

NSQF QUALIFICATION FILE

Approved in 22nd NSQC dated 19th December 2018

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE Name and address of submitting body:

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TECHNICAL

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List of documents submitted in support of the Qualifications File

1. Curriculum standardized by MoHFW (Annexure I)
2. Minutes of the consultation with experts for developing standards (Annexure II)
3. Schematic of overall Skills based training roll out in the country (Annexure III)
4. Evidence of need for Skill based courses (Annexure IV)
5. Policy (standards) for Skill courses as finalised by MoHFW (Annexure V)

SUMMARY

1.	Qualification Title	Medical Equipment Technology Assistant (META)
2.	Qualification Code, if any	Not applicable
3.	NCO code and occupation	3211.0501
4.	Nature and purpose of the qualification (Please specify whether qualification is short term or long term)	<p>The META program is a short duration skill based training program, with an objective to develop a pool of trained workforce which can be employed by diagnostic/healthcare service providers. This program focuses on the acquisition of skills necessary to use equipment designed to diagnose, and fix malfunctioning medical equipment.</p> <p>Medical Equipment Technology Assistants are more commonly referred to as medical equipment repairers in the healthcare industry. They are also known as biomedical equipment assistants. These professionals spend much of their time working hands-on with machines. To adjust and repair equipment, they use both tools and computer applications. They also perform some office duties such as reviewing product manuals and record keeping. As a professional, Medical Equipment Technology Assistant can work directly for a hospital, physician's office or long-term care facility. Opportunities are also available to work for a third party contractor, servicing the equipment of multiple facilities. It is the responsibility of the professional to keep medical equipment such as heart monitors, electric wheelchairs, operating tables and respirators etc. running properly. The work requires the professionals to have knowledge of electronics, hydraulics and computer technology.</p>
5.	Body/bodies which will award the qualification	IGNOU (Indira Gandhi National Open University)
6.	Body which will accredit providers to offer courses leading to the qualification	<p>National Accreditation Board for Hospitals and Healthcare Providers (NABH) accredited hospitals or ISO 9001 certified hospitals under NABCB accreditation and those affiliated with National Board of Examination (NBE) to be directly approved as training sites, including - Government hospitals such as functional</p>

	<p>First Referral Units (FRU), District Hospitals and above, Central Government Health Scheme (CGHS) empanelled hospitals and other Institutes of National Importance (INI), across the country.</p>
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Training institutions that do not have affiliation with any University

as approved under UGC/deemed university/ autonomous institutes/INI or not recognized by an appropriate health care statutory body, to be accredited by appropriate mechanisms under the National Accreditation Board for Certification Bodies (NABCB under QCI).

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7.	Whether accreditation/ affiliation norms are already in place or not, if applicable (if yes, attach a copy)	Accreditation norms will be as developed/ followed by NABCB, QCI for the same purpose.
8.	Occupation(s) to which the qualification gives access	<p>This course will prepare personnel having passed minimum 10th standard, who have completed ITI Diploma and acquired minimum</p> <p>3 years of experience post ITI, or Diploma in technical subjects (electronic/mechanical/ electrical/ computers/ any other related field), who desire to be employed as a 'Medical Equipment Technology Assistant' in a diagnostic/ health care facility.</p>
9.	Job description of trained the occupation	<p>The objective of the training program is to develop a pool of workforce which can be employed by diagnostic/healthcare service providers. This program focuses on the acquisition of skills necessary to use equipment designed to diagnose, and fix malfunctioning medical equipment.</p> <p><i>As per the training modules at the end of the training, the candidate would be certified to perform following activities–</i></p> <ol style="list-style-type: none"> 1. Explain the role of medical equipment technicians in health care settings. 2. Solve basic circuit problems involving DC and AC circuits. Explain the structure and function of major organ systems 3. in the human body, such as the cardio-vascular, nervous, endocrine, and renal systems. 4. Describe the theory of operation, functioning and clinical application of medical devices such as heart monitors, blood pressure monitors, pulse oximeters, infusion pumps, suction devices, and centrifuges and carry out operational checks on such devices. He/ She should be able to train and educate the hospital 5. staff about operating the various installed medical equipment. To be able to calibrate and assist in equipment 6. maintenance. 7. To be able to provide on and off- site assistance with the functioning of the medical equipment. 8. To be able to perform as a member of multidisciplinary team in a hospital setting.

10. Licensing requirements	Not applicable at the current moment, however, once a statutory body is established by MoHFW this may be explored at a later time.
11. Statutory and regulatory requirement of the relevant sector	Not applicable, please refer to point 10.

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	(Documentary evidence to be provided)	
12.	Level of the qualification in the NSQF	Level 4
13.	Anticipated volume of training/learning required to complete the qualification	It is recommended that any programme developed from this curriculum should have a minimum duration of 1500 hrs duration (including 318 hrs of theory, 640 hrs of practical and 542 hrs of internship) to qualify as an entry level professional in the field of medical equipment technology.
14.	Indicative list of training tools required to deliver this qualification	Videos and presentations, discussions, dialogues, dummies for the modalities and other equipments at Page No. 17 of Annex I- Curriculum
15.	Entry requirements and/or recommendations and minimum age	Any candidate who wishes to take this program must have passed minimum 10th standard and completed ITI Diploma and acquired minimum 3 years of experience post ITI, or have Diploma in technical subjects (electronic/mechanical/ electrical/ computers/ any other related field). (No minimum age has been specified in the Curriculum as entry criteria)
16.	Progression from the qualification (Please show professional and academic progression)	Professional progression After the due certification on qualifying all the desired skills, it is expected that the candidate will attain employment as a Medical Equipment Technology Assistant in a diagnostic/ health care facility. The candidate may further attain supervisory role as he/she progresses in their careers professionally after gaining adequate experience. However, it is recommended that other than supervisory provisions- no true change in the scope of practice or responsibility maybe accorded to the Medical Equipment Technology Assistant, unless an appropriate educational qualification is attained.

Academic progression

After attaining lateral entry to a full time B.Tech Bio-Medical programme, leading to attainment of a degree qualification, the Medical Equipment Technology Assistant may rise to additional responsibilities in his professional line higher to those mandated for an Assistant.

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<p>17.</p>	<p>Arrangements for the Recognition of Prior learning (RPL)</p>	<p>MoHFW already has existing process of upskilling and refresher training for the existing workforce but not a formal policy for recognition of prior learning. In view of the same, a body identified (third party assessors) by MoHFW for assessments will conduct pre-assessments of students through an appropriate mechanism for gap analysis as per designed curriculum, and appropriately the candidates will be trained and will undergo final assessments of all the desired skills to qualify as a META.</p>
<p>18.</p>	<p>International comparability where known (research evidence to be provided)</p>	<p>The curriculum guidelines framed by MoHFW comprises the skills needed for a Medical Equipment Technology Assistant to effectively perform his duties as per standards. These are aligned to the Indian standards, protocols and procedure for maintenance of medical equipment, however, detailed international literature review was undertaken to identify applicable techniques. The National Occupational Standards of UK, Australia, Canada and other countries were also reviewed for applicability and were deliberated upon by subject experts.</p> <p>In the future if the curriculum standards have to be specifically customized for certain target countries where such workforce might find employability, these shall also be facilitated by the relevant bodies.</p> <p>International documentation reviewed for the same include the following-</p> <p>Global strategy on human resources for health: Workforce 2030 http://www.who.int/hrh/resources/global_strategy_workforce2030_14_print.pdf?ua=1 Health Employment and Economic Growth: An Evidence Base, WHO Report 2017 http://www.who.int/hrh/resources/WHO-HLC-Report_web.pdf http://planningcommission.nic.in/reports/genrep/rep_uhc0812.pdf http://www.jobmarkets.com.au/doc/ANZSCO%20first%20edition%20revision%201.pdf https://tools.skillsforhealth.org.uk/role/view_role/pdf/427</p>

https://tools.skillsforhealth.org.uk/role/view_role/pdf/66

[https://qualifications.pearson.com/content/dam/pdf/NVQ-and-competence-based-qualifications/Engineering-Maintenance/2010/Specification/Level_3_Diploma_and_Extended_Diploma_in_Engineering_Maintenance -](https://qualifications.pearson.com/content/dam/pdf/NVQ-and-competence-based-qualifications/Engineering-Maintenance/2010/Specification/Level_3_Diploma_and_Extended_Diploma_in_Engineering_Maintenance_-_Servicing_Medical_Equipment_-_Pathway_11.PDF)

[_Servicing Medical Equipment - Pathway 11.PDF](#)

<http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TV>

[D=122372&CVD=122376&CPV=3219&CST=01012011&CLV=4&MLV=4](#)

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- 19. Date of planned review of the qualification** Considering the rapid advancement in the technology and techniques in healthcare, it is proposed that the qualification to be reviewed every three years. (Next review to be conducted in Year 2021)
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20. Formal structure of the qualification			
Mandatory components			
	Title of component and identification code/NOSs/Learning outcomes	Estimated size (learning hours)	Level
i.	Foundation course	58	4
ii.	Introduction to medical equipment technology- Concepts	270	4
iii.	Understanding the working of basic equipment	410	4
iv.	Calibration and maintenance of basic equipment	220	4
v.	Knowledge of Equipment and Departmental Practicum (Internship)	542	4
	Total Duration (Didactic + Practicum) [Points i to iv]	958	
	Sub Total (A) TOTAL DURATION OF THE PROGRAM (Including Internship)	1500	
Optional components			
	Title of component and identification code/NOSs/Learning outcomes	Estimated size (learning hours)	Level
	Not applicable		
	Sub Total (B)	Not applicable	
	Total A+ B	1500	

Curriculum attached at Annexure I

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SECTION 1
ASSESSMENT

21. Body/Bodies which will carry out assessment:

It is proposed IGNOU will be conducting assessment of the candidates, and the overall monitoring of the same will be executed by the monitoring committee. The monitoring committee will include representation from National Institute of Health and Family Welfare (NIHFW), All India Institute of Medical Sciences (AIIMS) or other INI, NBE, State institutes and Collaborating Training Institutes (CTIs) as applicable regionally and other subject experts for individual courses.

22. How will RPL assessment be managed and who will carry it out?

There is an existing process of upskilling and refresher training for the existing workforce but not a formal policy for recognition of prior learning for the public sector employees. However, for the RPL assessments of fresh candidates with prior work exposure, an appropriate body will be designated with the work of pre-assessments and will be done before any training is undertaken.

The following thorough process will be followed for the RPLs-

Registration: Candidates will be expected to submit registration form online along with uploading of scanned copies of some mandatory documents including basic education and prior work experience if any. The applications will be screened on the basis of the eligibility criteria and approved candidates will be duly informed.

Pre-assessment: The shortlisted candidates will then undergo a pre-assessment of skills and knowledge on the basis of the five (5) existing modules of the META course. The pre-assessment will be focused on the clinical skills of the candidate and there may be short knowledge based assessment with definite marking by MoHFW empaneled and notified assessor. The assessments will be coordinated and monitored by the MoHFW's State Health and Family Welfare Institutions/ Collaborating Training Institutions (CTIs), or authorized body as notified by MoHFW. The assessments will be undertaken in clusters and will be batch wise, however for the skills test each candidate will have to individually demonstrate on mannequins/or through role plays or as applicable based on the skill.

Training: The skills and knowledge gap in each candidate will be recorded and a performance chart will be developed. The candidate will then be rendered training as per the gaps identified and will be aligned with the classes planned for the regular students of the course, in order to make this more cost effective model.

Training Partners: It is further proposed that the training partners will be evaluated and accredited by NABCB, as applicable per the policy document.

23. Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.

Given that the effective healthcare services are dependent on the people's knowledge and skills pertaining to healthcare delivery techniques, it is imperative to create a transparent and equitable model in order to avert any conflict of interest in rendering the desired skill sets. It has thus been decided that different institutions will be notified for various responsibilities as stated above.

The main roles involved in this process include the following: 1) Training (and its related administrative processes including student enrolment etc.) examination and skill assessment of trainees, 2) Accreditation of clinical sites willing to partner for practical training, 3) Final certification of the candidate and 4) Overall process monitoring and evaluation at each level (national, state, district and local levels). The specified bodies will have standardized protocol for respective responsibilities such as that of accreditation, registration and training of candidates and assessments for the award of the certification.

For State level monitoring of the programme, a sub-committee authorized by the national monitoring committee will be established having representation from all the notified implementers of the programme. This committee will help to identify and solve the implementation problems of the region, monitor the programme for quality assurance and help towards recognition of the programme by the State.

1) For the Students' training and assessment protocol, a robust framework has been envisioned:

1.1 Didactic training Component

The didactic training sessions will be conducted through identified trainers at Programme Study Centre and Skill laboratories. These will be linked to Medical Colleges and District Level Hospitals (Skill Development Centres) identified by authorized body and monitoring team for this programme. At Skill labs, candidates will be demonstrated practical skills and given opportunity to clear their doubts where they would practice the skills for gaining competence.

In addition to the District hospitals, a skill development centre could also be a First Referral Unit(FRU) or a private set up (may be a large private hospital/nursing home) with a minimum patient turn over, availability of subject experts and the facilities as per the guideline mentioned set by the MoHFW and accreditation by notified body. The Skill development centre will be identified and allotted to the candidates as per proximity and definite student-supervisor ratio.

1.2 Practical Component

Every theory course has a related practical course. The skills that the candidate will learn is listed in the following table highlighting the following structure of qualification. The students will be assessed on each of the skill, which will be recorded and will be part of the learning exercise.

Please refer to **Annexure I (Curriculum)** that summarizes the hours that the candidate will need to spend in practical component of each module of the course. The time allotment at will be used for demonstration of skills and follow up practice. To ensure that the candidate has understood the steps involved in each of the skills demonstrated, one would practice the skills on mannequin initially for a recommended number of times as per the session plan in a skill lab and would be eventually asked to practice the same skill under supervision on live cases. The candidate will be internally evaluated on each of the skill and will be graded accordingly. The number of cases that one would handle for each skill will be mentioned in the logbooks (*as stated in following section 1.3*).

As per the curriculum, the duration of practical component will be mentioned against each course. The practical manuals provided for each course would provide information in details about the skills that the candidate need to perform. The manual will guide the candidate in carrying out the procedures both under supervision and later on for self-practice. Please note this entire process may be managed electronically as well.

1.3 Log-book/E-log book Maintenance

Log-book is meant for maintaining the records of all the activities/cases that the candidates will be performing as a part of the programme at various training sites.

The skill based case handled by the candidate will be recorded in the log book and will be countersigned by the

respective trainers/ internal assessors. As attendance of all the spells vis-à-vis completion of all skills is compulsory, this record will be on objective proof of actual performance and learning. If a particular activity is not duly signed, then it would not be considered for internal assessment and hence will fetch the candidate overall low scoring. The ***log-book will also be evaluated by the external examiner in the term-end practical*** examination to tally the skills that has been attained by the candidate during the training program. Please note this entire process of assessment may be managed electronically.

1.4 Method of Evaluation of Theory Courses

1.4.1 Internal Assessment(Assignments)

The internal assessment for theory will be carried out by providing one assignment for every two theory blocks. These assignments will have to be answered by the candidates either electronically or in hard copy. The candidate will have to secure an aggregate of minimum marks to pass. If one fails to secure passing marks, he/she will have to repeat the assignment/(s) in which he/she has scored less than minimum marks.

Submission of assignments is a pre-requisite for appearing in theory examination, which may be paper based or electronic. If someone appears in the term-end theory examination,

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without submitting the respective assignments, his/her term-end theory examination may not be reflected in the grade card. The internal assessments would carry 30% weightage in the total grading of the candidate to qualify the skills course.

1.4.2 Term-end Examination

There will be a standardized exit examination, held in select time of the year in authorized testing centres as notified by the assessment body, in which every candidate will have to pass both online/ written didactic examination and a skill test at one of the skill testing centres. Details specific to each course will be as per the assessment body's discretion.

1.5 Method of Evaluation of Practical Courses

1.5.1 Internal Assessment

Like the theory courses, the practical courses will have 30% weightage from internal assessment. The internal assessment of the practical component will be done by identified assessors as notified. There will be no formal question papers to assess this component. The assessors will make a subjective assessment of candidate's understanding and performance on every skill. The marks on internal assessment will be given to the assessor as well for verification.

Passing in internal assessment of the practical is a prerequisite for appearing in the Term-end Practical examination. A student will have to secure minimum marks to be declared as pass in the internal assessment component. If a student fails to secure pass marks, he/she will have to repeat all the practical activities of related courses **after paying the required fees at the regional centre.** The fees will be same as that applicable for readmission to practical Courses.

1.5.2 Term-end Examination

For term-end practical examination, there will be definite number of internal and external examiners. The internal examiners will be from the same programme study centre and the external examiners will be from same programme but of other States. Proper mapping of the assessor will be done to avoid any bias and at times an Observer from the monitoring team may also participate in the activities. The practical term-end examination will be held as per the duration of the program.

The examination pattern will be uniform across the whole country. A student will have to score definite minimum marks to pass successfully in each module separately for theory as well as practical, otherwise, he/she will have to repeat the respective course.

24. ASSESSMENT EVIDENCE

Outcomes to be assessed/ NOSs to be assessed	Assessment criteria for the outcome	Viva/ Theory	Skills Practical	Total for each component	
FOUNDATION COURSE	Explain the role of a Medical Equipment Technology Assistant in a hospital	10	0	10	
	Describe the major responsibilities of the job of a Medical Equipment Technology Assistant in a hospital	15	0	15	
	Describe the need for customer service and service excellence in Medical service	10	10	20	
	Describe and demonstrate how to communicate with patient with impaired hearing/ vision/ speech/ memory	5	25	30	
	Enumerate the changes in the patient with abnormal behaviour	5	0	5	
	Identify the various contents of First Aid Kit	0	20	20	
	Demonstrate Heimlich Manoeuvre	0	10	10	
	Demonstrate the immediate action to be taken for a patient with nosebleed/ minor burns/ asthma attack/fainting/ sprain/ hypothermia/ bites – bee sting or snake bite	0	30	30	
	Explain the importance of treating confidential information correctly	10	0	10	
	Demonstrate basic first aid and CPR	0	30	30	
	Describe precautions in the event of a disaster	5	5	10	
	Demonstrate the basic use of computers and aspects related to data handling	0	10	10	
		TOTAL	60	140	200
	INTRODUCTIO	Interpret circuit diagrams and			

N TO MEDICAL EQUIPMENT TECHNOLOGY- CONCEPTS	specifications of electronic systems in technical/service manuals for installation, testing and commissioning	20	30	50
	Proper selection of measuring instruments on the basis of range, least count, precision and accuracy required for measurement.	10	10	20
	Analyze properties of matter & their use for the selection of material.	20	10	30
	To verify the principles, laws, using given instruments under different conditions.	10	20	30
	To read and interpret the graph.	20	10	30
	To interpret the results from observations and calculations and to use these results for parallel problems.	20	10	30
	Measure the quantities Accurately	0	10	10
	Handle the apparatus carefully	0	10	10
	TOTAL	100	110	210

NSQF QUALIFICATION FILE

Outcomes to be assessed/ NOSs to be assessed	Assessment criteria for the outcome	Viva/ Theory	Skills Practical	Total for each component
UNDERSTANDING THE WORKING OF BASIC EQUIPMENT	Have understanding related to medical exposure of X-Rays	10	10	20
	Working knowledge and hands on experience with designing of circuits	10	20	30
	Working knowledge of spectrum	10	10	20
	Identify types of cables and connectors.	10	10	20
	Familiarizing and working with components eg: USG machines, ECG machines, X-ray equipment etc.	10	30	40
	Identification and soldering of surface mounted devices	0	10	10
	To study design rules for fabrication of PCB and identify types of PCB.	10	10	20
	Mini project and troubleshooting of the circuit.	0	20	20
	Draw and describe the basic circuits of rectifier, filter, regulator and amplifiers.	10	20	30
	Read the data sheets of diode and transistors.	10	10	20
	Test diode and transistors.	0	10	10
	Understand working of Regulated DC power supply.	10	0	10
	Ability to test the components using multimeter	0	10	10
	Follow standard test procedures. Able to draw circuits	10 0	10 10	20 10
	TOTAL		100	190
CALIBRATION AND MAINTENANCE OF	Awareness of the safety aspects of medical instruments.	10	0	10
	Measuring physical quantities	0	10	10

BASIC EQUIPMENT	accurately.			
	Mini project and troubleshooting of the circuit.	10	30	40
	To adopt proper procedure while performing the experiment	10	10	20
	Applications of various instruments.	10	10	20
	Check graphs/ waveforms for accuracy and correctness.	10	10	20
	Demonstrate On call assistance by giving assistance to hospital staff regarding the fault	0	10	10
	Read and interpret the graph.	10	10	20
	Interpreting the results from observations and calculations.	0	10	10
	Proper handling of instruments	0	10	10
	Know installation procedure.	10	10	20
	Information search through internet.	0	10	10
		TOTAL	70	130
KNOWLEDGE OF EQUIPMENT AND	Describe and demonstrate principles, installation, operation and repair of	0	40	40

NSQF QUALIFICATION FILE

Outcomes to be assessed/ NOSs to be assessed	Assessment criteria for the outcome	Viva/ Theory	Skills Practical	Total for each component
DEPARTMENTAL PRACTICUM	Laboratory Equipment			
	Describe and demonstrate principles, installation, operation and repair of Aspiration and Suction Devices	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Humidity and Aerosol Therapy Devices	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Medical Temperature Measuring Devices	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Infant Care devices	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Sterilizing Equipment	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Hospital Ancillary Equipment	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Cardiology Equipment	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Vascular/Fetal Doppler Monitoring Systems	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Respiratory Care Equipment	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Laboratory Equipment	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Physiotherapy devices	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Anesthesia Machines	0	40	40
	Describe and demonstrate principles, installation, operation and repair of Surgical devices	0	40	40
Describe and demonstrate principles,				

installation, operation and repair of Imaging Machines	0	40	40
Provide, or coordinate the provision of, appropriate information related to the set-up, features, routine use, trouble shooting, cleaning, and maintenance of all equipment provided	0	45	45
Provide relevant information and/or	0	45	45

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Outcomes to be assessed/ NOSs to be assessed	Assessment criteria for the outcome	Viva/ Theory	Skills Practical	Total for each component
	instructions about infection control issues 0related to the use of all equipment provided			
	Ensure that the hospital staff can use all equipment provided safely and effectively	0	30	30
	Make sure training and instructions provided to the hospital staff shall commensurate with the risks, complexity, and manufacturer's instructions and/or specifications for the equipment	0	40	40
	Document all training and communication in the providers record, including the date, time, and signature of the person providing the service	0	40	40
	TOTAL	0	800	800
	GRAND TOTAL	330	1370	1700
Means of assessment 1 Viva/ Theory examination : Total marks –330				
Means of assessment 2 Skills practical assessment : Total marks- 1370				
Pass/Fail				

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SECTION 2
25. EVIDENCE OF LEVEL
OPTION A

Title/Name of qualification/component: Medical Equipment Technology Assistant		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Process	<p>A healthcare worker who can be employed directly for a hospital, physician's office, long-term care facility or a third party contractor, servicing/ up-keeping the equipment of multiple facilities.</p> <p>Assist the facility to keep medical equipment such as heart monitors, electric wheelchairs, operating tables and respirators etc. running properly.</p>	<p>The expected outcomes prepare the candidate to carry out process that are repetitive on regular basis with emphasis on skill and practice. The candidate will have to follow a specific defined protocol and sequence of activities to identify the shortcoming in an equipment and set it right for ideal/ quality assured output.</p>	
Professional knowledge	<p>A Medical Equipment Technology Assistant should know -</p> <p>Role of medical equipment technicians in health care settings</p> <p>Basics of electronics including AC/DC circuits</p> <p>Cleaning and sterilization of machine and machine parts</p> <p>Deliver equipment to residences and assist in installation</p> <p>Theory of operations of medical equipment</p> <p>Recalibration of equipment</p> <p>Regular/periodic inspection of equipment</p>	<p>The responsibility of a Medical Equipment Technology Assistant is to keep a check on regular maintenance of medical equipment including installation, cleaning, sterilization, calibration and transportation among others. The stated outcomes indicate that an Assistant must have understanding basic understanding of electronic circuits, current flow, operations of machines and their about optimum performance.</p>	Level 4
Professional	<p>A Medical Equipment Technology Assistant must be able to -</p>	<p>A Medical Equipment Technology Assistant is</p>	

skill	Explain the role of medical equipment technicians in health care settings Solve basic circuit problems involving DC and AC circuits. Explain the structure and function of major organ	expected to perform limited set of activities which are repetitive in nature using select set of skills, tool and modalities.	
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Title/Name of qualification/component: Medical Equipment Technology Assistant		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<p>systems in the human body</p> <p>Describe the theory of operation, functioning and clinical application of medical devices and carry out operational checks on such devices</p> <p>Train and educate the hospital staff about operating the various installed medical equipment</p> <p>Calibrate and assist in equipment maintenance</p> <p>Provide on and off- site assistance with the functioning of the medical equipment</p> <p>Perform as a member of multidisciplinary team in a hospital setting</p>		
Core skill	<p>A Medical Equipment Technology Assistant must be able to-</p> <p>Identify various problems which could arise in medical equipment</p> <p>Maintain records, documentation with respect to upkeep of equipment</p> <p>Undertake standard precautions while handling medical equipment</p> <p>Follow code of conduct, professional accountability and responsibility</p> <p>Ethics in healthcare – Privacy, confidentiality, consent, medico legal aspects</p> <p>Basics of emergency care and life support skills</p> <p>Disaster preparedness and Resource management</p>	<p>A Medical Equipment Technology Assistant should possess adequate understanding of basic concepts of electronics and electronic devices, communication skills, basic documentation apart from the overall skill to ensure upkeep of medical equipment.</p>	Level 4
Responsibility	A Medical Equipment Technology Assistant is responsible to	The Medical Equipment Technology Assistant	

diagnose and fix malfunctioning medical equipment.

independently cannot perform the maintenance of

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Title/Name of qualification/component: Medical Equipment Technology Assistant		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
		all medical equipment without approval from either an Officer In-charge, or a Senior Nurse/ Doctor in case of an emergency. Thereby, a Medical Equipment Technology Assistant will work under direct supervision of an appropriate authority in the medical facility.	

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SECTION 3
EVIDENCE OF NEED

26. What evidence is there that the qualification is needed?

Upkeep of Medical Equipment is one of the skills very frequently possessed by multipurpose workers or general duty assistants. However, due to the advancement of technology, it is imperative to have workforce with specialized training in the medical equipments designed for therapeutic or diagnostic needs. With further modernization, the workforce will be expected to expand their role across different departments, wherein there is extensive use of modern technology.

Further, the Ministry of Health and Family Welfare also aims to prioritize on short term skilling courses, which are in huge demand in the market and also provide ample opportunity to participants to undergo a progressive career pathway. Medical Equipment Technology Assistant can be the entry point for candidates who may be interested in undertaking Bio-Medical Sciences as their profession. However, to get streamlined in the bio-medical sciences field, the candidate will have to undergo a Diploma or Bachelor degree level course.

Industry relevance – Minutes of the industry consultation refer to Annexure II and For additional evidence on the need of such qualifications, refer to Annexure IV

What is the estimated uptake of this qualification and what is the basis of this estimate?

As per the Healthcare sector report, workforce requirements for the Healthcare sector is expected to grow to 74 lakh in 2022 which is more than double its existing workforce to meet the market demand. Additionally the major percentage of the requirement is of allied and healthcare professionals (A&HP) apart from nursing and medical doctors. It is essential to also realign the existing workforce with the required course, so that their skills can be tested and adequate knowledge and skills can be rendered for them to be called as a qualified META.

Report: Human resource and skill requirement in Health sector is available at <https://www.ugc.ac.in/skill/SectorReport/Healthcare.pdf>

27. Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences

Since the MoHFW is the Nodal Ministry for all healthcare and related professions (except for AYUSH) and no regulatory body exists for the stated profession, the statement above is not applicable. Further, the NSQFs and Curriculum have been approved by the highest competent authority in the Nodal Ministry.

28. What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for

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	<p>presenting a duplicate qualification.</p> <p>As discussed with the NSDA and MSDE, the skill courses to be focused and as finalised by Ministry of Health and Family Welfare have already been informed to the respective bodies. In addition a policy note has been formulated for all skill courses in the health sector and thereby all the other approved qualifications may be aligned to the standards set by this Ministry.</p>
29.	<p>What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated? Specify the review process here.</p> <p>A robust monitoring framework will be set up and will include representation from National Institute of Health and Family Welfare (NIHFW), All India Institute of Medical Sciences (AIIMS) or other INI, NBE, State institutes and Collaborating Training Institutes (CTIs) as applicable regionally and other subject experts for individual courses, who will decide on the indicators to be monitored on regular basis.</p> <p>A team will be responsible to review the indicators, identify the issues and undertake appropriate consultations with the key players and market experts as deem fit. Additionally, the monitoring team will work in close coordination with the State institutes, trainers, recruiters and State Government leadership to ensure that the qualification meets the demand and fulfils the requirements. Feedback mechanism will also be established and a formal review will be done once every three years.</p>

SECTION 4
EVIDENCE OF PROGRESSION

30.	<p>What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector? Show the career map here to reflect the clear progression</p>		
	Level	Nomenclature	Comments on mandated qualification
	Level 4	Medical Equipment Technology Assistant	<i>META course as standardized by MoHFW</i>
	Level 5	Medical Equipment Technologist	<i>Lateral entry to B. Tech Bio medical stream of stipulated duration as recognized/ standardized by MoHFW</i>
	Level 6	Senior Medical Equipment Technologist	<i>After M.Tech Biomedical stream or B.Tech with 2 years of experience as recognized by/ standardized by MoHFW</i>

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