Date: 30-06-2015

Director

Agreed
30/06/15

Subject: Governance Development Plan & Institutional Development plan updation on Institute's website.

This is with reference to the requirements conveyed by the NPIU officials visited the Institute on 09-06-2015. They have desired to upload the Revised Institutional development Plan and Governance Development plan of this Institute website.

Director may kindly approve the revised Institutional development Plan and Governance Development plan so that it can be uploaded on the institute website.

(Dr. B S Pabla)
Coordinator (TEQIP-II)

REVISED

INSTITUTIONAL DEVELOPMENT PROPOSAL

(June, 2015)

For

Sub Component 1.1

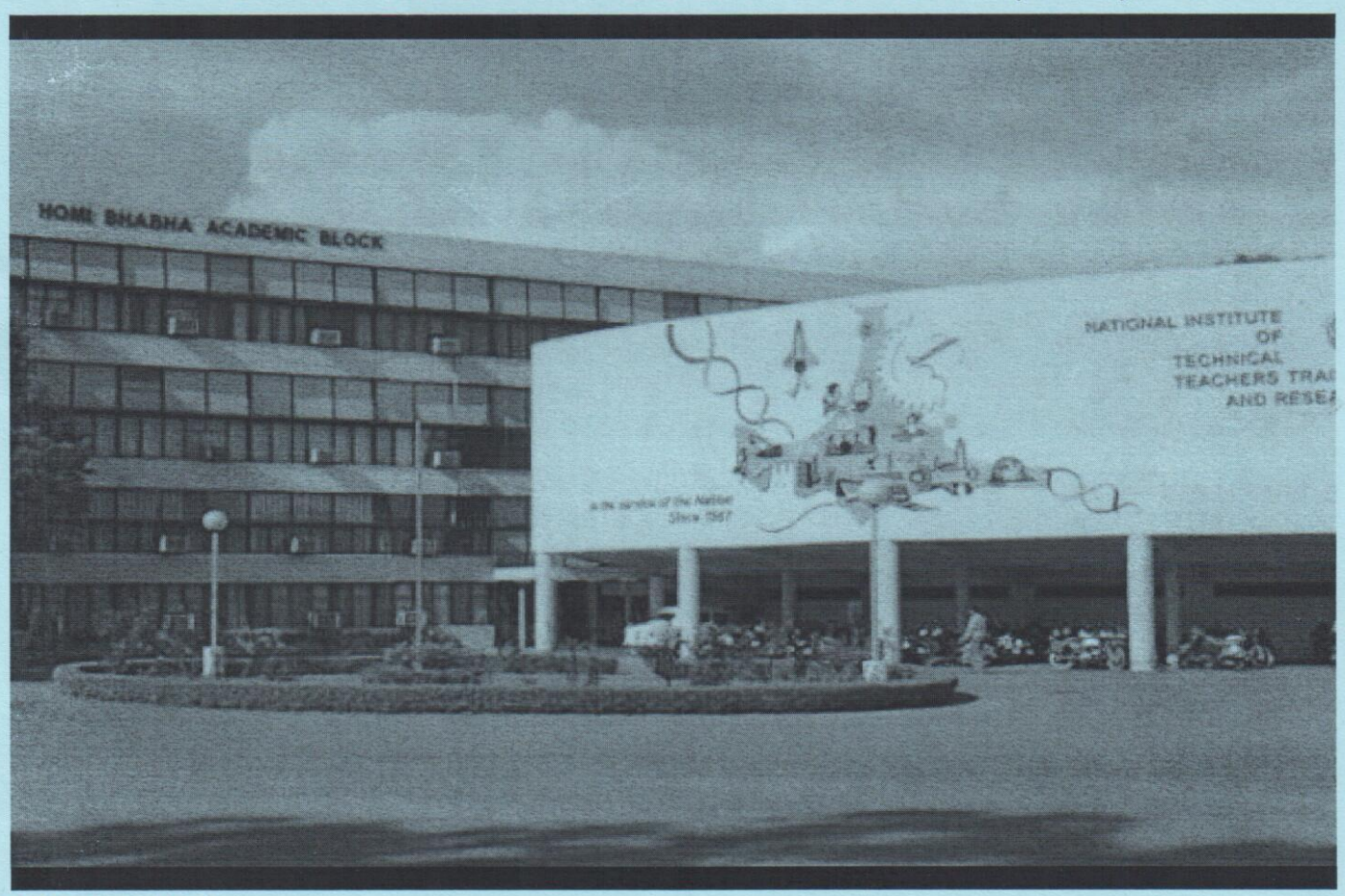
Strengthening Institutions to Improve Learning Outcomes and Employability of Graduates

Under

TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME
(TEQIP) - Phase II

Submitted to

NATIONAL PROJECT IMPLEMENTATION UNIT (NPIU), NOIDA



Submitted by:

NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING
& RESEARCH, SECTOR 26, CHANDIGARH 160 019

CERTIFICATE

Certified that all information provided are factually correct

(Dr. B S Pabla)
Coordinator (TEQIP-II)

Place: NITTTR, Chandigarh

Date: 30-06-2015

Executive summary of revised Institutional Development Proposal (Revised IDP)

National Institute of Technical Teachers Training and Research, Chandigarh, formerly known as Technical Teachers Training Institute (TTTI), was established by Ministry of Human Resource Development, Government of India in 1967 to meet the requirements of training polytechnic teachers for the growth and development of polytechnic education in the northern region of the country. It had the collaboration of Royal Netherlands Government up to 1974. The institute was a unique experiment in the history of Technical Education system in which efforts were made to combine knowledge of educational sciences and management with the knowledge of engineering practice for Polytechnic Education System. The institute ushered in a new era in November 2003, with its changed name and enhanced status as National Institute of Technical Teachers Training and Research (NITTTR). It is one of the four such National Institutes in the country with focus on the northern region comprising the states of Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand, National Capital Territory of Delhi and Union Territory of Chandigarh. Presently, the outreach of the programmes and activities of the institute covers the entire gamut of technical education. It is now reckoned as a resource institute for the technical education system providing services to its clientele covering faculty/staff of technical institutions, officials of directorates/boards of technical education, central and state government departments, industry, students from technical institutes, community and trainees from overseas. NITTTR, Chandigarh is an ISO 9001- 2008 certified institute. It has now evolved in to an Institute to play a role of "Change Agent" to the entire higher education System comprising both polytechnics and engineering colleges to ensure its organic growth through balanced quantitative expansion and qualitative improvement. The institute is an autonomous organization registered under the Societies Registration Act 1860. It is managed by a Board of Governors. Director is the executive head of the institute.

The institution comprises of fourteen departments. It has a sanction strength of 65 faculty members and 142 staff members. Laboratories and workshops of various departments are well equipped with the modern machinery and equipment to provide hands on experience to the faculty and students. This institute offers six post graduate degree courses, namely Mechanical Engineering, Electronics and Communication Engineering, Civil Engineering, Computer Science Engineering. Eligible Three PG programs were applied for NBA accreditation.

The Institution has well qualified faculty and more than 80 % of faculty positions are filled by regular fulltime faculty members. The institution encourages up gradation of qualification by faculty by QIP. GECK has good gender equity (nearly 50% of the faculty are women and 50% of students are girls) and social equity.

The institution has signed MoUs with industries to strengthen the Industry-Institution interaction. We have constituted an external screening Committee to scrutinize the proposals for international travel support scheme.

The institute has a first to its credit, in offering these Master Degree Programmes on modular basis also in the above six disciplines duly approved by AICTE and affiliated to Panjab University. These programmes are offered to teachers from technical institutions and working professionals from industry. In addition, fresh engineering graduates are also admitted in the disciplines of Electronics and Communication Engineering and Instrumentation and Control. The institute is an identified Centre for the Quality Improvement Programme of the Government of India for polytechnic faculty. The institute is a recognized Ph.D centre under QIP (Poly.) scheme of AICTE. In addition, the institute is also a research centre of Panjab University, Chandigarh and Punjab Technical University (PTU), Jalandhar for offering Ph.D Programmes.

The institute has approved intake of 157 students per year in six Master Degree Programmes offered through regular mode and 240 students through modular mode. Course-wise approved intake is given below:

Sr. No.	Name of the Programme	Approved Intake	Approved Intake
		Regular	Modular
1	M.Tech. Engineering Education	28	40
2	Mechanical Engineering	28	40
3	Civil Engineering	28	40
4	Computer Science & Engineering	28	40
5	Electrical Engineering	26	40
6	Electronics & Comm. Engineering	19	40
Total		**157**	**240**

There is a considerable improvement in academic performance of students. Research ambience of the institution improved considerably. The Institute is making optimum use of equipment procured under the project. Many existing laboratories have been modernized and new labs have been established.

The institution also conducts orientation programs and remedial classes for the students from weaker section on a regular basis under TEQIP II. The institute has conducted various National and International Conference/Seminars under TEQIP-II for development of faculty in order to give good exposure on the developments taking place in different areas during the last two years under TEQIP-II. The institute conducted many short-term courses for faculty and supporting staff members under the project. Faculty members of this institute had attended quality training programs. Besides, several senior faculty members including Director, HODs attended 'Institutional Management Capacity Enhancement' training programs organized by NPIU identified training Institutes. Seven faculty members visited abroad for paper presentation under TEQIP-II.

Details of faculty which presented papers at International Conferences/seminars abroad:

Sr. No.	Name & Designation	Purpose of Visit
1	Dr. M.P.Poonia Director	Attended two weeks leadership Development Programme in University of Indiana, Bloomington, USA from 9-13 December,2013.
2	Dr. B.S. Pabla Professor	Presented paper titled study of Wrinkle formation in Sheet Metal Drawing operation in Ryerson University Toronto, Canada from 8-9 August, 2013.
3	Dr. S.S. Banwait Professor	Presented paper titled "an exaustive Review of Die Sinking Electrical Discharge machining process & scope of future Research in International Conference on Manufacturing Engineering & Technology in Ryerson University Toronto, Canada from 20-21 June, 2013.
4	Dr. S.S. Dhami Professor	To present paper titled "Computer simulation as an effective tool in teaching of Mechatronics in asian conference on 23-27 October 2013 Society Education & Technology(ACSET 2013) at Ramada Osaka, Japan from 23-27 October, 2013
5	Dr. P.K. Tulsi Professor	To present paper titled training of Technical Teacher's through integration of information & communication Technology in India in Ramada Osaka, Japan from 23-27 October, 2013.
6	Dr. S. Chatterji Professor	To present paper titled "Artificial Intelligence (AI) based Cascade Multi level inverter of Smart Nano Grid in International conference on Automation Robotics & Vision Engineering at Ryerson University, Toronto, Canada from 20-21 June, 2013.

Revised Institutional Project Budget for Sub-Component 1.1

(₹ in Lakhs)

Sr. No	Activities	Project Life Allocation	2013-14	2014-15	2015-16	2016-17 Till Oct.
	(i) Modernization and strengthening of laboratories	220	13.59	52.77	92.18	61.46
	(ii) Establishment of new laboratories for existing PG & Ph.D. programmes	170	24.08	-	87.55	58.37
	(iii) Modernization of classrooms	25	-	-	15	10
	(iv) Updation of Learning Resources	50		-	30	20
	(v) Procurement of furniture	25	1.27	-	14.23	9.50
	(vi) Minor items	10	1.85	-	4.89	3.26
	(vii) Refurbishment (Minor Civil Works)	50	-	-	30	20
	Total (1)	**550**	**40.79**	**52.77**	**273.85**	**182.59**
2	Providing Teaching and Research Assistantships to increase enrolment in existing PG & Ph.D. programmes in Engineering disciplines	100	10.16	36.42	32.05	21.37
3	Enhancement of R&D and institutional consultancy activities	20	1.85	0.82	10.40	6.93
4	Faculty and Staff Development for improved competence based on TNA	100	12.54	13.80	44.20	29.46
5	Enhanced Interaction with Industry	40	0.54	-	23.68	15.78
6	Institutional management capacity enhancement	30	2.74	-	16.36	10.90
7	Implementation of institutional reforms	20	-	11.49	7.00	1.51
8	Academic support for weak students	40	0.34	0.67	23.39	15.60
9	Incremental Operating Cost	100	4.03	14.53	48.86	32.58
	Total	**1000**	**72.99**	**130.50**	**479.79**	**316.72**

Training Needs Analysis (TNA) carried out & Faculty Development Plan (FDP) improving their teaching, subject area and research competence based on Training Needs Analysis (TNA)

A. Basic pedagogical training of faculty from engineering discipline and supporting departments
B. Advanced pedagogical training of faculty from engineering discipline and supporting departments
C. Participation by faculty in subject matter training programmes.
D. Participation by faculty in seminars, conferences, workshop etc.
E. Organizing conferences, seminars, workshops etc.

Institutional project implementation arrangements with participation of faculty and staff

The following team has been identified which will be primarily responsible for project implementation and monitoring. In addition institute level and department level committees have been constituted for carrying out the different activities related to the project.

Head and Nodal Officer	Name	Phone Number 0172-	Mobile Number	Fax Number 0172-	E-mail Address
Head of the Institution (Full time appointee)	Dr. M. P. Poonia	2759501		2791366	director@nitttrchd.ac.in
TEQIP Coordinator	Dr. B. S. Pabla	2759525	9815951921	2791366	pablabs@yahoo.com
Project Nodal Officers for:					
Academic Activities	Dr. S. S. Banwait	2759552	9888424432	2791366	banwait_ss@hotmail.com
Civil Works including Environment Management	Dr. Sanjay Sharma	2759514	9872005961	2791366	sanjaysharmachd@yahoo.com
Procurement	Dr. B. S. Pabla	2759525	9815951921	2791366	pablabs@yahoo.com
Financial aspects	Dr. J. S. Saini	2759578	9872891457	2791366	jssainittti@rediffmail.com
Equity Assurance Plan Implementation	Dr. Sunil Dutt	2759594	9815906121	2791366	sunildut2002@yahoo.co.in

Project Targets for Institution under Sub-Component 1.1

S. No.	Deliverables	Base - line		Targets to be achieved	
		2010 - 11	2011 - 12	At the end of 2 years of joining the Project	By project closing i.e. 31-10-2016
1	Number of students registered for (a) Masters in Engineering programme (b) Doctoral programme in Engineering	230 05	205 16	300 25	400 40
2	Revenue from externally funded R&D projects and consultancies in total revenue (Rs. in lakh)	126	194	225	250
3	Number of publications in refereed journals (a) National (b) International	18 50	12 44	25 70	40 100
4	IRG as % of total annual recurring expenditure	6.6	12	15	18
5	Number of co-authored publications in refereed journals (a) National (b) International	18 50	12 44	25 70	40 100
6	Student credentials (a) campus placement rate of • UG students • PG students (b) average salary of placement package for (Rs. in lakh) • UG students • PG students	- NA - 100%* - NA - *	- NA - 100%* - NA - *	- NA - 100% - NA - 4.00 lakh	- NA - 100% - NA - 5.00 lakh

7	Number of collaborative programmes with Industry	NIL	02	02	02
8	Accreditation status (obtained and applied for)	00	00	Applied for 100%	100%
9	Vacancy position for (i) faculty and (ii) staff	27 50	20 52	Less than 10%	Zero
10	Percentage of regular faculty having a Master's Degree or a Doctorate Degree in Engineering disciplines	All faculty members in engineering disciplines have Master's degree or Doctorate degree in engineering (100%)			
11	Transit rate from 1st to 2nd year for the following: • All Students • SC and ST Students • OBC Students	 95% 94% 93%	 95% 95% 94%	 98% 98% 98%	 100% 100% 100%
12	Autonomy status	Yes, institute is an autonomous body under MHRD, GOI. However, institute has applied for Autonomous Institute status to UGC.			
13	Enrolment of faculty with only Bachelor Degree for qualification upgradation	Not applicable, as all the faculty members hold either Masters or Ph.D. degree			

*** At present, admission to ME/M.Tech. and Ph.D. programmes is open only to the working professionals**

Revised Action Plan

Under the TEQIP project the laboratories would be modernized and library resources updated which will result in improvement in the quality of the PG & Ph.D. programmes offered by the institute. As the facilities in the institute will be improved, the sustainability of the project activities will be ensured by the various outcomes

- The four funds viz Corpus Fund, Faculty Development Fund, Equipment Replacement Fund and Maintenance Fund established under this project will enable sustenance of the gains accrued under the project. The institute will continue to contribute to these funds even after the closure of the project so that the different activities can be supported.
- The improved R&D facilities established at the institute will attract more consultancy work, thus increasing the IRG which will be retained by the institute and used for further improving the facilities.

a) SWOT Analysis :

To know the present status of the human and other resources of the institute, SWOT analysis was conducted. Faculty and staff members from all the engineering and supporting departments participated in SWOT analysis. The results of SWOT analysis are presented below:

Strengths:

- Institute is an Autonomous body established by MHRD Government of India and enjoys full functional autonomy.
- Focused approach on development of human resource and state of art facilities.
- Qualified, experienced, dedicated and hardworking faculty and staff.
- Strong networking with the technical institutions of northern states, Directorates of Technical education, AICTE and MHRD.
- Comparatively strong central facilities like Computer Centre, Library, and hostel facility.

- Working on collaborative project with IIT Delhi and IIT Roorkee.
- AICTE and DST sponsored projects.
- Research center for Ph.D programs for Panjab University Chandigarh and Punjab Technical University Jalandhar.
- Offering masters degree programs in six disciplines of engineering and technology.
- Quality Improvement Programme (Polytechnic) Centre of AICTE for M.Tech/ME and Ph.D. programmes.
- Providing Education and Training Programmes for faculty of polytechnic and engineering colleges in the northern region
- Developing instruction material (both print and Non-print) for technical education system.
- Design and revision of curriculum for technical education system
- Undertaking research & development programmes for industry, technical system and other organizations.

Weakness:

- Need for modernization of laboratories and class rooms.
- Faculty and staff need training in the advanced areas of technology.
- Library needs up-gradation in terms of new titles, e-resources and research journals.
- PG program needs expansion.
- Need for starting new programs and restructuring of existing programs to enhance the employability of graduating students.
- Limited industry involvement in the academic activities of the Institute.

Opportunity:

- Increase enrolment in PG and Doctoral programs by reorienting the existing programs.
- Academic Autonomy to cater the needs of industry by continuously updating the curriculum and facilities with the changing demands of market.
- Setting-up of Research and Development Centre
- Promote self-employment in the area through vocational programs.
- To provide consultancy services in the core technical and engineering-education areas.
- Promote entrepreneurship development activities in northern zone.
- To explore new horizons in research work/studies.

Threats:

- Institute is not able to keep pace with the development in technology due to limited grant in aid for infrastructure and faculty development.
- Quality of the teachers taking admission in the ME/ M. Tech programs is not up to the mark.
- Due to inadequate facility for upgradation of faculty and staff of the institute, the new areas are not being explored.
- Number of faculty positions are lying vacant which effects the efficiency of the system.

b) Strategic Plan

To meet the requirement of qualified and competent teachers in the technical education system, the institute plans to upgrade the existing Masters and Ph.D. programmes. This will be done by increasing intake and creating state-of-the-art facilities. The admission to these programmes will be made open to general candidates which is now restricted to serving teachers only. The existing laboratory and infrastructural facilities will be upgraded with the additional financial support available through TEQIP. This will help in incorporating latest equipment and technologies to match the present requirements of the industry. To achieve academic excellence the faculty and staff will be trained in emerging areas of core technology as

well as in the pedagogy aspects. The upgraded research facilities will lead to increased consultancy by the faculty thereby exposing them to the current industry requirements. The research publications will be increased on continuing basis with the improvement in research facilities. All the PG programmes will be accredited at the end of two years of start of the project. The institute will fill the vacant positions of faculty and staff within two years of start of the project.

Vision

The vision of the institute is to dynamically respond, through an integrated package of research and development, education and training and extension services, to the needs of technical and vocational education, industry and community and challenges of advances in technology, including modern communication technology.

Mission

The mission of the institute is to promote excellence in technical education in collaboration with industry.

- To provide professional education and training for teachers of engineering and technology disciplines in technical institutions for advancement of learning towards promoting excellence in technical education and industry.
- To strive for continuous improvement in instruction and research in engineering and technology disciplines and research in management of technical education.
- To actively support the growth and quality improvement of technical education in the country through involvement in activities at national and state levels.
- To act as a centre for offering quality training programmes for teachers as per need of the system, covering the entire gamut of technical education including polytechnics, engineering colleges, vocational and management education at national level
- To arrange for practical training of technical teachers in industries
- To undertake systemic research to provide research inputs for development of technical education, training systems and its management
- To undertake action research for development of innovative methods, processes and practices for improvement of teaching learning environment in technical and vocational education institutions
- To design new instructional system and strategies for production of multimedia learning materials
- To develop and disseminate learning resources like Text books, Laboratory Manuals, Video Programmes, Computer Assisted Instructional Multimedia Packages to technical and vocational institutions and other organisations
- To offer programmes for technical and vocational teachers through distance learning mode using state-of-the-art technologies
- To offer courses / programmes for technical and vocational teachers to suit overseas demand especially SAARC and ASEAN countries
- To collaborate with community and industry in organising Continuing and Non-formal vocational education programmes and providing extension and consultancy services
- To undertake consultancy and extension work for industry, technical institutions/ organizations
- To provide support services to Government of India schemes related to technical and vocational education system and as entrusted by MHRD, Government of India, from time to time
- To cooperate with educational or other institutions in any part of the world having objectives wholly or partly similar to those of the institute by exchange of teachers and scholars and generally in such manner as may be conducive to their common objectives

c) The institute has strength in five major areas: education and training, curriculum development, instructional material development, research and development and consultancy and extension services. The key activities proposed in the IDP can be carried out effectively with the help of the funds available through this project. The strengths of the institute will provide a platform in terms of capabilities and experience of the faculty and staff in carrying out the proposed activities. The weaknesses identified through the SWOT analysis are primarily due to need of additional funds. Therefore this project will help in overcoming the weaknesses by improving the infrastructure and training requirements of the faculty and staff. This will in turn attract more candidates for our Masters and Ph.D. programmes, thereby producing better quality teachers for technical education system and professionals for industry in larger numbers.

Specific objectives and expected results of, "Institutional strengthening and improvements in employability and learning outcomes of graduates". These objective and results should be linked to the SWOT analysis.

As an outcome of the TEQIP project, the institute will be able to:

1. Improve the quality of Masters' Degree programmes
2. Improve the quality of Ph.D. programmes
3. Enhance the intake in Masters and Ph.D. programmes
4. Develop institute faculty and staff
5. Develop new laboratories and upgrade existing laboratories and workshops
6. Upgrade the institute library with latest text and reference books, online journals and other learning resources
7. Modernize classrooms, seminar, conference, and multi-purpose halls
8. Up-grade computing facilities in the institute
9. Provide financial support to Masters' and Ph.D. candidates
10. Enhance industry involvement in the academic activities of the institute
11. Improve research and development facilities for strengthening R&D and consultancy work

Targets applying for accreditation for 100% i.e. three PG programmes achieved. 100% accreditation would be obtained by the end of the Project of the eligible PG programmes

Provide an action plan for improving employability of graduates:

With the expansion of technical education both at UG and diploma level, the quality aspect has been a major casualty. One of the major factors responsible for decline in the quality is the non-availability of competent and qualified teachers. The institute plans to bridge this gap both qualitatively and quantitatively by taking the following steps under the project:

- ✓ Reorienting the existing PG programmes by revising the curricula
- ✓ Opening the admission to PG programmes to general candidates
- ✓ Providing financial support to PG and Ph.D. candidates
- ✓ Upgrading the laboratory and other infrastructure
- ✓ Increasing industry involvement in the PG programmes
- ✓ Upgradation of faculty and staff through training programmes, conferences, seminars, industrial visits etc for improvement in the teaching learning process
- ✓ Enhancing research and development activities
- ✓ Developing Entrepreneurial capabilities for generating entrepreneurs

Fund allocated for remaining Project Period

(₹ in Lakhs)

Allocated Funds	Grant Released	EXPENDITURE				TARGETS				
		Financial Year 2013-14	Financial Year 2014-15	April-May, 2015	Balance Available Amount	June-Sept 2015	Oct-Dec, 2015	Jan-Mar, 2016	Apr-June, 2016	July-Oct, 2016
1000.00	400.00	72.99	130.50	30.19	166.31	157.36	179.83	112.40	190.03	126.69

Note: Balance Grant of ₹ 600.00 lakhs is yet to be released