

**NSQF QUALIFICATION FILE****Approved in 24<sup>th</sup> NSQC Dated 27<sup>th</sup> Feb, 2020****NSDA Code****2020/CCM/DGT/03666****CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE**

Directorate General of Training (DGT)  
 Government of India, Ministry of Skill Development and Entrepreneurship,  
 1st and 2nd Floor, CIRTES Building  
 Next to Pusa ITI, Pusa Campus  
 New Delhi – 110012.

**Name and address of submitting body:**

Directorate General of Training (DGT)  
 Government of India, Ministry of Skill Development and Entrepreneurship,  
 1st and 2nd Floor, CIRTES Building  
 Next to Pusa ITI, Pusa Campus  
 New Delhi – 110012.

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

Name: Shri Deepankar Mallick

Position in the organisation: Deputy Director General (C & P)

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**List of documents submitted in support of the Qualifications File**

1. Competency-based curriculum with following details:

Model Curriculum to be added which will include the following:

- a) Indicative list of tools/equipment to conduct the training: Enclosed with curriculum
  - b) Trainers qualification: Indicated in the curriculum
  - c) Lesson Plan: All DGT curricula are designed indicating specific practical to be carried out during training along with details of trade theory. Based on this the concerned instructor prepares the Lesson Plan and Demonstration Plan with support of IMPs developed by NIMI,DGT.
  - d) Distribution of training duration into theory/practical/OJT component: Indicated in the curriculum.
2. Curriculum for Core Skills (Workshop Calculation & Science, Engineering Drawing and Employability Skills).

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## e) SUMMARY

1	<b>Qualification Title</b>	<b>‘VESSEL NAVIGATOR’</b>
2	<b>Qualification Code, if any</b>	<b>DGT/1090</b>
3	<b>NCO code and occupation</b>	8350.0100 - Serang, Deck/Bosun 8350.0600 - Boatman 8350.0300 - Seaconny/OS (Ordinary Seaman) 8350.0700 - Rudderman 8350.0400 - Lascar/OS (Ordinary Seaman) 8350.0800 - Oarsman 8350.0500 - Driver, Launch/Tug Master 8350.9900 - Ships’ Deck Ratings, Barge Crews and Boatmen, Other
4	<b>Nature and purpose of the qualification (Please specify whether qualification is short term or long term)</b>	Prepare skilled Technician to undertake the job roles of Vessel Navigator and will enable the trainee to understand and apply various aspects such as navigation of fishing vessel in the sea, seaman ship, chart work practical, marine meteorology, safety of life at sea, use, care and maintenance of various lifesaving, firefighting appliances used onboard a fishing vesseletc.  It is long term qualification.
5	<b>Body/bodies which will award the qualification</b>	Directorate General of Training (DGT).
6	<b>Body which will accredit providers to offer courses leading to the qualification</b>	Directorate General of Training (DGT) accredits the Training providers (ITIs/ NSTIs/MSTIs/BTCs/BTPs / Industries / Establishments).
7	<b>Whether accreditation/affiliation norms are already in place or not , if applicable (if yes, attach a copy)</b>	Yes. The accreditation/ affiliation norms and any amendments made from time to time are available on DGT web portal.
8	<b>Occupation(s) to which the qualification gives access</b>	<ul style="list-style-type: none"> <li>• Serang, Deck/Bosun</li> <li>• Boatman</li> <li>• Seaconny/OS (Ordinary Seaman)</li> <li>• Rudderman</li> </ul>

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		<ul style="list-style-type: none"> <li>• Lascar/OS (Ordinary Seaman)</li> <li>• Oarsman</li> <li>• Driver, Launch/Tug Master</li> <li>• Ships' Deck Ratings, Barge Crews and Boatmen, Other</li> </ul>																					
9	<b>Job description of the occupation</b>	The individual is capable to carry out following works onboard the fishing vessel such as preparation for the voyage, casting off from the jetty, ensuring the tide conditions, observing weather forecast, chart preparation for passage planning, maneuvering the vessel, efficient watch keeping (i.e. look out) etc.																					
10	<b>Licensing requirements</b>	NOT REQUIRED																					
11	<b>Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)</b>	NOT APPLICABLE																					
12	<b>Level of the qualification in the NSQF</b>	Level 5																					
13	<b>Anticipated volume of training/learning required to complete the qualification</b>	<table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Course Element</th> <th>Notional Training Hours</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Professional Skill (Trade Practical)</td> <td>2000</td> </tr> <tr> <td>2</td> <td>Professional Knowledge (Trade Theory)</td> <td>640</td> </tr> <tr> <td>3</td> <td>Workshop Calculation &amp; Science</td> <td>160</td> </tr> <tr> <td>4</td> <td>Engineering Drawing</td> <td>160</td> </tr> <tr> <td>5</td> <td>Employability Skills</td> <td>240</td> </tr> <tr> <td></td> <td><b>Total</b></td> <td><b>3200</b></td> </tr> </tbody> </table>	Sl. No.	Course Element	Notional Training Hours	1	Professional Skill (Trade Practical)	2000	2	Professional Knowledge (Trade Theory)	640	3	Workshop Calculation & Science	160	4	Engineering Drawing	160	5	Employability Skills	240		<b>Total</b>	<b>3200</b>
Sl. No.	Course Element	Notional Training Hours																					
1	Professional Skill (Trade Practical)	2000																					
2	Professional Knowledge (Trade Theory)	640																					
3	Workshop Calculation & Science	160																					
4	Engineering Drawing	160																					
5	Employability Skills	240																					
	<b>Total</b>	<b>3200</b>																					
14	<b>Indicative list of training tools required to deliver this qualification</b>	As per Annexure - I of curriculum.																					
15	<b>Entry requirements and/or recommendations and</b>	Passed 10th Class with Science and Mathematics.																					

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	<b>minimum age</b>	Minimum age 14years as on first day of academic session.		
<b>16</b>	<b>Progression from the qualification (Please show Professional and academic progression)</b>	An Individual can proceed for:		
		Professional <ul style="list-style-type: none"> <li>• Technician</li> <li>• Senior Technician</li> <li>• Supervisor</li> <li>• Manager</li> <li>• Entrepreneur</li> </ul>	Technical / Academic <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px auto;"></div> Diploma/ Advance Diploma (Vocational)	
<b>17</b>	<b>Arrangements for the Recognition of Prior learning (RPL)</b>	<ul style="list-style-type: none"> <li>• Yes (For more details refer “Guidelines for Private candidate” in DGT website MIS portal).</li> </ul>		
<b>18</b>	<b>International comparability where known (research evidence to be provided)</b>	-		
<b>19</b>	<b>Date of planned review of the qualification.</b>	5 Yrs. from the Date of Approval		
<b>20</b>	<b>Formal structure of the qualification</b>			
	<b>Mandatory components</b>			
	<b>Title of component and identification code/NOSs/ Learning Outcomes</b>	<b>Estimated size (learning hours)</b>		<b>Level</b>
		<b>Skills</b>	<b>Knowledge</b>	
<b>TRADE SPECIFIC</b>				
(i)	Calculate plane parallel sailing to find course and distance between two positions following safety precautions.	100	28	4
(ii)	Calculate, set and drift current from DR position to fix.	25	07	4

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(iii)	Calculate course, distance and position arrived using Mercator sailing method.	75	21	4
(iv)	Illustrate altitude corrections.	25	07	4
(v)	Plan and Fabricate specific fishing gears by selecting suitable material.	50	14	5
(vi)	Distinguish various fishing methods and select suitable fishing gears according to the fish resources.	25	07	5
(vii)	Recognize basic design concept of fishing gear and select suitable fishing gear, technique to carryout fishing.	150	42	5
(viii)	Use different navigational equipment and examine the compass error (Different important navigational equipment – sextant, azimuth mirror, pelorus, chronometer.)	100	28	5
(ix)	Choose various parameters to determine position of celestial body. (various parameters:- GHA, LHA, Longitude)	150	42	5
(x)	Examine the breaking strength, safe work load of ropes, blocks and tackles in marine use and apply the same during execution in various situations.	50	14	5
(xi)	Plan & perform fabrication of fishing gears especially trawls by various techniques. (Various techniques: - TED and BRD)	50	14	5
(xii)	Design and construction of fishing gears.	150	42	5
(xiii)	Identify fishing gear accessories.	25	07	5
(xiv)	Collect data on fishing from different source and analyse the same to perform navigation. ( <i>Different sources – Fishing vessels, dock yards, net making factory</i> )	25	07	5
(xv)	Perform dry docking and maintain fishing	25	09	5

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	vessel including painting schedule.			
(xvi)	Plan and make vessel ready for certificate inspection.	50	18	5
(xvii)	Recognize and act on different critical situation during on board navigation. (Different critical situation - accidents, collision, man overload, leak, bad weather preparation, aground.)	50	18	5
(xviii)	Analyze the various aspect of ship stability to prepare for voyage. (Various aspect – displacement, effect of density on draft and displacement, dead weight, load)	225	81	5
(xix)	Recognize various subsistent fishing gears to operate the same for commercial fishing. (Various subsistent fishing gears: - Pole and line, troll line, changadom, raft, bag bet, dol net, shore seine, Chinese net, cast net, trammel net, tangle net)	100	36	5
(xx)	Locate the marine fishery resources of India and apply specific fishing techniques for the exploitation of marine fishery resources.	50	18	5
(xxi)	Calculate by chronometer and Intercept method to find direction of position line and position.	50	18	5
(xxii)	Distinguish types of anchor, anchoring procedure and demonstrate anchoring of vessel.	50	18	5
(xxiii)	Distinguish different emergency situation and observe standard guidelines during voyage. (Different emergency situation – Abandoning, distress signals, storm signals)	100	36	5
(xxiv)	Analyse different advance ship stability features and arrange loading, discharging, shifting cargo onboard for stability.	100	36	5

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	(Different advance ship stability features – Centre of Gravity, Centre of buoyancy, transverse stability, list, heel.)			
(xxv)	Explain conservation and management of marine fishery resources; hygienic handling of fish on board and its implementation in day to day work.	75	27	5
(xxvi)	Illustrate fish preservation technique, avoid spoilage and set up appropriate technique for preservation and maintain quality of fish. ( <i>Appropriate fishing technique – chilling, freezing, salting, curing, sun drying, canning and smoking.</i> )	125	45	5
<b>CORE SKILL</b>				
<b>EMPLOYABILITY SKILLS</b>				
(i)	Apply safe working practices.	-	30	5
(ii)	Comply with environment regulation and housekeeping.		30	5
(iii)	Interpret & use formal and technical communication.		30	5
(iv)	Apply the concept in productivity & quality management in day to day work to improve productivity & quality.		30	5
(v)	List and interpret various acts of labour welfare legislation.		30	5
(vi)	Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.		30	5
(vii)	Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.		30	5
(viii)	Utilize computer applications and internet to take benefit of IT developments in the industry.		30	5
<b>WORKSHOP CALCULATION &amp; SCIENCE</b>				
(i)	Demonstrate mathematical concept and principles to perform practical operations.	-	80	5

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(ii)	Explain science in the field of study including simple machine.		80	5
<b>ENGINEERING DRAWING</b>				
(i)	Read and apply engineering drawing for different application in the field of work.	-	160	5
	<b>Total</b>		<b>3200</b>	

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21	<p><b>Body/Bodies which will carry out assessment:</b> Controller of Examinations, DGT</p>
22	<p><b>How will RPL assessment be managed and who will carry it out?</b> DGT will carry out the RPL assessment following the below mentioned eligibility criteria for Trainee:</p> <p>Applicants aspiring to appear as Private Candidates in the AITT under CTS for award of NTC, have been categorized based on their educational background and experience. Subsequently 'Private Candidates' may be admitted under one of the following categories. Category wise 'eligibility criteria' for appearing as 'Private Candidate' in AITT under CTS has been listed below:</p> <p>Category I: Ex-trainees (successful pass-outs) of ITI</p> <p>A. Ex-trainees of ITI who already possess NTC in one of the trades under CTS, are eligible for applying as Private candidate for an allied trade, provided he/ she fulfils all the conditions regarding educational qualification etc. prescribed for that allied trade.</p> <p>B. In addition, the applicant should possess minimum of 1 year experience (as on date of submission of application) post the date of AITT result declaration in the desired allied trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State.</p> <p>Category II: 'Ex-trainees (successful pass-outs) and current trainees under CoE scheme</p> <p>A. The applicant should have the minimum prescribed entry qualification and should fulfil eligibility criteria for the desired trade under CTS, in which he/she intends to appear for AITT as Private Candidate. CoE candidates must register as 'Private Candidate' under CTS in the relevant/mapped CTS trade only.</p> <p>B. There should be a minimum gap of 1 year between successful completions of CoE training i.e. from the date of result declaration to the date of submission of application for 'Private Candidate' certification.</p> <p>C. During this gap of 1 year, the candidate must have undergone Industry training or gained experience in desired trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities</p>

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	<p>registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State.</p> <p>Category III: SCVT Candidates (admitted till August 2018 session)</p> <p>A. No special provisions have been made for SCVT Trainees to enrol as 'Private Candidate'. Going forward, SCVT trainees have been granted equivalence vide G.S.R 186(E) dated 2nd March 2017 for undergoing apprenticeship training under the Apprentices Act 1961 to obtain 'NAC'.</p> <p>B. Only for SCVT trainees admitted till August 2018 batch, provision has been made for obtaining NTC by appearing in AITT under 'Private Candidate'. Such trainees will continue to be governed by old guidelines for 'Private Candidate'.</p> <p>Category IV: Other Candidates (candidate not falling in any of the above 3 categories, including SCVT trainees enrolled from admission session 2019 onwards)</p> <p>A. The applicant should have the minimum prescribed entry qualification and should fulfil eligibility criteria for the relevant trade under CTS, in which he/she desires to appear for AITT as Private Candidate.</p> <p>B. Applicant should be minimum 21 years of age on the date of submission of application. There is no upper age limit.</p> <p>C. The applicant should possess minimum of 3 years' experience (on the date of submission of application) in the relevant trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State.</p> <p>For detail and updated information please refer to DGT web portal.</p>
23	<p><b>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.</b></p> <p><b>(1) Assessment process:</b></p> <p>The assessment for the qualification is carried out by conducting formative assessments, and end of year examinations (Summative). The formative assessments in respect of each Learning Outcome for practical and related theory are conducted by the concerned instructors for evaluating the knowledge and skill acquired by trainees and the behavioural transformation of the trainees. This formative assessment is primarily</p>

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carried out by collecting evidence of competence gained by the trainees by evaluating them at work based on assessment criteria, asking questions and initiating formative discussions to assess understanding and by evaluating records and reports. Summative assessment is carried out by All India Trade Test on Trade Theory, Trade practical, Workshop Calculation & Science, Engineering Drawing and Employability Skills. The question papers for the theory Examinations contain objective type questions.

The marking pattern and distribution of marks for the qualification are as under:

Marking Pattern				
Sl. No.	Type of Assessment	Subject for the Trade Test	Marks for the 1st Year	Marks for the 2nd Year
1	Summative Assessment	Practical	250	250
2		Trade Theory	100	100
3		Employability Skills	50	50
4		Workshop Calculation and Science.	50	50
5		Engineering Drawing	50	50
6	Formative assessment based on Learning Outcomes		200	200
TOTAL:			700	700

**(2) Minimum pass marks:**

The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%. There will be no Grace marks.

**Testing and certifications for the course:**

Controller of examinations, DGT carries out the assessment and issues National Trade Certificate (NTC) following the norms and guidelines issued by the Directorate from time to time.

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Assessment of the qualification evaluates trainees to show that they can integrate knowledge, skills and values for carrying out relevant tasks as per the defined learning outcomes and assessment criteria. The trainees may choose the preferred language for assessment. The underlying principle of assessment is fairness and transparency. While assessing the trainee, assessor is directed to assess as per the defined assessment criteria against the learning outcomes. The evidence of the competence acquired by the trainees can be obtained by conducting theory and practical examinations, observing the trainees at work, asking questions and initiating discussions to assess, understand and evaluate records and reports. The ultimate objective of the assessment is to assess the candidates as per the defined assessment criteria for the learning outcomes.

**Specific Arrangements for assessment:**

- Assessment is outcome-based.
- There are formative and summative assessments in Theory and Practical.
- Assessment is carried out in Trade theory, Trade Practical, Workshop

Calculation and Science, Engineering Drawing and Employability Skills.

- While Trade Theory and Trade Practical are used for assessing Trade-related jobs, Workshop Calculation and Science is used to test trainee's numerical and logical skills, Drawing is used to test the ability of the trainee to draw and read sketches and Employability skills is used to test the communication, professional language, leadership, entrepreneurship and team-work abilities of the trainee.
- In addition to demonstration of theory and practical knowledge, trainees get a chance to present total personality.

**Quality assurance activities:**

Question papers are set by external paper setters/ software generated.

Evaluation of Theory Examinations in Trade, Workshop Calculation & Science, Engineering Drawing and Employability Skill is done by third-party agency.

Trade Practical is examined by External Examiner.

**24. Assessment evidences**

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( on half yearly average of the learning assessment covered)

**Means of assessment**

Assessment will be evidence based comprising the following for each Learning Outcome:

<b>Serial No.</b>	<b>Terminal Competency</b>	<b>Maximum Weightage (%)</b>
1	Safety consciousness	15
2	Workplace hygiene	5
3	Attendance/ Punctuality	10
4	Ability to follow Manuals/ Written instructions	5
5	Application of Knowledge	10
6	Skills to handle tools / equipment/ Instruments/ Devices	10
7	Economical use of materials	5
8	Working Strategy	10
9	Quality in workmanship/ Performance	15
10	VIVA	15
	<b>Total Maximum Weightage (%)</b>	<b>100</b>

**Pass/Fail**

The minimum pass percentage is 60% marks for formative assessment.

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## LEARNING OUTCOME WITH ASSESSMENT CRITERIA:

LEARNING OUTCOME (TRADE SPECIFIC)	
LEARNING OUTCOMES	ASSESSMENT CRITERIA
<b>First Year</b>	
1. Calculate plane parallel sailing to find course and distance between two positions following safety precautions.	Ascertain the given latitude and understand whether it is North or South.
	Ascertain the given Longitude and understand whether it is East or West.
	Do the calculation as per the formula.
	Find the course and distance as per the difference of Lat and Long.
2. Calculate, set and drift current from DR position to fix.	Understand the present dead reckoning position and the present fixed position.
	Do the calculation as per the formula and find out the direction and speed of current.
	Result obtained by calculation is the set of current and the distance is the drift of current.
3. Calculate course, distance and position arrived using Mercator sailing method.	Understand the principles of Mercator sailing method
	Obtain the meridional parts table from the nautical table
	Obtain the difference of Lat and long and name them according to the direction
	Apply the Mercator sailing formula to find course and distance to reach destination
4. Illustrate altitude corrections.	Determine the error of sextant
	Take the altitude of celestial body
	Obtain the correct GMT for the above observations
	Obtain nautical almanac of that year and extract corrections and apply to the altitude of celestial body
5. Plan and Fabricate specific fishing gears by selecting suitable material.	Design and fabricate a gill net of suitable material
	Design and fabricate a trawl of suitable material
	Design and fabricate a purse seine of suitable material
	Design and fabricate a long line of suitable material

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6. Distinguish various fishing methods and select suitable fishing gears according to the fish resources.	Identify demersal fishery resources and selection of suitable fishing gears for exploitation
	Identify pelagic fishery resources and selection of suitable fishing gears for exploitation
	Identify deep sea and oceanic resources and select suitable fishing gear for exploitation
7. Recognize basic design concept of fishing gear and select suitable fishing gear, technique to carryout fishing.	Identify the gear to exploit fishery resources from the different water depth.
	Identify the suitable fishing gear to exploit shoaling pelagic fishes
	Identify the suitable fishing gear to exploit deep sea resources
	Identify the suitable fishing gear to exploit demersal resources
	Identify the suitable fishing gear to exploit predatory fishes.
8. Use different navigational equipment and examine the compass error ( <i>Different important navigational equipment – sextant, azimuth mirror, pelorus, chronometer.</i> )	Arrange Marine magnetic compass
	Also azimuthal mirror, pelorus
	Arrange the above equipments in such a manner in order to take compass bearing
	Take compass bearing of different objects and find the difference between the true bearing
	Find the difference and apply variation of that places in order to find the deviation and compass error
9. Choose various parameters to determine position of celestial body. (various parameters:- GHA, LHA, Longitude)	Obtain current year nautical almanac
	Make sure the sextant is free from error or find out the error if any.
	Observe the altitude of celestial body by the sextant and find GHA, LHA and longitude of the ship by calculation.
	Chronometer also kept ready without any error to obtain GMT
10. Examine the breaking strength, safe work load of ropes, blocks and tackles in marine use and apply the same during execution in	Collect various types of ropes
	The ropes are used for marine purpose and determine the size of rope
	As per the theory and formula find out the breaking strength and safe working load of different rope.
	Select different types of blocks and tackle for various

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various situations.	purpose and rig the same for different purpose
11. Plan & perform fabrication of fishing gears especially trawls by various techniques ( <i>TED and BRD</i> )	Design and Fabrication of bottom trawl
	Fabrication of midwater trawl as per plan on resources
	Fabrication of shrimp trawl
	Fabrication of trawl with TED
	Fabrication of trawl with BRDs
12. Design and construction of fishing gears	Design and construct Trawl, Purse seine, Gill net and Longline
	Identify factors effecting fishing gear design
	Carryout Joining of netting, Seaming, Stapling of two sections, Lacing, Mounting, Reeving.
13. Identify fishing gear accessories.	Identify suitable accessories for rigging to various fishing gears
	Select suitable accessories for trawl
	Select suitable accessories for purse seine
	Select suitable accessories for longline
	Select suitable accessories for gillnet
14. Collect data on fishing from different source and analyse the same to perform navigation. ( <i>Different sources – Fishing vessels, dock yards, net making factory</i> )	Collect the data about the traditional fishing
	Collect the data about different fishing vessel operated in fishing harbour
	Collect the data about local dockyards/boat building yards
	Collect the data about different types of webbings fabricated and used for fishing (From net making factory)
	Collect the data about the implementation fishing rules and regulation (MFRAs)
<b>Second Year</b>	
15. Perform dry docking and maintain fishing vessel including painting schedule.	Dry docking a vessel is very large process of work to carry out maintenance and repair of vessel and machinery
	Repair work order in consultation with Chief engineer and to be submitted to the dock authority
	Obtain the day and time for dry docking the vessel in consultation with the dock authority
	Obtain necessary tools and paints for the preliminary work
	Before the work starts surveyor may be inspect the vessel and his suggestions may be obtained



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16. Plan and make vessel ready for certificate inspection.	Service all necessary lifesaving appliances
	Service all firefighting appliances and replace if necessary
	Make sure that all communication and navigational equipment are working properly.
	Ensure that all navigational lights and signals are working properly.
	Carry out all other important works noted by the surveyor
17. Recognize and act on different critical situation during on board navigation. ( <i>Different critical situation - accidents, collision, man overload, leak, bad weather preparation, aground.</i> )	Mock drill of various situations is to be created and demonstration in this regard may be conducted.
	The above drill may be carried out on board vessel during sailing as well as when the vessel at harbour.
	Comply the safety procedure and rules while performing the above operations.
	Dispose all the used and unwanted items as per the ship standing order.
	Refill or recharge firefighting equipment and the date/month/year of recharge may be indicated
18. Analyze the various aspect of ship stability to prepare for voyage. ( <i>Various aspect – displacement, effect of density on draft and displacement, dead weight, load</i> )	Study and analyse hydrostatic particulars of the ship supplied by the shipyard.
	Understand the manoeuvring capability of the ship.
	As per the hydrostatic particulars study the present displacements
	Ascertain the load displacement, dead weight available , dead weight aboard etc.
19. Recognize various subsistent fishing gears to operate the same for commercial fishing. ( <i>Various subsistent fishing gears:-Pole and line, troll line, changadom, raft, bag bet, dol net, shore seine, Chinese net, cast net, trammel net, tangle net etc</i> )	Survey and study of cast net and Chinese net
	Survey and study of pole & line and trolling
	Survey and study of <i>Changadam</i> and raft
	Survey and study of bag net and dol net
	Survey and study of shore seine and trammel net

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20. Locate the marine fishery resources of India and apply specific fishing techniques for the exploitation of marine fishery resources	Locate fishing ground with the help of fish finding equipment
	Locate fishing ground with the help of remote sensing data
	Locate fishing ground with the help of exploratory survey and data collected by fisheries research organizations
	Locate fishing ground with the help of commercial fishermen
	Locate fishing ground with own fishing experience
21. Calculate by chronometer and Intercept method to find direction of position line and position.	Understand starting procedure of chronometer
	Wind the chronometer
	Enter the chronometer error in the log book
	Calculate the GMT time while taking altitude of Sun, Moon, Star
	Calculate azimuth, intercept and direction of position line and draw the position line in the chart
22. Distinguish types of anchor, anchoring procedure and demonstrate anchoring of vessel.	Identify the anchor to be dropped and its working condition
	Check the hydraulic winch to be used for anchoring
	Check to be made for the break and bow stopper
	Choose appropriate place for anchoring the vessel and calculate the cable to be released
	During the above work all safety measures to be taken
23. Distinguish different emergency situation and observe standard guidelines during voyage. ( <i>Different emergency situation – Abandoning, distress signals, storm signals</i> )	Carry out voyage preparation and inform the crew about sailing program
	Inform the crew about the muster list to be followed during emergency as well as distress situation.
	Follow the traffic rules while navigating the channel and open sea
	Comply with the international regulation for preventing collision at sea.
	Observe other bulletin and radio communication.
24. Analyze different advance ship stability features and arrange loading, discharging, shifting cargo onboard for stability. ( <i>Different</i>	Study and analyse hydrostatic particulars of the ship supplied by the shipyard.
	Understand the manoeuvring capability of the ship.
	As per the hydrostatic particulars study the present displacements
	Ascertain the load displacement, dead weight available ,

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<i>advance ship stability features – Centre of Gravity, Centre of buoyancy, transverse stability, list, heel.)</i>	dead weight aboard etc. After loading the cargo always observe that there is no list appeared in the vessel if any lists arrange the cargo in such a manner to remove list.
25. Explain conservation and management of marine fishery resources, hygienic handling of fish on board and its implementation in day to day work.	Identification and use of by-catch reduction devices
	Code of Conduct for Responsible Fisheries (CCRF)
	Knowledge about the uniform ban period
	Hygienic handling of catch onboard fishing vessel
	Handling of longline catch to maintain <i>Sashimi</i> grade quality
26. Illustrate fish preservation technique, avoid spoilage and set up appropriate technique for preservation and maintain quality of fish. (Appropriate fishing technique – chilling, freezing, salting, curing, sun drying, canning and smoking.)	Preservation technique using ice
	Preservation technique using refrigeration
	Knowledge and application of preservation technique such as salt curing, sun drying and smoking
	Application of canning process for fish preservation

LEARNING OUTCOME (CORE SKILL)	
LEARNING OUTCOMES	ASSESSMENT CRITERIA
<b>EMPLOYABILITY SKILLS</b>	
1. Apply safe working practices	Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements and according to site policy.
	Recognize and report all unsafe situations according to site policy.
	Identify and take necessary precautions on fire and

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	safety hazards and report according to site policy and procedures.
	Identify, handle and store / dispose off dangerous goods and substances according to site policy and procedures following safety regulations and requirements.
	Identify and observe site policies and procedures in regard to illness or accident.
	Identify safety alarms accurately.
	Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	Identify and observe site evacuation procedures according to site policy.
	Identify Personal Protective Equipment (PPE) and use the same as per related working environment.
	Identify basic first aid and use them under different circumstances.
	Identify different fire extinguisher and use the same as per requirement.
2. Comply with environment regulation and housekeeping	Identify environmental pollution & contribute to the avoidance of instances of environmental pollution.
	Deploy environmental protection legislation & regulations
	Take opportunities to use energy and materials in an environmentally friendly manner.
	Avoid waste and dispose waste as per procedure
	Recognize different components of 5S and apply the same in the working environment.
3. Interpret & use formal and technical communication.	Obtain sources of information and recognize information.
	Use and draw up technical drawings and documents.
	Use documents and technical regulations and occupationally related provisions.
	Conduct appropriate and target oriented discussions with higher authority and within the team.
	Present facts and circumstances, possible solutions & use English special terminology.

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	Resolve disputes within the team.
	Conduct written communication.
4. Apply the concept in productivity & quality management in day to day work to improve productivity & quality.	Explain the concept of productivity and apply during execution of job.
	Explain the concept of quality tools and apply during execution of job.
5. List and interpret various acts of labour welfare legislation.	Explain basic concept of labour welfare legislation, adhere to responsibilities and remain sensitive towards such laws.
	Knows benefits guaranteed under various acts.
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	Explain the concept of energy conservation, global warming, pollution and utilize the available resources optimally & remain sensitive to avoid environment pollution.
	Explain standard procedure for disposal of waste.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	Explain personnel finance and entrepreneurship.
	Explain role of various schemes and institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non-financing support agencies to familiarize with the policies/ programmes, procedure & the available scheme.
	Prepare a report to become an entrepreneur for submission to financial institutions.
8. Utilize computer applications and internet to take benefit of IT developments in the industry.	Explain the basic hardware of personal computer.
	Use common application software viz., word, excel, power point etc., in day to day work.
	Awareness about useful internet websites, search relevant information pertaining to the assigned tasks.
<b>WORKSHOP CALCULATION &amp; SCIENCE</b>	
1. Demonstrate mathematical concept	Solve different problems like phase angle, etc. with the help of a calculator.

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and principles to perform practical operations.	Demonstrate conversion of Fraction to Decimal and vice versa.
	Explain BCD code, conversion from decimal to binary and vice-versa, all other conversions.
2. Explain science in the field of study including simple machine.	Explain concept of basic science related to the field such as Material science, Mass, weight, density, speed, velocity, heat & temperature, force, motion, pressure, heat treatment, centre of gravity, friction.
	Explain levers and its types.
	Explain relationship between Efficiency, velocity ratio and Mechanical Advantage.
	Prepare list of appropriate materials by interpreting detail drawings and determine quantities of such materials.
	Solve simple problems on lifting tackles like crane- Solution of problems with the aid of vectors.
<b>ENGINEERING DRAWING</b>	
1. Read and apply engineering drawing for different application in the field of work.	Read & interpret the information on drawings and apply in executing practical work.
	Read & analyse the specification to ascertain the material requirement, tools and assembly/maintenance parameters.
	Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.

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## NSQF QUALIFICATION FILE

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Title/Name of qualification/component: VESSEL NAVIGATOR		Level: 5	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Process	<p><b>Requires Well Developed Skill with Clear choice of procedures in familiar context</b></p> <ul style="list-style-type: none"> <li>Calculate plane parallel sailing to find course and distance between two positions drawing following safety precautions.</li> <li>Plan and Fabricate specific fishing gears by selecting suitable material.</li> <li>Examine the breaking strength, safe work load of ropes, blocks and tackles in marine use and apply the same during execution in various situations.</li> </ul>	<p>The learner demonstrates well-developed skill while performing tasks mentioned in the learning outcomes for eg: 'Examine the breaking strength, safe work load of ropes, blocks and tackles in marine use and apply the same during execution in various situations', 'Calculate plane parallel sailing to find course and distance between two positions drawing following safety precautions' to achieve the tolerance levels and accuracy demanded as per the job.</p> <p>Hence NSQF Level is 5 for this descriptor.</p>	5
Professional knowledge	<b>Knowledge of facts in the field of work or study</b>	The learner demonstrates knowledge of facts, principles, processes and general concepts, in	5



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Title/Name of qualification/component: VESSEL NAVIGATOR		Level: 5	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<ul style="list-style-type: none"> <li>• Classification of fishing gear materials- Natural and synthetic fibres, Yarn numbering system</li> <li>• The shape of the earth. Poles, equator, meridians, Parallel of latitude.</li> </ul> <p><b>Knowledge of Principles and general concepts in the field of work or study</b></p> <ul style="list-style-type: none"> <li>• Shaping of netting Shaping of netting by hand braiding – Baiting, Creasing, Fly mesh (Single and Double).</li> <li>• Properties of fishing gear materials Physical, Chemical and Biological properties</li> </ul> <p><b>Knowledge of processes in the field of work or study</b></p> <ul style="list-style-type: none"> <li>• Effect of density on draft and displacement Fresh Water Allowance</li> <li>• Design and Construction of Fishing Gear, Factors effecting fishing gear design.</li> </ul>	<p>the field of work related to Shipping, different types of Vessel Navigation, types of Marine instruments, compass and fishing equipment Properties of fishing gear materials Physical, Chemical and Biological properties, Design Process, Factors effecting fishing gear design etc.</p> <p>The learner requires demonstrating knowledge of navigation and fishing gear knowledge. Study the different Poles, equator, meridians, Parallel of latitude, specification and their types.</p> <p>Hence NSQF Level is 5 for this descriptor.</p>	
<b>Professional skill</b>	<ul style="list-style-type: none"> <li>• Recognize various subsistent fishing gears to operate the same for commercial fishing.</li> </ul>	In learning outcomes for example ‘Recognize various subsistent fishing gears to operate the	5

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Title/Name of qualification/component: VESSEL NAVIGATOR		Level: 5	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<p>(Various subsistent fishing gears: -Pole and line, troll line, changadom, raft, bag bet, dol net, shore seine, Chinese net, cast net, trammel net, tangle net).</p> <ul style="list-style-type: none"> <li>• Use different navigational equipment and examine the compass error (Different important navigational equipment – sextant, azimuth mirror, pelorus, chronometer.)</li> <li>• Collect data on fishing from different source and analyse the same to perform navigation. (Different sources – Fishing vessels, dock yards, net making factory)</li> </ul>	<p>same for commercial fishing.’ and ‘Use different navigational equipment and examine the compass error (Different important navigational equipment – sextant, azimuth mirror, pelorus, chronometer.)’ the learner require cognitive and practical skills to accomplish tasks that involve understanding requirements; then as per requirements deciding which operations/procedure/tools will achieve desired result; planning the sequence of operations to maximum effectiveness; constantly checking and reviewing plan, etc., all of which involve problem solving and decision making.</p> <p>Hence NSQF Level is 5 for this descriptor.</p>	
<b>Core skill</b>	<p><b>Desired Mathematical Skills</b></p> <ul style="list-style-type: none"> <li>• Explain science in the field of study including simple machine.</li> </ul> <p><b>Understanding of social/political</b></p> <ul style="list-style-type: none"> <li>• Explain personnel finance, entrepreneurship and manage/organize</li> </ul>	<p>The learning outcomes for example ‘Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal &amp; societal growth ’ and ‘Interpret &amp; use formal and technical communication’ are the learning outcomes where the learner needs to</p>	5

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Title/Name of qualification/component: VESSEL NAVIGATOR		Level: 5	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<p>related task in day to day work for personal &amp; societal growth.</p> <p><b>Organizing information and communication</b></p> <ul style="list-style-type: none"> <li>Interpret &amp; use formal and technical communication.</li> </ul>	<p>display desired mathematical skill; understanding of social, political; and some skill of collecting and organizing information, communication.</p> <p>Hence NSQF Level is 5 for this descriptor.</p>	
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Analyse different advance ship stability features and arrange loading, discharging, shifting cargo onboard for stability. (<i>Different advance ship stability features – Centre of Gravity, Centre of buoyancy, transverse stability, list, heel.</i>)</li> <li>Explain conservation, management of marine fishery, handling of fish on board and comply such in day to day work.</li> </ul>	<p>The role of Vessel Navigator is independently responsible to perform the work as per specifications followed by analysis of what needs to be done based on their understanding of various vessels navigators, navigation equipment, principles and standards to achieve desired outcome.</p> <p>Here the learner takes responsibility for own work and learning and some responsibility of other's works and learning.</p> <p>Hence NSQF Level is 5 for this descriptor.</p>	5

**NSQF QUALIFICATION FILE****Approved in 24<sup>th</sup> NSQC Dated 27<sup>th</sup> Feb, 2020****SECTION 3****EVIDENCE OF NEED**

26	<p><b>What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?</b></p> <table border="1" data-bbox="339 562 1390 1711"> <thead> <tr> <th data-bbox="339 562 627 707"><b>Basis</b></th> <th data-bbox="627 562 1390 707"><b>In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="339 707 627 1088">Need of the qualification</td> <td data-bbox="627 707 1390 1088">Capital Goods and Manufacturing Sector has a significant presence of organized as well as unorganized skilled manpower requirement. This sector is poised to grow exponentially in the years to come and is highly labor intensive and there are many emerging trends in this sector. Hence the qualification has been designed keeping in view to cater to the ever-increasing demand of skilled manpower in consultation with stakeholders.</td> </tr> <tr> <td data-bbox="339 1088 627 1514">Industry Relevance</td> <td data-bbox="627 1088 1390 1514">The job role defined for the qualification is as per the National Classification of Occupations 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. Moreover, the training is imparted in ITIs/NSTIs/MSTIs/BTC/ BTPs/ Industries / Establishments etc. where such requirement is available. This justifies the qualification is very much relevant for industry.</td> </tr> <tr> <td data-bbox="339 1514 627 1637">Usage of the qualification</td> <td data-bbox="627 1514 1390 1637">The Proposed qualification will create skilled Technician for various establishments in different Sectors.</td> </tr> <tr> <td data-bbox="339 1637 627 1711">Estimated uptake</td> <td data-bbox="627 1637 1390 1711">The present seating capacity is 189.</td> </tr> </tbody> </table>	<b>Basis</b>	<b>In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</b>	Need of the qualification	Capital Goods and Manufacturing Sector has a significant presence of organized as well as unorganized skilled manpower requirement. This sector is poised to grow exponentially in the years to come and is highly labor intensive and there are many emerging trends in this sector. Hence the qualification has been designed keeping in view to cater to the ever-increasing demand of skilled manpower in consultation with stakeholders.	Industry Relevance	The job role defined for the qualification is as per the National Classification of Occupations 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. Moreover, the training is imparted in ITIs/NSTIs/MSTIs/BTC/ BTPs/ Industries / Establishments etc. where such requirement is available. This justifies the qualification is very much relevant for industry.	Usage of the qualification	The Proposed qualification will create skilled Technician for various establishments in different Sectors.	Estimated uptake	The present seating capacity is 189.
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Usage of the qualification	The Proposed qualification will create skilled Technician for various establishments in different Sectors.										
Estimated uptake	The present seating capacity is 189.										
27	<p><b>Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences.</b></p> <p>The qualification originally designed for Craftsman Training Scheme is in existence for many years and approved by DGT (Regulatory Body) under</p>										

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	Ministry of Skill Development and Entrepreneurship, Govt. of India.
28	<p><b>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 presenting a duplicate qualification</b></p> <p>The qualification is originally designed and approved by DGT for the Craftsman Training Scheme and is in existence for many years. No such duplicate qualification of same duration and competencies exists.</p>
29	<p><b>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</b></p> <ul style="list-style-type: none"> <li>• The research wing of CSTARI &amp; DGT reviews and updates the qualification, in consultation with industries and other stakeholders, on a regular basis by conducting trade committee meetings.</li> <li>• DGT will monitor any duplicity by comparing existing qualifications with upcoming ones in the National Qualifications Register (NQR) and relevant sectors.</li> </ul>

**SECTION 4****EVIDENCE OF PROGRESSION**

30	<p><b>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</b></p> <p>On completion of the training the trainee will have an opportunity to move in vertical/horizontal pathways to promote to higher designations. The learner can further undergo other specialised courses to excel in the relevant field.</p> <pre> graph LR     A[Technician] --&gt; B[Senior Technician]     B --&gt; C[Supervisor]     C --&gt; D[Manager]     B --&gt; E[Entrepreneur] </pre>
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