

Revised Application Documentation: Version 5 /25 May 2015

## **QUALIFICATION FILE – CONTACT DETAILS OF SUBMITTING BODY**

### **Name and address of submitting body:**

#### **Healthcare Sector Skill Council**

C/o Confederation of Indian Industry, 23, Institutional Area Lodi Road New Delhi – 110 003

### **Name and contact details of individual dealing with the submission**

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**Position in the organisation:** CEO

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### **List of documents submitted in support of the Qualifications File (attached in following order)**

1. Qualification Pack- Annexure1
2. Occupational Mapping Report-Annexure 2
3. Functional Analysis Report-Annexure 3
4. RFP for development of occupational standards-Annexure 4
5. Validation group and industry consultations- Annexure 5
6. The Brief Report on the whole process of the development, validation and notification of these qualification packs along with list of companies and Industry associations involved -Annexure 6
7. Human Resource & Skills Requirement in Healthcare Sector accessible on below given link:  
<http://healthcare-ssc.in/images/Human%20Resource%20&%20Skills%20Requirement%20in%20Healthcare%20sector.pdf>
8. Quality Assurance Strategy of Assessment in HSSC-Annexure 7
9. Assessment criteria/framework-Annexure 8

## QUALIFICATION FILE SUMMARY

<b>Qualification Title</b>	X Ray Technician (HSS/Q 0701)		
<b>Body/bodies which will assess candidates</b>	Healthcare Sector Skill Council Accredited Assessing Bodies		
<b>Body/bodies which will award the certificate for the qualification.</b>	Healthcare Sector Skill Council		
<b>Body which will accredit providers to offer the qualification.</b>	Healthcare Sector Skill Council		
<b>Occupation(s) to which the qualification gives access</b>	Individuals at this job need to create X-ray images of parts of the human body using radiographic equipment under the guidance and supervision of radiologist. They Explain medical imaging procedure, to patient & manage requisition, prepare X-ray room, prepare patient for procedure, operate X-ray machine, guide patients for positions during the procedure, maintain X-ray room, maintain and record radiological supplies, prepare report & document under Radiologist's guidance, maintain records and carry out other administrative jobs as needed in the department.		
<b>Proposed level of the qualification in the NSQF.</b>	Level 3		
<b>Anticipated volume of training/learning required to complete the qualification.</b>	600 hrs.		
<b>Entry requirements / recommendations.</b>	Preferably Class XII, but Class X is also considered in certain situations.		
<b>Progression from the qualification.</b>	Progression will be possible in both academic as well as professional area as:  Level 4- Radiology Technician		
<b>Planned arrangements for RPL.</b>	HSSC has developed RPL policy to conduct pre assessment of students for gap analysis as per NOS, sharing the gap & final assessments of students and certification. It is explained in section 1 under Assessment, Point 2		
<b>International comparability where known</b>	While writing the NOSs the UK NOSs were also referred to and an effort was taken to maintain comparability in the technical part of the NOSs.		
<b>Title of unit or other component</b> (include any identification code used)	<b>Mandatory/ Optional</b>	<b>Estimated size (learning hours)</b>	<b>Level</b>
HSS/ N 0711: Comprehend conventional radiological needs of patients	Mandatory	Class Room and Skill Lab Training = 360 hours  Clinical/Laboratory Training (OJT) = 240 hours	3
HSS/ N 0712: Prepare the patient and the room for the conventional radiological procedures	Mandatory		3
HSS/ N 0713: Operate and oversee operation of conventional radiologic equipment	Mandatory		3
HSS/ N 0714: Process X-ray films/ Images	Mandatory		3
HSS/ N 0715: Prepare and document conventional radiological reports	Mandatory		3

HSS/ N 9601: Collate and communicate health information	<b>Mandatory</b>		<b>3</b>
HSS/ N 9602: Ensure availability of medical and diagnostic supplies	<b>Mandatory</b>		<b>3</b>
HSS/ N 9603: Act within the limits of your competence and authority	<b>Mandatory</b>		<b>3</b>
HSS/ N 9606: Maintain a safe, healthy and secure environment	<b>Mandatory</b>		<b>3</b>
HSS/ N 9608: Follow radiation safety guidelines	<b>Mandatory</b>		<b>3</b>
HSS/ N 9609: Follow biomedical waste disposal protocols	<b>Mandatory</b>		<b>3</b>
HSS/ N 9610: Follow infection control policies and procedures	<b>Mandatory</b>		<b>3</b>
HSS/ N 9611: Monitor and assure quality	<b>Mandatory</b>		<b>3</b>
HSS/ N 9614: Recognize healthy body systems	<b>Mandatory</b>		<b>3</b>

Please attach any document giving further detail about the structure of the qualification – eg a Curriculum or Qualification Pack.

Give details of the document here:

**Qualification pack is attached as Annexure 1**

## **SECTION 1**

### **ASSESSMENT**

#### **Name of assessment body:**

If there will be more than one assessment body for this qualification, give details.

Manipal City & Guilds  
 IRIS corporate solutions pvt ltd  
 Aspiring Mind  
 CII  
 IYD  
 Mettl  
 FIWE

#### **Will the assessment body be responsible for RPL assessment?**

Give details of how RPL assessment for the qualification will be carried out and quality assured.

HSSC conducts QP-NOS based direct three-way assessment for each and every candidate applied for recognition of prior learning (vis. Certifying the un-certified but skilled workforce who acquired skills through experience of years). Here, the candidates may undergo short-term training of gaps identified. The assessment is conducted via HSSC certified assessor. The assessment pattern is as follows:

#### **REGISTRATION**

The candidates need to submit registration form online along with uploading of scanned copies of some mandatory documents. Based on screening of the form, the candidates would be registered on conforming following eligibility criteria.

**PRE-ASSESSMENT:** The purpose of Pre-assessment is to shortlist candidates as per prescribed limit, and also to notify gaps NOS wise to each candidate for their own self-training or opting for short-term training module before final assessment. The pre-assessment also informs about the reliability of information provided by candidates that they have experience working in the given job role. The pre-assessment is Online, Objective

type, NOS based, with Each NOS compulsory each carrying 100 marks, No negative marking for incorrect answers, Test venue is kept as may be home/cyber café/institution/HSSC assessment center if the system have google chrome (Version 41.0.2272.101) and a web camera. Timed test link which expires after 90 minutes from the time of starting / writing the test is used for the same. Result is presented with no. of questions allotted and answered correctly for each NOS along with marks scored for each NOS out of 100.

#### PORTFOLIO SCREENING

Each registered candidate has to prepare and submit the portfolio as per formats given by HSSC. The portfolio may be verified by HSSC/nominated assessor during pre-assessment and scoring card is given for each portfolio.

FINAL ASSESSMENT: The candidates conforming to RPL guidelines based on both pre-assessment and portfolio screening are finally selected for final assessment. Final assessment is conducted through HSSC accredited Assessing body as per HSSC defined assessment criteria and NOS used for assessment of fresh entrants as described above. Final Assessment is conducted at the training site or at working place in case number of enrolled candidate from the site is more than 15. If needed, Assessment centers is arranged for assessment of candidates in cluster

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

*QA regarding accreditation of Assessing Body:*

The HSSC Accreditation process is divided into two steps:

- 1) Pre-accreditation process:
  - Apply for Accreditation: Application form with desired documents in prescribed format to be sent.
  - Document Compliance Check: to be done for ensuring the compliance and adherence of applied assessing body according to criteria laid down by HSSC.
  - Presentation on Quality Assurance: to be given by Assessing body highlighting the quality assurance process laid down by AB at the process points
  - Once the assessing body clears the due diligence process, the accreditation is given along with terms and conditions.
- 2) Post-accreditation process: Post accreditation, the accredited assessing bodies needs to fulfill following minimum eligibility criteria or requisites for implementation:
  - All Empanelled Assessors would have to undergo **“Train the Assessor”** Program conducted by HSSC for each job role time to time.
  - Accredited Assessing Body would have to abide with requisite time-lines, policies and regulations declared by HSSC.
  - Accredited Assessing Body with times would have to contribute in expansion of the questionnaire.

*QA Regarding Assessment Criteria & papers:*

The emphasis is on 'learning-by-doing' and practical demonstration of skills and knowledge based on the performance criteria. Accordingly, assessment criteria for each job role is set and made available in qualification pack.

The assessment papers for both theory and practical are developed by Subject Matter Experts (SME) hired by Healthcare Sector Skill Council or with the HSSC accredited Assessment Agency as per the performance and assessment criteria mentioned in the Qualification Pack. The assessments papers are also checked for the various outcome based parameters such as quality, time taken, precision, tools & equipment requirement etc.

The assessment sets as well as assessment criteria are then reviewed by panel of experts from Industry as well as HSSC official for consistency and suitability. The assessments are designed so as to assess maximum parts during the practical hands on work. The technical limitations at the training centres are taken care in

theory and viva.

All HSSC accredited Assessment Agency follow the "HSSC process of Assessment Framework" and HSSC approved assessment papers. The assessment by assessment agency will be completely based on the assessment criteria as mentioned in the Qualification Pack developed by HSSC.

Each NOS in the Qualification Pack (QP) will be assigned a relative weightage for assessment based on the criticality of the NOS. Therein each Performance Criteria in the NOS will be assigned marks for or practical based on relative importance, criticality of function and training infrastructure.

The following tools are proposed to be used for final assessment:

**1 Practical Assessment:** This will comprise of a creation of mock environment in the skill lab which is equipped with all equipment's required for the qualification pack.

Candidate's soft skills, communication, aptitude, safety consciousness, quality consciousness etc. will be ascertained by observation and will be marked in observation checklist. The end product will be measured against the specified dimensions and standards to gauge the level of his skill achievements.

**2 Viva/Structured Interview:** This tool will be used to assess the conceptual understanding and the behavioural aspects as regards the job role and the specific task at hand. It will also include questions on safety, quality, environment and equipment's etc.

**3 Written Test:** Under this test few key items which cannot be assessed practically will be assessed. The written assessment will comprise of

- i. True / False Statements
- ii Multiple Choice Questions
- iii Matching Type Questions.
- iv) Fill in the blanks

*QA Regarding Assessors:*

Assessors are selected as per the "eligibility criteria" laid down by HSSC for assessors for each job role. The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to HSSC Assessment Framework, competency based assessments, assessors guide etc. HSSC conducts "Training of Assessors" program time to time for each job role and sensitize assessors regarding assessment process and strategy which is outlined on following mandatory parameters:

- 1) Guidance regarding NSQF
- 2) Qualification Pack Structure
- 3) Guidance for the assessor to conduct theory, practical and viva assessments
- 4) Guidance for trainees to be given by assessor before the start of the assessments.
- 5) Guidance on assessments process, practical brief with steps of operations practical observation checklist and mark sheet
- 6) Viva guidance for uniformity and consistency across the batch.
- 7) MOCK assessments
- 8) Sample question paper and practical demonstration

HSSC also conduct telephonic orientation of the assessors before each assessment for the given job role to assure quality, fairness and timely conduct of assessment.

The assessment agencies are instructed to hire assessors with integrity, reliability and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessments.

*QA before, during and after Assessments:*

HSSC ensures pre-requisites of Assessment needed by training institute regarding ARTICLES like Mannequins, Mock Ward Infrastructure, Transferring Equipment, Job role related equipment; INFRASTRUCTURE like Class rooms, Skill Lab, Aids like board/marker/logistics, Furniture like display tables, chairs; STAFF like Co-ordinator from training institute, Peon, Some additional members(for simulated situations, if required); DOCUMENTS like Admit Card, Govt. validated ID proof, Record Books like attendance, log book, internal evaluation sheets, Student Enrollment details; for CO-ORDINATION one full time co-ordination point for co-ordination with assessment coordinator before, during and after

assessment.

HSSC ensures the three Phases of Assessment to be assured by assessing body and assessor for fair, consistent and quality assessment. The three phases of assessment is enlisted below:

PREPARATORY PHASE: **Documents ensured to be packed, sent and received:** Seal Pack of Sets of Papers, Invigilation Sheet/Covering letter, OMR/Answer sheet; Well **Co-ordination needs to be assured between** Assessment Co-ordinator of assessing body, HSSC official, Co-ordinator from skill center and assessor.

PHASE OF CONDUCT:

**1) Written Examination:**

- o Assessor should reach the VTP 30 minutes before the assessment and ensure that all the arrangements are as per the HSSC rules and regulation
- o He should make seating arrangement to students leaving minimum 3 feet space between candidates.
- o He should make the students sit in the order of seating arrangements.
- o The enrolment numbers are to be written on the desks before the arrival of students.
- o The details to be filled like assessor name , date and Qualification name should be written on the board
- o Learners should keep all their belongings outside the classroom. All mobiles should be switched off and kept on the desk in front of the invigilator
- o The seal of the assessment materials is opened in front of the students.
- o OMR sheets to be distributed to all learners
- o Assessors should instruct the learners on the rules and regulation of the assessment
  - No. of questions
  - Duration of paper
  - Disciplinary rules
  - Administrative rules

**2) Attendance:**

- o The assessor/assessment co-ordinator needs to get signature of all candidates while theory as well as practical examination on invigilation sheet. The sheets are signed and stamped by the In-charge /Head of the Training Centre.
- o The assessor/assessment co-ordinator needs to verify the authenticity of the candidate by checking the photo ID card issued by the institute as well as any one Photo ID card issued by the Central/Government. The same needs to be mentioned in the attendance sheet. In case of suspicion, the assessor should authenticate and cross verify trainee's credentials in the enrolment form.
- o The assessor/assessment co-ordinator needs to punch the trainee's roll number on all the test pieces.
- o The assessor/assessment co-ordinator needs to take a photograph of all the students along with the assessor standing in the middle and with the centre name/banner at the back as evidence.
- o The assessor/assessment co-ordinator needs to carry a camera to click photograph of the trainees working on the job and giving theory exam as evidence.
- o The assessor/assessment co-ordinator also needs to carry a photo ID card.
- o The assessor/assessment co-ordinator also needs to take the photographs as evidence from appropriate angles/sides of the final work piece/job submitted by the trainee. This evidence is signed by the trainee at the time of submission of the job piece.
- o The assessor/assessment co-ordinator needs to measure the dimensions and finish of the submitted job piece as per the tolerance or standards mentioned in the assessment guide.

**3) Segregate learners into batches:**

- o Assign combination of one critical and one elementary NOS along with the soft skill NOS
- o Allocate time to learner
- o Ask learners to be present 5 minutes earlier than the time allotted at the lab

**4) Conduct Practical Assessments:**

- o Assign practical task to the learners
- o Ask the learner to collect articles and be ready for assessments
- o Observe learner conducting the assigned task
- o Evaluate and Record observations and marks and in the recording sheets
- o You may ask learners question on the task being done

**5) Conduct Viva:**

- o Ask questions from the learners on the assigned task
- o Ask questions prescribed in the assessment guide on non-prescribed tasks to ensure that the learners have complete knowledge on the assessment

**6) Collate Results:**

- o Check written answer scripts
- o Sum up the practical NOS marks
- o Sum up the viva marks
- o Remember to sign off on all sheets where scores are mentioned
- o Submit the collated result to assessment body representative/project manager

7) **Surprise Visits/Surveillance check** is kept to ensure the quality and fair assessments.

**POST-ASSESSMENT PHASE**

**1) Verify Result**

- o Check for accuracy of names and date of birth
- o Check for accuracy of marks against each learner
- o Ensure that the pass percentage is correctly applied to the result
- o Ensure that the learner has cleared all sections of the assessments in line with the HSSC assessment strategy
- o Check if the excel sheet for each learner is accurately filled and is available for cross referencing with the covering result sheet
- o Each and every result has to get cross-verified by HSSC official

**2) Upload/Sharing of Results**

- o Once the results are ready it is uploaded on the SDMS website/portal and verified on the same
- o Or the results are shared to Training institute only by HSSC.
- o In case of any query or issue raised for assessment, the assessments are subjected to re-evaluation as per protocol laid down by HSSC.

**3) Documentation**

- o Question papers are kept in secure cupboard with limited and controlled access.
- o Used OMR sheets are to be stored for the next ten years
- o QP should be always current version

**Assessment process and guidelines are attached as Annexure 7**

Please attach any documents giving further information about assessment and/or RPL.

Give details of the document(s) here:

1. **Quality Assurance Strategy of Assessment in HSSC attached as Annexure 7**
2. **Assessment Criteria attached as Annexure 8**

**ASSESSMENT EVIDENCE**

Complete the following grid for each grouping of NOS, assessment unit or other component as per the assessment criteria. Insert the required number of rows.

<b>Job Role</b>	X ray Technician
<b>Qualification Pack</b>	(HSS/Q 0701)

<b>Code</b>	
<b>Sector Skill Council</b>	Healthcare Sector Skill Council

### **Guidelines for Assessment**

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack, every trainee should score as per assessment grid.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

<b>Skills Practical and Viva (80% weightage)</b>						
				<b>Marks Alloted</b>		
<b>Grand Total-1 (Subject Domain)</b>				<b>400</b>		
<b>Grand Total-2 (Soft Skills and Comunication)</b>				<b>100</b>		
<b>Grand Total-(Skills Practical and Viva)</b>				<b>500</b>		
<b>Theory (20% weightage)</b>						
				<b>Marks Alloted</b>		
<b>Grand Total-1 (Subject Domain)</b>				<b>80</b>		
<b>Grand Total-2 (Soft Skills and Comunication)</b>				<b>20</b>		
<b>Grand Total-(Theory)</b>				<b>100</b>		
<b>Grand Total-(Skills Practical and Viva + Theory)</b>				<b>600</b>		
<b>Passing Marks (50% of Grand Total Max. Marks)</b>				<b>300</b>		
<b>Subject Domain</b>			<b>Pick any 2 NOS each of 200 marks totalling 400</b>			
<b>National Occupational Standards (NOS)</b>	<b>Performance Criteria (PC)</b>	<b>Total Marks (400)</b>	<b>Out Of</b>	<b>Marks Allocation</b>	<b>Marks Awarded by Assessor</b>	<b>Grand Total of Practical</b>



				Viva	Skills Practical	Viva	Skills Practical
1. HSS/ N 0711: Comprehensive conventional radiological needs of patients	PC1. Explain the subdivisions of anatomy, terms of location and position, fundamental planes, vertebrate structure of man, organisation of the body cells and tissues	200	50	20	30		
	PC2. Explain the pathology of various systems: cardiovascular system, respiratory system, central nervous system, musculoskeletal system, GIT, GUT and reproductive system		20	40	20		
	PC3. Explain the pathology of radiation injury and malignancies		20	20	0		
	PC4. Understand specific requests of physicians with respect to the scans required		20	10	10		
	PC5. Take medical history of the patient and document it as required		30	15	15		
	PC6. Understand and interpret instructions and requirements documented by the physician in the patient's prescription		30	20	10		
	PC7. Determine the radiological diagnostic tests required for the		30	20	10		

	patient based on the physician's prescription and the medical history						
	<b>TOTAL</b>	<b>200</b>	<b>145</b>	<b>95</b>	<b>0</b>	<b>0</b>	
2. HSS/ N 0712: Prepare the patient and the room for Conventional Radiological procedure	PC1. Prepare the room, apparatus and instruments for conventional radiological procedures like X-ray, BMD or Mammography	<b>200</b>	20	10	10		
	PC2. Set up the machine for the desired procedure		10	4	6		
	PC3. Position the patient correctly for an x-ray in the following positions: a. Erect b. Sitting c. Supine d. Prone e. Lateral f. Oblique g. Decubitus		30	5	25		
	PC4. Explain relative positions of x-ray tube and patient and the relevant exposure factors related to these		10	5	5		
	PC5. Explain the use of accessories such as Radiographic cones, grid and positioning aids		10	6	4		
	PC6. Explain the anatomic and physiological basis of the procedure to be undertaken		10	5	5		

PC7. Explain the radiographic appearances of both normal and common abnormal conditions in order to ensure application of the appropriate radiographic technique	10	5	5		
PC8. Apply modifications in positioning technique for various disabilities and types of subject	15	5	10		
PC9. Explain the principles of radiation physics detection and measurement	15	7	8		
PC10. Explain the biological effects of radiation	10	3	7		
PC11. Explain the principles of radiation protection: Maximum permissible exposure concept b. Annual dose equivalent limits (ADEL) ALARA concept c. International recommendations and current code of practice for the protection of persons against ionising radiation from medical and dental use	10	7	3		

	<p>PC12.Explain the use of protective materials:</p> <p>a. Lead</p> <p>b. Lead – impregnated substances</p> <p>c. Building materials</p> <p>d. Concept of barriers</p> <p>e. Lead equivalents and variations</p> <p>f. Design of x-ray tubes related to protection.</p> <p>g. Structural shielding design (work-load, use factor, occupancy factor, distance</p>		10	6	4			
	<p>PC13. Explain the instruments of radiation protection, use of gonad shield and practical methods for reducing radiation dose to the patient</p>		20	10	10			
	<p>PC14. Ensure protection of self, patients, departmental staff and public from radiation through use of protection instruments and monitoring personnel and the work area</p>		20	10	10			
	<b>TOTAL</b>		200	88	112	0	0	
3. HSS/ N 0713: Operate and oversee operation of	<p>PC1. Describe the construction and operation of general radiographic equipment</p>	<b>200</b>	20	8	12			

conventional radiological equipment	PC2. Reliably perform all non-contrast plain Radiography, and contrast radiography in special situations	20	15	5		
	PC3. Apply quality control procedures for all radiologic equipment	20	10	10		
	PC4. Control and manipulate parameters associated with exposure and processing to produce a required image of desirable quality	20	15	5		
	PC5. Practice the procedures employed in producing a radiographic image	20	10	10		
	PC6. Describe methods of measuring exposure and doses of radiographic beams	10	0	10		
	PC7. Discuss and apply radiation protection principles and codes of practice	30	15	15		
	PC8. Demonstrate an understanding of processing of images in digital form and be familiar with recent advances in imaging	20	5	15		
	PC9. Set up the X-ray machine for the procedure	20	15	5		
	PC10. Carry out routine procedures	10	4	6		

	associated with maintenance of imaging and processing systems							
	PC11. Ensure protection of patients, departmental staff and public from radiation through use of protection instruments and monitoring personnel and the work area		10	2	8			
	<b>TOTAL</b>		<b>200</b>	<b>99</b>	<b>101</b>	<b>0</b>	<b>0</b>	
4. HSS/ N 0714: Process X-ray films/ Images	PC1. Explain the principles of conventional radiographic imaging	<b>200</b>	30	30	0			
	PC2. Apply knowledge of conventional radiographic imaging to the production of radiographs and the assessment of image quality		30	10	20			
	PC3. Understand the construction and operation of image processing equipment		20	10	10			
	PC4. Control and manipulate parameters associated with exposure and processing to produce a required image of desirable quality		30	15	15			
	PC5. Perform X-ray film / image processing techniques (including dark room techniques)		40	10	30			

	PC6. Explain and implement the fundamentals, concepts and applications of processing of images in digital form using computer based systems		30	10	20		
	PC7. Carry out quality control for automatic film processing, evaluate and act on results		20	5	15		
	<b>TOTAL</b>		<b>200</b>	<b>90</b>	<b>110</b>	<b>0</b>	<b>0</b>
5.HSS/ N 0715: Prepare and document conventional radiological reports	PC1. Correctly identify anatomical features on the radiographs and identify some major pathological and traumatic conditions	<b>200</b>	60	30	40		
	PC2. Seek the advice of the Radiologist on conditions identified		60	40	30		
	PC3. Document the comments and diagnosis of the Radiologist in a report for the patient		60	40	20		
	PC4. Maintaining the patient record		20	5	15		
	<b>TOTAL</b>		<b>200</b>	<b>110</b>	<b>90</b>	<b>0</b>	<b>0</b>
HSS/ N 9614 : Recognize Healthy body systems	PC1. Correctly use and interpret the medical terminology that describes normal structure, function & location of major body systems	<b>200</b>	30	10	20		

	PC2. Correctly use and interpret the information that relates to the interrelationship between major components of each body system and other structure		40	20	20		
	PC3. Review the factors that contribute to maintain whole body health		60	20	40		
	PC4. Evaluate how relationship between different body systems affect and support healthy functioning		40	10	30		
	PC5. Enhance quality of work by using and sharing information about healthy functioning of the body		30	10	20		
	<b>TOTAL</b>		<b>200</b>	<b>70</b>	<b>130</b>		
7. HSS/ N 9608: Follow radiation safety guidelines	PC1. Confirm sources of radiation and likely type of exposure for all individuals within the work area	<b>200</b>	20	15	5		
	PC2. Apply appropriate assessment methodology suitable for source, type of exposure, dose, level of risk and the recipients' exposure time		30	20	10		
	PC3. Confirm that all required procedures and associated safety measures are		20	15	5		



	compliant with current and relevant legislation requirements									
	PC4. Determine and assess the appropriateness of the projected radiation dose over a suitable period of time for an individual or key staff and other personnel	30	20	10						
	PC5. Record the results of the assessment accurately and in correct format, referencing any monitoring measurements taken to accepted published values to indicate conformance within accepted safety guidance limits for the procedures undertaken within the work practice	20	10	10						
	PC6. Communicate and provide information, advice and guidance effectively in the appropriate medium to meet the individuals needs and preferences	20	0	10						
	PC7. Report actual and potential risks from radiation, in context, to other healthcare professionals and where appropriate seek assistance and advice	10	5	5						

	PC8. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, policies and protocols		10	5	5		
	PC9. Confirm that all required procedures and associated safety measures are current and compliant with relevant legislation		20	5	15		
	PC10. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, local policies and protocols		20	10	10		
	<b>TOTAL</b>		<b>200</b>	<b>105</b>	<b>85</b>	<b>0</b>	<b>0</b>
8. HSS/ N 9610 (Follow infection control policies and procedures)	PC1. Perform the standard precautions to prevent the spread of infection in accordance with organisation requirements	<b>200</b>	5	0	5		
	PC2. Perform the additional precautions when standard precautions alone may not be sufficient to prevent transmission of infection		5	0	5		
	PC3. Minimise contamination of materials, equipment and		5	5	0		

instruments by aerosols and splatter					
PC4. Identify infection risks and implement an appropriate response within own role and responsibility	20	10	10		
PC5. Document and report activities and tasks that put patients and/or other workers at risk	5	0	5		
PC6. Respond appropriately to situations that pose an infection risk in accordance with the policies and procedures of the organization	5	0	5		
PC7. Follow procedures for risk control and risk containment for specific risks	10	0	10		
PC8. Follow protocols for care following exposure to blood or other body fluids as required	10	0	10		
PC9. Place appropriate signs when and where appropriate	20	10	10		
PC10. Remove spills in accordance with the policies and procedures of the organization	5	0	5		
PC11. Maintain hand hygiene by washing hands before and after patient contact and/or after any activity likely to	5	0	5		

cause contamination					
PC12. Follow hand washing procedures	5	0	5		
PC13. Implement hand care procedures	5	0	5		
PC14. Cover cuts and abrasions with water-proof dressings and change as necessary	5	5	0		
PC15. Wear personal protective clothing and equipment that complies with Indian Standards, and is appropriate for the intended use	5	0	5		
PC16. Change protective clothing and gowns/aprons daily, more frequently if soiled and where appropriate, after each patient contact	5	0	5		
PC17. Demarcate and maintain clean and contaminated zones in all aspects of health care work					
PC18. Confine records, materials and medicaments to a well-designated clean zone	20	10	10		
PC19. Confine contaminated instruments and equipment to a well-designated contaminated					

zone					
PC20. Wear appropriate personal protective clothing and equipment in accordance with occupational health and safety policies and procedures when handling waste	5	0	5		
PC21. Separate waste at the point where it has been generated and dispose of into waste containers that are colour coded and identified	5	0	5		
PC22. Store clinical or related waste in an area that is accessible only to authorised persons	5	5	0		
PC23. Handle, package, label, store, transport and dispose of waste appropriately to minimise potential for contact with the waste and to reduce the risk to the environment from accidental release	5	0	5		
PC24. Dispose of waste safely in accordance with policies and procedures of the organisation and legislative requirements	5	5	0		
PC25. Wear personal protective clothing	5	0	5		

	and equipment during cleaning procedures						
	PC26. Remove all dust, dirt and physical debris from work surfaces	5	0	5			
	PC27. Clean all work surfaces with a neutral detergent and warm water solution before and after each session or when visibly soiled	5	0	5			
	PC28. Decontaminate equipment requiring special processing in accordance with quality management systems to ensure full compliance with cleaning, disinfection and sterilisation protocols	5	0	5			
	PC29. Dry all work surfaces before and after use	5	0	5			
	PC30. Replace surface covers where applicable	5	0	5			
	PC31. Maintain and store cleaning equipment	5	5	0			
	<b>TOTAL</b>	<b>200</b>	<b>55</b>	<b>145</b>			
<b>Grand Total-1 (Subject Domain)</b>		<b>400</b>					
<b>Soft Skills and Communication</b>		<b>Pick one field from both parts each carrying 50 marks totalling 100</b>					
<b>National Occupational</b>	<b>Performance Criteria (PC)</b>	<b>Total Marks</b>	<b>Out Of</b>	<b>Marks Allocation</b>	<b>Marks Awarded by Assessor</b>	<b>Grand Total of</b>	

Standards (NOS)		(100)					Practical
			Viva	Observation/ Role Play	Viva	Skills Practical	
<b>Part 1 (Pick one field randomly carrying 50 marks)</b>							
<b>1. Attitude</b>							
HSS/ N 9603 (Act within the limits of one's competence and authority)	PC1. Adhere to legislation, protocols and guidelines relevant to one's role and field of practice	<b>50</b>	5	1	4		
	PC2. Work within organisational systems and requirements as appropriate to one's role		5	2	3		
	PC3. Recognise the boundary of one's role and responsibility and seek supervision when situations are beyond one's competence and authority		10	5	5		
	PC4. Maintain competence within one's role and field of practice		5	2	3		
	PC5. Use relevant research based protocols and guidelines as evidence to inform one's practice		5	2	3		
	PC6. Promote and demonstrate good practice as an individual and as a team member at all times		5	3	2		
	PC7. Identify and manage potential and actual risks to the quality and safety of practice		10	5	5		

	PC8. Evaluate and reflect on the quality of one's work and make continuing improvements		5	2	3			
			50	22	28			
<b>Attitude Total</b>		<b>50</b>						
<b>2. Work Management</b>								
HSS/ N 9602 (Ensure availability of medical and diagnostic supplies)	PC1. Maintain adequate supplies of medical and diagnostic supplies	<b>50</b>	15	10	5			
	PC2. Arrive at actual demand as accurately as possible		8	3	5			
	PC3. Anticipate future demand based on internal, external and other contributing factors as accurately as possible		10	5	5			
	PC4. Handle situations of stock-outs or unavailability of stocks without compromising health needs of patients/ individuals		17	7	10			
			50	25	25			
<b>3. Attiquete</b>								
HSS/ N 9601 (Collate and Communicate Health Information )	PC1. Respond to queries and information needs of all individuals	<b>50</b>	4	2	2			
	PC2. Communicate effectively with all individuals regardless of age, caste, gender, community or other characteristics		10	5	5			
	PC3. Communicate with individuals at		10	5	5			



	a pace and level fitting their understanding, without using terminology unfamiliar to them						
	PC4. Utilise all training and information at one's disposal to provide relevant information to the individual	10	5	5			
	PC5. Confirm that the needs of the individual have been met	4	2	2			
	PC6. Adhere to guidelines provided by one's organisation or regulatory body relating to confidentiality	4	2	2			
	PC7. Respect the individual's need for privacy	4	2	2			
	PC8. Maintain any records required at the end of the interaction	4	2	2			
		50	25	25			
<b>Part 2 (Pick one field as per NOS marked carrying 50 marks)</b>							
<b>1. Team Work (Evaluate with NOS: HSS/N/0304, 0305, 0306, 0307)</b>							
<b>2. Safety management (Evaluate with NOS: HSS/N/0301, 0302, 0303, 0409, 9610)</b>							
HSS/ N 9606 (Maintain a safe, healthy, and secure working environment)	PC1. Identify individual responsibilities in relation to maintaining workplace health safety and security requirements	50	6	2	4		
	PC2. Comply with health, safety and security procedures for the workplace		4	0	4		

PC3. Report any identified breaches in health, safety, and security procedures to the designated person	4	3	1		
PC4. Identify potential hazards and breaches of safe work practices	6	4	2		
PC5. Correct any hazards that individual can deal with safely, competently and within the limits of authority	6	4	2		
PC6. Promptly and accurately report the hazards that individual is not allowed to deal with, to the relevant person and warn other people who may get affected	6	4	2		
PC7. Follow the organisation's emergency procedures promptly, calmly, and efficiently	6	2	4		
PC8. Identify and recommend opportunities for improving health, safety, and security to the designated person	6	4	2		
PC9. Complete any health and safety records legibly and accurately	6	2	4		
	50	25	25		

**3. Waste Management (Evaluate with NOS: HSS/N/5105, 5108, 5114, 5115)**

HSS/ N 9609 (Follow biomedical waste disposal protocols)	PC1. Follow the appropriate procedures, policies and protocols for the method of collection and containment level according to the waste type	50	6	2	4		
	PC2. Apply appropriate health and safety measures and standard precautions for infection prevention and control and personal protective equipment relevant to the type and category of waste		8	4	4		
	PC3. Segregate the waste material from work areas in line with current legislation and organisational requirements		4	0	4		
	PC4. Segregation should happen at source with proper containment, by using different colour coded bins for different categories of waste		8	4	4		
	PC5. Check the accuracy of the labelling that identifies the type and content of waste		4	2	2		
	PC6. Confirm suitability of containers for any required course of action appropriate		4	4	0		

	to the type of waste disposal						
	PC7. Check the waste has undergone the required processes to make it safe for transport and disposal		4	4	0		
	PC8. Transport the waste to the disposal site, taking into consideration its associated risks		4	4	0		
	PC9. Report and deal with spillages and contamination in accordance with current legislation and procedures		4	4	0		
	PC10. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, local policies and protocols		4	4	0		
			<b>50</b>	<b>32</b>	<b>18</b>		
HSS/ N 9611: Monitor and assure quality	PC1. Conduct appropriate research and analysis	<b>50</b>	6	2	4		
	PC2. Evaluate potential solutions thoroughly		8	4	4		
	PC3. Participate in education programs which include current techniques, technology and trends pertaining to the dental industry		4	0	4		
	PC4. Read Dental hygiene, dental		8	4	4		

and medical publications related to quality consistently and thoroughly						
PC5. Report any identified breaches in health, safety, and security procedures to the designated person	4	2	2			
PC6. Identify and correct any hazards that he/she can deal with safely, competently and within the limits of his/her authority	4	4	0			
PC7. Promptly and accurately report any hazards that he/she is not allowed to deal with to the relevant person and warn other people who may be affected	4	4	0			
PC8. Follow the organisation's emergency procedures promptly, calmly, and efficiently	4	4	0			
PC9. Identify and recommend opportunities for improving health, safety, and security to the designated person	4	4	0			
PC10. Complete any health and safety records legibly and accurately	4	4	0			
	50	32	18			
<b>Grand Total-2 (Soft Skills and Communication)</b>	<b>100</b>					

## SECTION 2

### EVIDENCE OF NEED

#### What evidence is there that the qualification is needed?

While collecting data from the companies for the occupational map & functional analysis, we also took feedback from industry, which was collected with respect to roles for which qualification packs development, was to be prioritized. This was largely based on volume of people required, quantitative and qualitative shortfall which the Industry feels they face. Governing council of HSSC gave final approval and endorsement for the same.

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

The workforce in allied healthcare sector need expected to around 74 lac by 2022 double the workforce employed in 2013 as envisaged in Skills Gap analysis Reports for industry demand and secondary research data, though these do not lend to accurate demand projection. The link to NSDC Human Resource & Skills Requirement in Healthcare Sector is <http://healthcare-ssc.in/images/Human%20Resource%20&%20Skills%20Requirement%20in%20Healthcare%20sector.pdf>

- Feedback from industry for demand though again sample size may not lend to accurate figures
- Training duration, and current and potential training capacity envisaged
- An LMIS development initiative is being put in place to be more precise regarding the demand and supply

#### What steps were taken to ensure that the qualification(s) does/do not duplicate already existing or planned qualifications in the NSQF?

- NSDC list of Approved and Under-Development QPs was checked prior to commissioning the work
- Is being sent to NSDC QRC team for the confirmation of the same
- No objection received while QP was put on public view.

#### 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?

- Agencies/personnel would be appointed by the HSSC to interact with training providers, employers, assessors to gather feedback in implementation.
- Monitoring of results of assessments, training delivery
- Employer feedback will be sought post-placement
- A formal review is scheduled in two year time

Please attach any documents giving further information about any of the topics above.

Give details of the document(s) here:

1. **Occupational Mapping Report-Annexure 2**
2. **Functional Analysis Report-Annexure 3**
3. **RFP for development of occupational standards-Annexure 4**
4. **Validation group and industry consultations- Annexure 5**
5. **The Brief Report on the whole process of the development, validation and notification of these qualification packs along with list of companies and Industry associations involved -Annexure 6**

6. **Human Resource & Skills Requirement in Healthcare Sector accessible on below given link:**

<http://healthcare-ssc.in/images/Human%20Resource%20&%20Skills%20Requirement%20in%20Healthcare%20sector.pdf>

**SECTION 3**

**SUMMARY OF DIRECT EVIDENCE OF LEVEL**

Justify the NSQF level allocated to the QP. Relate information about the job role and build upon the five descriptors for the level to justify.

Generic NOS is/are linked to the overall authority attached to the job role.

<b>Qualification Title and Classification Code X ray Technician (HSS/Q 0701)</b>					
<b>Process required</b>	<b>Professional knowledge</b>	<b>Professional skill</b>	<b>Core skill</b>	<b>Responsibility</b>	<b>Level</b>
Individuals at this job need to create X-ray images of parts of the human body using radiographic equipment under the guidance and supervision of Radiologist. This is an activity which require limited range of activities routine and predictable	This job requires individuals to work in a team and in close collaboration with Radiologist. They must be polite and be able to calm and placate upset individuals. They should be able to remain standing for long periods of time and must have strength to transfer and position patients for scans. They should have the capacity to visualize two and three - dimensional spatial. The individual should also be able to demonstrate clinical skills, Communication skills and ethical behaviour. This indicates that a X-Ray Technician must have basic facts, process and principle for performing the functions	The X ray Technicians explain medical imaging procedure, to patient & manage requisition, prepare X-ray room, prepare patient for procedure, operate X-ray machine, guide patients for positions during the procedure, maintain X-ray room, maintain and record radiological supplies, prepare report & document under Radiologist's guidance, maintain records and carry out other Administrative jobs as needed in the department. All these are activities that require him/her to demonstrate his practical skill which are repetitive and narrow in nature.	Be updated with general and specialized medical terms, basic medical Knowledge and specialized radiographic procedures. Avoid using jargon, slang or acronyms when communicating with patient/donor, colleagues or the medical officer, recording of information on software, Keep Knowledge about medical terminology, physiology and anatomy that are important to understand doctors' orders, Perform basic clerical tasks and assist patients as needed, Maintain safety and sanitation records and	The X ray Technician are responsible for Performing diagnostic imaging examinations such as X-ray images, BMD and Mammography scans under the guidance of a Radiologist. Prepare patients and operating equipment for tests, keep patient records, adjusting equipment's based on patient need and test recommended and maintaining equipment. Prepare work schedules such as patient registered for the day, patients scheduled for different test, feedback on the quality of equipment, or assistant in	3

			utilize medical databases or other Computer programs. The work ethics characterized by dedication and persistence and the ability to deal tactfully with patients. X ray Technician should possess communication skills (written & oral) with minimum required clarity, skill of basic arithmetic with with basic understanding of social and natural environment	overall management of radiology department. The X ray Technician is responsible for carrying out a limited range of jobs within defined limit under close supervision. His/her work may require the completion of a number of related tasks. Individual carrying out these job roles may be described as "partly-skilled workers".	
Level: 3	Level: 3	Level: 3	Level: 3	Level: 3	3

**OTHER EVIDENCE OF LEVEL** [This need only be filled in where evidence other than primary outcomes was used to allocate a level] (**Optional**)

- Validated by Industry, training provider & stake holders

Summary of other evidence (if used): NA

#### **SECTION 4**

#### **EVIDENCE OF RECOGNITION OR PROGRESSION**

**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?**

Horizontal and vertical mobility options have been articulated.

Please attach any documents giving further information about any of the topics above.

Give details of the document(s) here:

- Occupational Mapping Report-Annexure 2**
- Functional Analysis Report-Annexure 3**
- Validation group and industry consultations- Annexure 5**



4. **The Brief Report on the whole process of the development, validation and notification of these qualification packs along with list of companies and Industry associations involved -Annexure 6**