrities. Keeping this as an institutional understanding, we create a setting where individuals are facilitated to participate in events of their choice and proficiency.  Being in a metro city we hire facilities whenever required or demanded and spend on equipment and props on yearly basis as a need base activity and our students bring a lot of laurels from these cultural and sports activities competing with best of class institute like IIMs and many more.  The college reorganized the Gymkhana facility in the current form in the year 2014 and we set aside budgeted amount for improving participation in intra and inter-collegiate events. Lot many cultural activities and rehearsals happen in Student Lounge and it is a breeding ground for collaborative activities of all kind and the institute channelizes these energies in right direction to be more productive. City-bred students also avail facilities of municipal corporation around their place of residence in addition to centralized facility getting organized at college level and the level of participation is pervasive.   |  |  | | --- | --- | | **File** | **Description** | | **Additional Information:** Details of facilities for sports and cultural activities | [View Document](https://drive.google.com/file/d/1mEKHGMdO2QjfZjGbhdwgQOLOPFDsXT1N/view?usp=sharing) |   **File Description** | |
| **4.1.3 Percentage of classrooms and seminar halls with ICT – enabled facilities such as smart class, LMS, etc**  **Response: 100%**  *Percentage of classrooms and seminar halls with ICT =*  All the 26 classrooms are having desktop computers with latest hardware specification fulfilled with latest version of operating systems and utility software’s and have internet connection. Few of the classrooms are having smart boards facility on experimental basis and also using as a teacher-training platform. Geo-tagged photographs of ICT enabled classrooms/seminar halls with captions have been attached in the table given below.  Diagram  Description automatically generated  **Fig. 4.3:** Classrooms with ICT Facilities  **4.1.3.1 Number of classrooms and seminar halls with ICT facilities**  **Response:** 34   |  |  | | --- | --- | | **File Description** | **Document** | | Number of classrooms and seminar halls with ICT enabled facilities (Data Template) | [**View Document**](https://docs.google.com/spreadsheets/d/19mFwX82lLfk5uEr42pdSdl9LoUN5_oxo/edit?usp=sharing&ouid=108247205475808110389&rtpof=true&sd=true) | |

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| **4.1.4** **Average percentage of expenditure, excluding salary for infrastructure augmentation during last five years (INR in Lakhs)**  **Response:** **33.1%**  **4.1.4.1 Expenditure for infrastructure augmentation, excluding salary year wise during last five years (INR in lakhs)**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 2020-21 | 2019-20 | 2018-19 | 2017-18 | 2016-17 | | 197.79 | 74.49 | 91.01 | 339.18 | 228.80 |  |  |  | | --- | --- | | **File Description** | **Document** | | Details of budget allocation, excluding salary during the last five years (Data Template) | [View Document](https://docs.google.com/spreadsheets/d/1-n2ysYe5C-wMOcKYNbVUeCjGrCLRV9JK/edit?usp=sharing&ouid=108247205475808110389&rtpof=true&sd=true) | | **Additional Information:** Audited utilization statements 16-17 | [View Document](https://drive.google.com/file/d/1HF5-tdy40RBvPy8xz06OGoQY4zR6p9sF/view?usp=sharing) | | **Additional Information:** Audited utilization statements 17-18 | [View Document](https://drive.google.com/file/d/1U2SjRFTfmdfIrnpibYdE817XPg9PuUkb/view?usp=sharing) | | **Additional Information:** Audited utilization statements 18-19 | [View Document](https://drive.google.com/file/d/1qaffIoKhaskDTmxj-4rMBIpBQ4TSNtOi/view?usp=sharing) | | **Additional Information:** Audited utilization statements 19-20 | [View Document](https://drive.google.com/file/d/1uSvM2Wlne_yHzQOdZLtZi_OPybwjO5OB/view?usp=sharing) | | **Additional Information:** Audited utilization statements 20-21 | To be audited | |

**4.2 Library as a Learning Resource**

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| **4.2.1 Library is automated using Integrated Library Management System (ILMS)**  **Response:**  In this digital era, library automation is essential in every academic institution. Accelerated disruptions in the science and technology and matching literature on these sectors drives acquisition of the same in the library. The learners who remain focused and have the innate ability of seeking new knowledge have been found hugely satisfied in the quest for new frontiers.  TSEC has also taken steps to transform its library functionality into a paperless environment by implementing LibSuite Educational, an automated library management system.  The Institution has a spacious Central Library with an area of 456+ square meters and has a seating capacity for 100 users.  (1) Name of the ILMS software: “LIB SUITE Educational”  (2) Nature of automation (fully or partially): All the Library functions are fully automated.  (3) Version: Library uses version 5.1  (4) Year of Automation: Library is fully automated since 2005  Diagram  Description automatically generated  **Fig. 4.4:** Knowledge Creation & Discovery Center  The TSEC Library has 42,745 volumes with a total of 10,287 titles. It includes an online subscription to e-journals and e-books along with 40 print periodicals. We have a vast amount of digital content that is accessible through a strong digital library infrastructure.  The institution considers the library to be a vital learning resource. It is regularly updated to include the most recent books and periodicals.  The institute library functions under the Open Access System having a total collection of 39,077 volumes of books with 15 titles covering all the branches of Engineering, Management, Sciences and Humanities and general books.  The library has the subscription of several online Journals, national and international Journals, Periodicals, Newspapers, previous years question papers, books on competitive exams etc. We also have Book Bank facility.  The digital library has an impressive collection of around 1000 CDs, e-resources like e-books, e-journals. In addition to this, the library is also equipped with an internet browsing center with 25 systems with access to various academic resources available on the internet.  Resources like digital scanners, printers, photocopiers and CCTV Camera surveillance system for security etc. are available.  The details of various collection are given as follows:   |  |  | | --- | --- | | **Title** | **Quantity** | | Technical Books | 41992 | | Encyclopedia | 22 | | Handbooks | 231 | | Dictionaries | 31 | | Newspaper | 08 | | Magazines | 08 | | CD,DVDs | 1000 | | Non Technical Books | 500 | | E-books | 1890 |   **Other Learning Resources:**  In addition, the library has proceedings of national and international conferences, seminars, symposiums, lecture notes, technical proceedings, technical resources, manuals, guidelines, standard specifications, special publications, layouts, IS codes which are made available for access to all students, faculty and staff.   |  |  | | --- | --- | | **File Description** | **Document** | | **Additional Information:** Functions of Integrated Library Management System | [**View Document**](https://drive.google.com/file/d/1KijdNhyi7YyjxqFYmhg59k6fKEk0wUpa/view?usp=sharing) | |

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| **4.2.2 The institution has subscription for the following e-resources**  1. e-journals  2. e-ShodhSindhu  3. Shodhganga Membership  4. e-books  5. Databases  6. Remote access to e-resources  **Options:**  **A. Any 4 or more of the above**  **B. Any 3 of the above**  **C. Any 2 of the above**  **D. Any 1 of the above**  **E. None of the above**  **Response:**  **A. Any 4 or more of the above**  The total count of e-books and e-journals the institute have is 1890   |  |  | | --- | --- | | **File Description** | **Document** | | Details of Subscriptions like E-journals, e-Shodhsindhu, Shodhganga membership etc. (Data Template) | [**View Document**](https://docs.google.com/spreadsheets/d/1uW1j8pBRw915W93baZ7ULIgibbLTfMTK/edit?usp=sharing&ouid=105276984840037118452&rtpof=true&sd=true) | | **Additional Information:** E-copy of the letter of subscription/membership (e-journals) | [**View Document**](https://drive.google.com/file/d/1_Dfk2HB3oopVCSDCwkqGgbjFdxUmjKvl/view?usp=sharing) | | **Additional Information:** Screenshots of the facilities (claimed with name of TSEC) and specific details | [**View Document**](https://drive.google.com/file/d/14dSDKGHHEUx-eq2PTUEY6ZrJ0oXlPGyr/view?usp=sharing) | |

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| **4.2.3 Average annual expenditure for purchase of books and journals during the last five years (INR in Lakhs)**  **Response:**  Average annual expenditure is Rs. 9.66 Lakhs.    4.2.3.1 **Annual expenditure for purchase of books and journals year-wise during the last five years (INR in Lakhs)**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 2020-21 | 2019-20 | 2018-19 | 2017-18 | 2016-17 | | 8.18 | 10.20 | 9.24 | 11.11 | 9.57 |  |  |  | | --- | --- | | **File Description** | **Document** | | Details of annual expenditure for purchase of Books/E-Books and Journals/E-journals during the last five years (Data Template) | [View Document](https://docs.google.com/spreadsheets/d/1Ad07cxjiKdlPwvqbBW0Ja_E5AhGjZKBn/edit?usp=sharing&ouid=108247205475808110389&rtpof=true&sd=true) | | **Additional Information:** Audited statement of account 2016-17 | [View Document](https://drive.google.com/file/d/1zvycrkhymq_M9pf8M06Zp_DADPvCEtm1/view?usp=sharing) | | **Additional Information:** Audited statement of account 2017-18 | [View Document](https://drive.google.com/file/d/1y70T5sF-l3U0QCsWinVSwdFGr71TT03O/view?usp=sharing) | | **Additional Information:** Audited statement of account 2018-19 | [View Document](https://drive.google.com/file/d/19T6B1NEElk5KwQ2gzsOPknqpyNYuAiSR/view?usp=sharing) | | **Additional Information:** Audited statement of account 2019-20 | [View Document](https://drive.google.com/file/d/1NQwrgeEcFp1pjBS-9A3LIAUSdq9_2Ke6/view?usp=sharing) | | **Additional Information:** Audited statement of account 2020-21 | Yet to be audited | |

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| **4.2.4 Percentage per day usage of library by teachers and students**  **Response: 6.12%**    **4.2.4.1 Number of teachers and students using library per day over last one year**  **Response:** Due to the pandemic, the usage of physical library was restricted.   |  |  | | --- | --- | | **File Description** | **Document** | | **Additional Information:** Certified E-copy of the ledger for footfalls for 5 days | **[View Document](https://drive.google.com/file/d/1NFURFffi24K_Bjd1_lSnafCYYCQpPIIJ/view?usp=sharing)** | | **Additional Information:** Certified screenshots of the data for the same 5 days of online access | [**View Document**](https://drive.google.com/file/d/1GvwAgluSCZqvKipjgX1wBGp-qnyoiyvT/view?usp=sharing) | |

**4.3 IT Infrastructure**

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| **4.3.1 Institution frequently updates its IT facilities including Wi-Fi**  **Response:**  TSEC has a policy of updating its IT infrastructure on a regular basis as needed. We have over 600 Microsoft licenses, as well as licenses for MATLAB, SPSS, library software, accounting software, sketching software, a learning management system, and specialised chemical engineering software packages. Windows 8/10 operating system, Microsoft Office 2016, Keil software, MATLAB, Ls-Dyna, LibSuite, Tally, and other programming softwares are among those used. The IT infrastructure at TSEC is updated on a regular basis to keep up with the institute's requirements.  The institute regularly upgrades its IT facilities. The institution has been purchasing high-end computers on a regular basis. Zenith computers with Core i3 CPUs were purchased in 2015-16. Since 2016, the Institute has been upgrading all of its computers to the Core i5 level. All laboratories have the most recent PC hardware, including Core i5 CPU, 4 GB-6GB memory, 500 GB-1TB hard drive, and 19” screen. The majority of the computers are of brands like Dell and HP with preloaded Windows operating systems. In addition, TSEC has three high-end Tower Servers from IBM, Compaq, and Assembled. The server configuration has been upgraded to an Octa Core CPU, 4GB-16GB RAM, and a 1TB HDD with RAID support.  Every lab has network switches that connect internal computers to the main core network of the institute. The switches used for networking between different laboratories are of brand CISCO and DLINK with 16-24 port support. To secure the access, TSEC has replaced some of its unmanageable switches with manageable switches over the last five years.  TSEC is committed to increasing the internet speed year after year. We had an internet speed of 100 MBPS in 2016-17, which was increased to 200 MBPS in 2017-18 and then to 700 MBPS in 2020-21. Many of the departmental laboratories have their own 25 MBPS broadband connection. A centralized firewall system provides and manages internet connections in a secure manner. The entire campus is Wi-Fi enabled and has high-speed internet access, allowing students and faculty to access the internet from anywhere within the college building and its peripherals. Over the years, the Wi-Fi facility has been improved by increasing internet bandwidth as well as upgrading some Wi-Fi routers from 300 MBPS to 1200 MBPS with dual band 2G + 5G support. The institute's digital library has its own high-speed internet connection to allow for quick and efficient access to digital teaching-learning materials such as MOOC platforms, research papers, E-journals, E-Books, Swayam courses, NPTEL videos and so on.  In the last five years, the classrooms have also been upgraded with computer-aided podiums, high-end projectors, some smart boards, air-conditioning, and internet access to create a conducive environment for teaching and learning.  During the unexpected COVID-19 outbreak, the institution purchased online teaching platforms such as Microsoft Teams and Zoom apps to make the teaching-learning process run more smoothly, as well as provide the ability to conduct seminars, workshops, webinars, and engage students productively. |
| **4.3.2** **Student - Computer ratio**  **Response: 2 : 1**  • Number of computers in working condition: 927  • Total Number of students: 2006   |  |  | | --- | --- | | **File Description** | **Document** | | **Additional Information:** Number of Computers available for student use only will be considered. | [**View Document**](https://docs.google.com/spreadsheets/d/1acOwPylbw8qmkSMd7w6GIhjpzFu_MLCa/edit?usp=sharing&ouid=105276984840037118452&rtpof=true&sd=true) | | **Additional Information:** Bills for the purchase of computers | [**View Document**](https://drive.google.com/file/d/1m_40cKWGegIcfWJ4GiWslGkljUnYxPBG/view?usp=sharing) | | **Additional Information:** Highlight the entries of computers purchased in the stock registers | [**View Document**](https://drive.google.com/file/d/1YLTlpvc8wOaIUEg-iFe6BGZKpMQL0Axp/view?usp=sharing) | |

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| **4.3.3** **Available bandwidth of internet connection in the Institution**  A. ≥ 50 MBPS  B. 30 - 50 MBPS  C. 10 - 30 MBPS  D. 10 - 5 MBPS  E. < 5 MBPS  **Options:**  **Response: A. ≥ 50 MBPS**   |  |  | | --- | --- | | **File Description** | **Document** | | Bills for any one month/one quarter maximum three months old of the latest completed academic year indicating internet connection plan, speed and bandwidth and the HEI’s name. | [**View Document**](https://drive.google.com/file/d/1GIt4jSrTfmSUANE1CFld8NrZbbxrpeJk/view?usp=sharing) | | E-copy of document of agreement with the service provider. | [**View Document**](https://drive.google.com/file/d/1ZEDLRuwi9ycKNSqosrxdRfZ4p0S71Rg5/view?usp=sharing) | |

**4.4 Maintenance of Campus Infrastructure**

Sizeable amount gets budgeted for periodic maintenance including AMCs and Dean Infrastructure is entrusted with the responsibility of maintenance, repairs and replacements of the campus facilities

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| **4.4.1 Average Expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component, as a percentage during the last five years (INR in Lakhs)**  **Response: 16.85 %**  Average percentage **=** |
| **4.4.1.1** Expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component year-wise during the last five years (INR in Lakhs)   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **2020-21** | **2019-20** | **2018-19** | **2017-18** | **2016-17** | | 163.80 | 35.28 | 46.83 | 151.38 | 76.26 |  |  |  | | --- | --- | | **File Description** | **Document** | | Details about assigned budget and expenditure on physical facilities and academic support facilities (Data Templates) | [View Document](https://docs.google.com/spreadsheets/d/1m9V4LRamz7Gik80CUXC9lnkUtRKZUDRO/edit?usp=sharing&ouid=108247205475808110389&rtpof=true&sd=true) | | **Additional Information:** Audited statements of accounts 2016-17 | [View](https://drive.google.com/file/d/1A9UCgi0cXyKauJZCcG-8NfcyOaoO7eL-/view?usp=sharing) Document | | **Additional Information:** Audited statements of accounts 2017-18 | [View](https://drive.google.com/file/d/1Y5gXhVGhRysU07KBEroI6M5ckIb0sNBy/view?usp=sharing) Document | | **Additional Information:** Audited statements of accounts 2018-19 | [View](https://drive.google.com/file/d/1amhrX2zNO_n_wFAYf6hlMJ2GFZFZ6WTL/view?usp=sharing) Document | | **Additional Information:** Audited statements of accounts 2019-20 | [View](https://drive.google.com/file/d/12mDR7o7kCcdmR_9k7nvkDO6Jix9a2NXn/view?usp=sharing) Document | | **Additional Information:** Audited statements of accounts 2020-21 | Not Audited | |

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| **4.4.2 There are established systems and procedures for maintaining and utilizing physical, academic and support facilities - laboratory, library, sports complex, computers, classrooms etc.**  **Response:**  Adequate physical infrastructure and support facilities are available to support the academic activities in the institute. In order to ensure their maintenance and optimum utilization, various systems and procedures are established so as to benefit all the stakeholders. We are located in metro city therefore we are bound to have high end support facility.  **Maintenance of resources**   1. **Equipment and machine maintenance**   Some of the critical maintenance works are outsourced as per the outsourcing process. However regular monitoring and control is the responsibility of maintenance section. During the maintenance if anything is required to be purchased it is raised through a requisition slip.   1. Records of equipment are maintained in stock registers as specified in Purchase Process 2. Equipment / appliances are serviced periodically or as and when required 3. Equipment like measuring devices is checked / calibrated during servicing 4. Servicing is done either by in-house personnel or by external party or through annual maintenance contract (AMC) 5. Record of servicing is maintained. 6. Records of AMC are maintained in AMC Register. 7. Equipment that are not in working condition and are not repairable are removed from the stock.     **b) General maintenance:**   1. Maintenance of ACs and lifts are outsourced on AMC basis to the outside agencies. 2. Cleanliness & daily maintenance of the internal facility (classrooms, laboratories, hallway, and staircase) and college premises is outsourced by the institute. 3. Cleanliness of toilet blocks and wash room is outsourced by in-house employees of the institute. 4. Fire extinguisher is outsourced and refilling of the cylinder is done once in a year. 5. Maintenance of CCTV is outsourced and is maintained in coordination through technical person of the institute. 6. ICT infrastructure is maintained by technical assistants of the respective departments. 7. Cleaning work is done by floor peon. Other maintenance related issues are attended by carpenter and electrician of the institute subject to the complaint put in complaint register. 8. Water filter and coolers are cleaned on regular basis by the housekeeping staff.   **Maintenance laboratory, library, computers, classrooms**  **1. Routine Maintenance:** The housekeeping team cleans, dusts, sweeps, and mop all areas on a daily basis.  **2. Preventive Maintenance:** The designated staff (Carpenters, Electricians, and Plumbers) are in charge of overseeing the maintenance and small repairs of the institute's buildings, classrooms and laboratories, and library, among other things.  **Computers**  Preventive maintenance work is undertaken once every week by lab assistants and issues are reported to IT helpdesk in case of serious issues.  **Laboratory Instruments**  Preventive maintenance work is conducted once every week by lab assistant. If any problem is in instrument, lab assistant tries to address a problem. If a problem cannot be resolved by the lab assistant, the instruments are forwarded to the vendor for service or replacement. Lab Assistants are responsible for keeping track of lab records, catalogues, lab manuals, and student work.  Dead Stock is also updated and maintained by lab assistants. They work with vendors and maintenance departments to schedule regular servicing of air conditioners, water coolers, and other equipment, as well as repairs when needed.  **Library**  The Librarian and her support personnel are in charge of the library's upkeep. The library conducts internal audits on a regular basis to ensure that the volumes are in good condition. The librarian interacts with students and staff on a regular basis to learn about their needs and take the appropriate steps to address them.  Diagram  Description automatically generated  **Fig. 4.7:** Equipment and Machine Maintenance  The library conducts a regular stock check of volumes. Staff and students have separate log-in registers at the library. Staff, students, and research researchers can use the digital library section to access e-books, journals, audio books, NPTEL videos, soft copies of final year project reports from all UG/PG programmes, as well as old question papers.  **Computers and accessories:**  The Institution's computers are maintained by individual system administrators. The computer systems are inspected and serviced on a regular basis. In order to demonstrate proper usage, all computer laboratories keep log-in registers. The LAN connects all the computer systems.  The institution's computers are all managed by AMC. If there is a problem with the hardware or software, the system administrator will immediately notify AMC, and the problem will be remedied as soon as possible. AMC monitors and maintains the power backup infrastructure, including UPS and batteries. The Institute's air conditioners are also serviced by AMC.  **Campus Infrastructure:**  The institute is having well established protocols for maintenance of campus infrastructure. All of the blocks have a Reverse Osmosis (RO) system that provides safe drinking water. The fire extinguishers are refilled on a regular basis and kept in good operating condition.  **Electrical Power Backup** – A 125KVA Cummins diesel generator has been installed and maintained on campus to provide the requisite power backup.  Diagram  Description automatically generated  **Fig. 4.8:** Machinery and Equipment under AMC  The details of the Machinery and Equipment which are covered under annual maintenance contract is given below:   |  |  |  | | --- | --- | --- | | **Sr. No** | **Name of the machinery and equipment’s** | **AMC provider** | | 1 | Lifts | Otis & Kone | | 2 | Water purifier/ Water Cooler | Eureka Forbes | | 3 | Pest control | Pepstop Pest Contral Services | | 4 | Air conditioners | Western Air Conditioner | | 6 | Firefighting and Fire alarm system | Stopfire Equipment Pvt. Ltd | | 7 | CCTV system | Third Eye Solutions |  |  |  | | --- | --- | | **File Description** | **Document** | | **Additional Information:** Details of AMC Providers | [**View Document**](https://drive.google.com/file/d/17VG5JZYVmvhC2Fy5pYB2MSXmeIvDRMBB/view?usp=sharing) | | **Additional Information:** General Process of Maintenance | [**View Document**](https://drive.google.com/file/d/1JXyXtsVxvTurWgHxMniErACCLxxIjMH2/view?usp=sharing) | |