

MECHANIC AGRICULTURAL MACHINERY

NSQF LEVEL- 6



SECTOR- AUTOMOTIVE

COMPETENCY BASED CURRICULUM

CRAFT INSTRUCTOR TRAINING SCHEME (CITS)



GOVERNMENT OF INDIA

Ministry of Skill Development & Entrepreneurship

Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

EN-81, Sector-V, Salt Lake City, Kolkata – 700091

MECHANIC AGRICULTURAL MACHINERY

(Engineering Trade)

SECTOR – AUTOMOTIVE

(Revised in 2019)

Version 1.1

CRAFT INSTRUCTOR TRAINING SCHEME (CITS)

NSQF LEVEL - 6

Developed By
Government of India
Ministry of Skill Development and Entrepreneurship
Directorate General of Training
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
EN-81, Sector-V, Salt Lake City,
Kolkata – 700 091
www.cstaricalcutta.gov.in

CONTENTS

Sl. No.	Topics	Page No.
1.	Course Overview	1
2.	Training System	2
3.	General Information	6
4.	Job Role	8
5.	Learning Outcome	9
6.	Course Content	10
7.	Assessment Criteria	21
8.	Infrastructure	25
	Annexure I –List of Trade Experts	34



Skill India
 कौशल भारत - कुशल भारत

1. COURSEOVERVIEW

The Craft Instructor Training Scheme is operational since inception of the Craftsmen Training Scheme. The first Craft Instructors' Training Institute was established in 1948. Subsequently, 6 more institutes namely, Central Training Institute for Instructors (now called as National Skill Training Institute (NSTI)), NSTI at Ludhiana, Kanpur, Howrah, Mumbai, Chennai and Hyderabad were established in 1960 by DGT. Since then the CITS course is successfully running in all the NSTIs across India as well as in DGT affiliated institutes viz. Institutes for Training of Trainers (IToT). This is a competency based course of one year duration. "Mechanic Agricultural Machinery" CITS trade is applicable for Instructors of "Mechanic Agricultural Machinery" Trade only.

The main objective of Craft Instructor training programme is to enable Instructors explore different aspects of the techniques in pedagogy and transferring of hands-on skills so as to develop a pool of skilled manpower for industries, also leading to their career growth & benefiting society at large. Thus promoting a holistic learning experience where trainee acquires specialized knowledge, skills & develops attitude towards learning & contributing in vocational training ecosystem.

This course also enables the instructors to develop instructional skills for mentoring the trainees, engaging all trainees in learning process and managing effective utilization of resources. It emphasizes on the importance of collaborative learning & innovative ways of doing things. All trainees will be able to understand and interpret the course content in right perspective, so that they are engaged in & empowered by their learning experiences and above all, ensure quality delivery.

2. TRAINING SYSTEM

2.1 GENERAL

CITS courses are delivered in National Skill Training Institutes (NSTIs) & DGT affiliated institutes viz., Institutes for Training of Trainers (IToT). For detailed guidelines regarding admission on CITS, instructions issued by DGT from time to time are to be observed. Further complete admission details are made available on NIMI web portal <http://www.nimionlineadmission.in>. The course is of one-year duration. It consists of Trade Technology (Professional skills and Professional knowledge), Training Methodology and Engineering Technology/ Soft skills. After successful completion of the training programme, the trainees appear in All India Trade Test for Craft Instructor. The successful trainee is awarded NCIC certificate by DGT.

2.2 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of one year:

S No.	Course Element	Notional Training Hours
1.	Trade Technology	
	Professional Skill (Trade Practical)	640
	Professional Knowledge (Trade Theory)	240
2.	Engineering Technology	
	Workshop Calculation & Science	80
	Engineering Drawing	120
3.	Training Methodology	
	TM Practical	320
	TM Theory	200
	Total	1600

2.3 PROGRESSION PATHWAYS

- Can join as an Instructor in vocational training Institute/ technical Institute.
- Can join as a supervisor in Industries.

2.4 ASSESSMENT & CERTIFICATION

The CITS trainee will be assessed for his/her Instructional skills, knowledge and attitude towards learning throughout the course span and also at the end of the training program.

a) The Continuous Assessment (Internal) during the period of training will be done by **Formative Assessment Method** to test competency of instructor with respect to assessment criteria set against each learning outcomes. The training institute has to maintain an individual trainee portfolio in line with assessment guidelines. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in.

b) The **Final Assessment** will be in the form of **Summative Assessment Method**. The All India Trade Test for awarding National Craft Instructor Certificate will be conducted by DGT at the end of the year as per the guidelines of DGT. The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The external examiner during final examination will also check the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS CRITERIA

Sl. No.	Subject	Marks	Internal Assessment	Full Marks	Pass Marks		
					Exam	Internal Assessment	
1.	Trade Technology	Trade Theory	100	40	140	40	24
		Trade Practical	200	60	260	120	36
2.	Engineering Technology	Workshop Cal. & Sc.	50	25	75	20	15
		Engineering Drawing	50	25	75	20	15
3.	Training Methodology	TM Practical	200	30	230	120	18
		TM Theory	100	20	120	40	12
Total Marks		700	200	900	360	120	

The minimum pass percent for Trade Practical, TM practical Examinations and Formative assessment is 60% & for all other subjects is 40%. There will be no Grace marks.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. While assessing, the major factors to be considered are approaches to generate solutions to specific problems by involving standard/non-standard practices.

Due consideration should also be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising of the following:

- Demonstration of Instructional Skills (Lesson Plan, Demonstration Plan)
- Record book/daily diary
- Assessment Sheet
- Progress chart
- Video Recording
- Attendance and punctuality
- Viva-voce
- Practical work done/Models
- Assignments
- Project work

Evidences of internal assessments are to be preserved until forthcoming yearly examination for audit and verification by examining body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
(a) Weightage in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of an acceptable standard of crafts instructorship with occasional guidance and engage students by demonstrating good attributes of a trainer.	<ul style="list-style-type: none"> • Demonstration of fairly good skill to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Average engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A fairly good level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Occasional support in imparting effective training.
(b) Weightage in the range of 75%-90% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess	<ul style="list-style-type: none"> • Demonstration of good skill to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field.

<p>learners which demonstrates attainment of a reasonable standard of crafts instructorship with little guidance and engage students by demonstrating good attributes of a trainer.</p>	<ul style="list-style-type: none"> • Above average engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A good level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Little support in imparting effective training.
<p>(c) Weightage in the range of more than 90% to be allotted during assessment</p>	
<p>For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of a high standard of crafts instructorship with minimal or no support and engage students by demonstrating good attributes of a trainer.</p>	<ul style="list-style-type: none"> • Demonstration of high skill level to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Good engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A high level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Minimal or no support in imparting effective training.

Skill India
कौशल भारत - कुशल भारत

3. GENERAL INFORMATION

Name of the Trade	MECHANIC AGRICULTURAL MACHINERY-CITS
Trade Code	DGT/ 4036
NCO – 2015	7233.2800,2356.0100
NSQF Level	Level-6
Duration of Craft Instructor Training	One Year
Unit Strength (No. Of Student)	25
Entry Qualification	Degree in Agricultural Engineering from recognized University. OR Diploma in Agricultural Engineering from recognized Board / University. OR NTC/ NAC passed in the Mechanic Agricultural Machinery or other related trades.
Minimum Age	18 years as on first day of academic session.
Space Norms	120 Sq. m
Power Norms	10 KW
Instructor's Qualification for	
1. Mechanic Agricultural Machinery -CITS Trade	B.Voc/Degree in Agricultural Engineering from AICTE/UGC recognized University with two years experience in relevant field. OR 03 years Diploma in Agricultural Engineering from AICTE/recognized Board / University or relevant Advanced Diploma (Vocational) from DGT with five years experience in relevant field. OR NTC/ NAC passed in the Mechanic Agricultural Machinery with seven years experience in relevant field. Essential Qualification: National Craft Instructor Certificate (NCIC) in Mechanic Agricultural Machinery, in any of the variants under DGT.
2. Workshop Calculation & Science	B.Voc/Degree in any Engineering from AICTE/ UGC recognized Engineering College/ university with two years experience in relevant field. OR 03 years Diploma in Engineering from AICTE /recognized board of technical education or relevant Advanced Diploma (Vocational) from

	<p>DGT with five years' experience in the relevant field. OR NTC/ NAC in any Engineering trade with seven years experience in relevant field.</p> <p>Essential Qualification: National Craft Instructor Certificate (NCIC) in relevant trade OR NCIC in RoDA or any of its variants under DGT</p>					
3. Engineering Drawing	<p>B.Voc/Degree in Engineering from AICTE/ UGC recognized Engineering College/ university with two years experience in relevant field. OR 03 years Diploma in Engineering from AICTE /recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with five years' experience in the relevant field. OR NTC/ NAC in any one of the 'Mechanical group (Gr-I) trades categorized under Engg. Drawing'/ D'man Mechanical / D'man Civil' with seven years experience.</p> <p>Essential Qualification: National Craft Instructor Certificate (NCIC) in relevant trade OR NCIC in RoDA / D'man (Mech /civil) or any of its variants under DGT</p>					
4. Training Methodology	<p>B.Voc/Degree in any discipline from AICTE/ UGC recognized College/ university with two years experience in training/ teaching field. OR Diploma in any discipline from recognized board / University with five years experience in training/teaching field. OR NTC/ NAC passed in any trade with seven years experience in training/ teaching field.</p> <p>Essential Qualification: National Craft Instructor Certificate (NCIC) in any of the variants under DGT / B.Ed /ToT from NITTTR or equivalent.</p>					
5. Minimum Age for Instructor	21 Years					
Distribution of training on Hourly basis: (Indicative only)						
Total Hrs /week	Trade Practical	Trade Theory	Workshop Cal. & Sc.	Engg. Drawing	TM Practical	TM Theory
40 Hours	16 Hours	6 Hours	2 Hours	3 Hours	8 Hours	5 Hours

4. JOB ROLE

Brief description of job roles:

Manual Training Teacher/Craft Instructor; instructs students in ITIs/Vocational Training Institutes in respective trades as per defined job role. Imparts theoretical instructions for the use of tools & equipment of related trades and related subjects. Demonstrate process and operations related to the trade in the workshop; supervises, assesses and evaluates students in their practical work. Ensures availability & proper functioning of equipment and tools in stores.

Agriculture Engineering Technician; Agriculture Engineering Technician maintains, services, repairs or overhauls different farm equipment such as Tractors, Power tillers, Sprayers, Drillers, etc. Receives instructions from Senior Engineers. Studies standing duty chart, sketches, blue prints, etc. and decides methods of work to be adopted. Draws necessary stores, examines their suitability, and issues them to respective workers. Instructs and guides his subordinates on machines and tools to be used, accuracy required, process of work and other details to ensure correct repairs or overhauling. Checks completed work, makes necessary adjustments or replacements. Guides farmers in proper use and upkeep of farm equipment. Lends machines on hire to farmers. Sells spare parts of farm machinery and implements. Prepares contour maps by taking levels and plane table surveying. Examines land and prepares estimates for reforming the land to make it suitable for cultivation. Prepares plans for field channels for surface and sub-surface drainage. Provides bench terraces in hill areas and guides installation of sprinkler irrigation equipment and accessories. May design and fabricate agricultural machinery. May also sell pesticides and fertilizers.

Reference NCO 2015:

- a) 2356.0100-Manual Training Teacher/Craft Instructor.
- b) 7233.2800-Agriculture Engineering Technician.

5. LEARNING OUTCOME

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

5.1 TRADE TECHNOLOGY

1. Analyse & implement the quality management techniques and safe working practices in workplace; evaluate measurement of tractor's dimensions.
2. Manage independently the servicing of diesel engine, perform daily periodical maintenance of tractor & hitching of agricultural implements with tractor.
3. Monitor checking, repairing, servicing & replacement of major components and assemblies of different types of ploughs, rotavator, disc harrow, cultivator, Tracer, leveller, ditcher & bund former.
4. Perform and manage independently installation, testing, servicing & replacement of major components & assemblies of various types of digger, seed drill machine, planter machine, transplanter Fertilizer applicator, and assess the calibration of seed drill machine & Planter Machine .
5. Review the installation, testing, repair & servicing of different types of pump, irrigation valve & hydrants, Power tiller & Power weeder.
6. Monitor testing, repairing, servicing & replacement of major components and assemblies of farming tools, equipments & machines.
7. Manage independently operations, adjustments, periodical maintenance & care of winnower, cleaner & grader.
8. Plan & execute independently servicing of rice huller, polisher, feed grinder-cum-mixer, hammer mill.
9. Review performance of grain handling, seed treating and drying equipment. & assess preparation of log books of Tractor & agricultural machinery.
10. Plan & organise service schedule of Farm machinery (Off season storage).

6. COURSE CONTENT

SYLLABUS FOR MECHANIC AGRICULTURAL MACHINERY– CITSTRADE			
TRADE TECHNOLOGY			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
Practical 16 Hrs Theory 06 Hrs	Analyze & implement the quality management techniques and safe working practices in workplace; evaluate measurement of tractor's dimensions.	1. Practice of safety precaution to be observed in the MAM section & workshop & Practice 5 S & 7 QC techniques in the MAM workshop. 2. Practice of different working system of tractor with the Measurement of dimensions of tractor. 3. Servicing of engine. 4. Dismantling & assembling of hydraulic pump & distributor. 5. Set and adjust hydraulic pressure at ideal rpm of engine. 6. Work on agriculture machinery by handling farm machinery.	<ul style="list-style-type: none"> • Introduction to the trade curriculum. • Importance of the trade in the advancement of agriculture technology in the country. • Concept of 5 S & 7 QC tools, time management as employed for quality circle. • Importance of healthy environment. • Types of tractor. • Different system of tractor. • Technical terms used in tractor. • Major dimension of tractor. • Types of engine, working & its components. • Daily & periodical maintenance.
Practical 16 Hrs Theory 06 Hrs	Manage independently the servicing of diesel engine; perform daily periodical maintenance of tractor & hitching of agricultural implements with tractor.	7. Hitching practice of trailed type implements. 8. Hitching practice of mounted type implements. 9. Field operation & adjustments of trailed & mounted type implements.	<ul style="list-style-type: none"> • Tillage, Types of tillage & their uses. • Method of hitching. • Importance of weight transfer. Considerations while using mounted and semi mounted implements. Methods of field operation.
Practical 96Hrs Theory 36Hrs	Monitor checking, repairing, servicing & replacement of major components and assemblies of different types of	10. Servicing, Dismantling & assembling of Mould Board plough. 11. Measuring Horizontal & Vertical suction. 12. Workshop adjustments, hitching, methods of	<ul style="list-style-type: none"> • Function & working Principle of Mould Board Plough. • Constructional details Workshop adjustments. • Methods of field operation. Recommended speeds for operation.

ploughs, rotavator, disc harrow, cultivator, Tracer, leveler, ditcher & bund former.	ploughing, field operation & adjustment.	<ul style="list-style-type: none"> • Daily & Periodical maintenance. • Fault & remedies.
	13. Servicing, Dismantling & assembling of Disc plough. 14. Measuring Disc angle & Tilt angle. 15. Workshop adjustments, hitching, methods of ploughing, field operation & adjustment.	<ul style="list-style-type: none"> • Function & working Principle of Disc Plough. • Constructional details. • Workshop adjustments. • Methods of field operation. Recommended speeds for operation. • Daily & Periodical maintenance. • Fault & remedies.
	16. Servicing of sub soiler. 17. Dismantling & assembling of chisel plough. 18. Hitching of sub soiler/chisel plough. 19. Workshop adjustments. 20. Field operation & adjustment.	<ul style="list-style-type: none"> • Function & working Principle of Sub soiler & chisel plough. • Constructional details. • Workshop adjustments. • Methods of field operation. Recommended speeds for operation. • Daily & Periodical maintenance. • Fault & remedies.
	21. Servicing, Dismantling & assembling of rotavator. 22. Hitching of rotavator. 23. Workshop adjustments, hitching & field operation.	<ul style="list-style-type: none"> • Function & working Principle of rotavator. • Constructional details. • Workshop adjustments. • Methods of field operation. Recommended speeds for operation. • Daily & Periodical maintenance. • Fault & remedies.
	24. Servicing, Dismantling & assembling of disc harrows (Single/offset type/double action), Measurement of gang angle. 25. Servicing, Dismantling & assembling of bar/power harrows. 26. Servicing of spring/blade harrow. 27. Hitching arrangements,	<ul style="list-style-type: none"> • Function & working of disc harrow. • Types of harrow & their uses. Constructional details. • Function & working of Rotavator. • Workshop adjustments. • Method of hitching. • Difference between disc

		<p>28. Field operation & workshop adjustments.</p>	<p>harrow & drag harrow.</p> <ul style="list-style-type: none"> • Difference between disc harrow & disc plough. • Daily & periodical maintenance. • Fault & remedies.
		<p>29. Servicing, Dismantling & assembling of cultivator (spring/rigid).</p> <p>30. Setting of cultivator with the help of floor diagram.</p> <p>31. Workshop adjustment, Hitching arrangements, field operation & adjustments.</p>	<ul style="list-style-type: none"> • Function & working of cultivator. • Types of cultivator. • Construction details & uses. • Common types of shovels & sweeps. • Methods of field operation. Recommended speeds for operation. • Daily & periodical maintenance. • Fault & remedies.
		<p>32. Servicing, Dismantling & assembling of scraper, leveller, ditchers & bund former.</p> <p>33. Workshop adjustments, hitching arrangements.</p> <p>34. Practice of field operation & adjustments.</p>	<ul style="list-style-type: none"> • Function & working of scraper/blade, ditchers & bund former. • Construction details & uses. • Methods of field operation. • Recommended speeds for operation. • Prime mover and driving practice adjustment. • Daily & periodical maintenance. • Fault & remedies.
		<p>35. Servicing, Dismantling & assembling of lazer leveller.</p> <p>36. Workshop & hitching adjustment.</p> <p>37. Practice of field operation of lazer leveller.</p>	<ul style="list-style-type: none"> • Function & working of laze leveller. • Construction details & uses. Methods of field operation. • Recommended speeds for operation. • Prime mover and driving practice adjustment. • Daily & periodical maintenance. • Fault & remedies.

Practical 112Hrs Theory 42Hrs	Perform and manage independently installation, testing, servicing & replacement of major components & assemblies of various types of digger, seed drill machine, planter machine, transplanter Fertilizer applicator, and assess the performance of calibration of seed drill machine, Planter Machine.	38. Servicing, Dismantling& assembling of trench digger machine & post hole digger. 39. Workshop& hitching adjustment. 40. Practice of field operation & adjustments.	<ul style="list-style-type: none"> • Function & working of Trench digger & Post hole digger. • Construction details & uses. • Methods of field operation. • Recommended speeds for operation. • Prime mover and driving practice adjustment. • Daily & periodical maintenance. • Fault& remedies.
		41. Servicing, Dismantling& assembling of Seed drill machine. 42. Practice in calibration of seed &fertilizer metering devices rates. 43. Workshop & hitching, field operation & adjustments of special drills such as zero till, strip drill/roto drill & happy seeder. 44. Practice of field operation of special drills.	<ul style="list-style-type: none"> • Function & working of Seed drill machine. • Types of seed drills & their uses. • Constructional details of seed cum fertilizer drill. • Seed & fertilizer metering devices. • Constructional details of special drills such as zero till, strip drill/roto drill & Happyseeder. • Types of furrow openers, methods of transmission of power. • Calibration and mode of operation. • Guide chart for mixing fertilizers. • Recommended speeds for operation. • Daily & periodical maintenance. • Fault& remedies.
		45. Servicing, Dismantling& assembling of Planter machine. 46. Practice in calibration of planter& fertilizer rates. 47. Workshop, field operation & adjustments.	<ul style="list-style-type: none"> • Function & working of Planter machine. • Types of Planter & their uses. • Constructional details of Planter. • Seed & fertilizer metering device. • Types of furrow openers. • Methods of transmission of power. • Calibration and mode of operation.

			<ul style="list-style-type: none"> • Daily & periodical maintenance. • Fault& remedies.
		<p>48. Servicing, Dismantling& assembling of Vegetable transplanter.</p> <p>49. Setting of vegetable transplanter.</p> <p>50. Workshop adjustments.</p>	<ul style="list-style-type: none"> • Function & working of vegetable transplanter. • Types of vegetable transplanter& their uses. • Constructional details of vegetable transplanter. • Methods of transmission of power. • Recommended speeds for operation. • Daily & periodical maintenance.
		<p>51. Servicing, Dismantling& assembling of Paddy transplanter.</p> <p>52. Setting of Paddy transplanter.</p> <p>53. Practice of cage wheels. Workshop adjustments.</p>	<ul style="list-style-type: none"> • Function & working of Paddy transplanter. • Types of Paddy transplanter & their uses. • Constructional details of Paddy transplanter. • Methods of transmission of power. • Recommended speeds for operation. • Daily & periodical maintenance.
		<p>54. Servicing, Dismantling& assembling of fertilizer applicator.</p> <p>55. Practice of calibrations of fertilizer applicator.</p> <p>56. Workshop adjustments.</p>	<ul style="list-style-type: none"> • Function & working of fertilizer applicator. • Types of fertilizer applicator & their uses. • Constructional details. • Methods of transmission of power. • Calibration & workshop adjustments. • Recommended speeds for operation. • Daily& periodical maintenance.

Practical 64Hrs Theory 24Hrs	Review the installation, testing, repair & servicing of different types of pump, irrigation valve & hydrants, Power tiller & Power weeder.	57. Dismantling & assembling of volute type centrifugal pump. 58. Preparing foundations and installing a pumping set. 59. Adjustments and operation of a pumping set.	<ul style="list-style-type: none"> • Function & working of centrifugal pump. • Study of boring and its operation. • Types of Pumps & their uses. • Types of irrigation systems. • Constructional details. • Methods of transmission of power. • Recommended speeds for operation. • Daily & periodical maintenance.
		60. Servicing, Dismantling & assembling of a submersible pump. 61. Installation of HDPE, QRC, PVC & dipper pipe line.	<ul style="list-style-type: none"> • Function & working of submersible pump. • Types of pump & the uses. • Constructional details. • Methods of transmission of power. • Description of tools and equipment required for boring a tube well. • Daily & periodical maintenance.
		62. Installing sprinkler and fogger. 63. Repairing and adjusting of irrigation valves, and hydrants. 64. Installing pop-up and drippers. 65. Installing drippers on level/hilly ground. 66. Field operation & adjustment (angular/ full circle).	<ul style="list-style-type: none"> • Function & working of sprinkler/Pop up, fogger and drip irrigation. • Pump selection, common prime movers, and coupling devices. • Different types of irrigation pipes Working principles of valves and hydrants. • Methods of field operation & adjustment. • Daily and periodical Maintenance.
		67. Servicing, Dismantling & assembling of Power tiller/power weeder. 68. Servicing of rotary unit of power tiller. 69. Workshop & hitching adjustment. 70. Practice of field operation & adjustments.	<ul style="list-style-type: none"> • Function & working of power tiller/power weeder. • Types of power tillers, their uses. • Constructional details. • Method of power transmission for different field operation with different attachments. • Common types of weeds

			<p>and their control.</p> <ul style="list-style-type: none"> • Methods of weed control. Constructional detail of power weeder. • Daily and periodical maintenance.
<p>Practical 224Hrs</p> <p>Theory 84Hrs</p>	<p>Monitor testing, repairing, servicing & replacement of major components and assemblies of farming tools, equipments & machines.</p>	<p>71. Practice with computer. General purpose & special purpose computer.</p> <p>72. Practice on data base creation with MS access and data base application.</p>	<ul style="list-style-type: none"> • Introduction to the trade curriculum. • Importance of the trade in the advancement of agriculture technology in the country. Use of computer. • Features and applications. • Data types. Physical & logical concept of data base.
		<p>73. Servicing, Dismantling & assembling of Knapsack Sprayer & duster.</p> <p>74. Calibration of Sprayer & duster.</p> <p>75. Servicing of fogging machine.</p> <p>76. Servicing of aero blast sprayer, cotton sprayer, and high clearance sprayer.</p> <p>77. Field operation workshop adjustments.</p>	<ul style="list-style-type: none"> • Function & working of sprayer & duster, fogger, cotton sprayer, aero blast sprayer & high clearance sprayer. • Types & their uses. • Constructional details. • Calibration of sprayer & duster. • Recommended speeds for operation. Methods of transmission of power. • Common accidents and their prevention. • Daily & periodical maintenance.
		<p>78. Servicing, Dismantling & assembling of reaper, straw reaper & reaper binder machine.</p> <p>79. Hitching and fitting with prime mover.</p> <p>80. Field operation & Workshop adjustments.</p>	<ul style="list-style-type: none"> • Function & working of reaper, straw reaper & reaper binder machine. • Types & their uses. • Constructional details. • Recommended speeds for operation. • Methods of transmission of power. • Common accidents and their prevention. • Daily & periodical maintenance.
		<p>81. Servicing, Dismantling & assembling of thresher, maize sheller & groundnut</p>	<ul style="list-style-type: none"> • Function & working of thresher, maize Sheller & groundnut decorticator.

		<p>decorticator. 82. Fitting with prime mover. 83. Field operation & adjustment.</p>	<ul style="list-style-type: none"> • Types & their uses. • Constructional details. • Recommended speeds for operation. • Methods of transmission of power. • Common accidents and their prevention. • Daily & periodical maintenance.
		<p>84. Servicing, Dismantling of cutter bar assembly, feeder unit, threshing unit, separating unit. 85. Checking, repairing and replacing the defective components. 86. Assembling the Components of different systems of combine harvester. 87. Practice with combine on different components systems of combine harvester. 88. Driving practice of combine harvester.</p>	<ul style="list-style-type: none"> • Function & working of combine harvester. • Types of combiner harvester & their uses. • Flow path material of combine harvesters. • Transmission & drive systems. • Workshop adjustments • Methods of field operation. • Field adjustments according to crop & soil condition. • Types of grain losses, their causes and remedies. • Factors affecting the performance of a combine. • Recommended speeds for operation. • Methods of transmission of power. • Common accidents and their prevention. • Daily & periodical maintenance.
		<p>89. Servicing, Dismantling & assembling of mower, fodder harvester, chaff cutter & silage cutter. 90. Hitching and fitting with prime mover. 91. Field operation & adjustments.</p>	<ul style="list-style-type: none"> • Function & working of mower, fodder harvester, chaff cutter & silage cutter, Types & their uses. • Need of green harvesting equipment. • Constructional details. • Methods of transmission of power. • Common accidents and their prevention. • Daily & periodical maintenance.

		<p>92. Servicing, Dismantling and assembling rotary harvester, haybailer.</p> <p>93. Hitching and fitting with prime mover.</p> <p>94. Field operation and adjustments.</p>	<ul style="list-style-type: none"> • Function and working of rotary harvester. Function and working of hay-bailer. • Workshop adjustments. • Method of field • Operation. • Method of transportation. • Common accidents and their prevention. • Daily & periodical maintenance.
		<p>95. Servicing, Dismantling & assembling of groundnut digger, potato/onion digger.</p> <p>96. Attachment of diggers with prime- movers.</p> <p>97. Field operation and adjustments.</p>	<ul style="list-style-type: none"> • Function and working of groundnut digger, potato/onion digger. • Need & importance of root harvesting. Workshop adjustments. Method of field operation. Method of transportation. • Common accidents and their prevention. Daily & periodical maintenance.
<p>Practical 32Hrs</p> <p>Theory 12Hrs</p>	<p>Manage independently operations, adjustments, periodical maintenance & care of winnower, cleaner & grader.</p>	<p>98. Servicing of winnower, cleaner & grader.</p> <p>99. Fitting with prime mover attachment.</p> <p>100. Operation of winnower, cleaner and grader.</p> <p>101. Workshop adjustments & operation.</p>	<ul style="list-style-type: none"> • Function and working of winnower, cleaner & grader. • Need & importance of winnowing. • Types and their uses. Workshop adjustments. • Prime mover attachments & driving system. • Method of field operation. • Method of transportation. • Common accidents and their prevention. • Daily & periodical maintenance.
<p>Practical 32Hrs</p> <p>Theory 12Hrs</p>	<p>Plan & execute independently servicing of rice huller, polisher, feed grinder-cum-mixer, hammer mill.</p>	<p>102. Servicing of rice huller, polisher, feed grinder cum mixer, hammer mill.</p> <p>103. Fitting with prime mover.</p> <p>104. Operation of rice huller, polisher, feed grinder cum mixer, hammer mill.</p> <p>105. Workshop adjustments & operation.</p>	<ul style="list-style-type: none"> • Function and working of rice huller, polisher, feed grinder cum mixer, hammer mill, Need & importance, Types and their uses. • Workshop adjustments. • Prime mover attachments & driving system. • Method of transportation. • Common accidents and their prevention.

			<ul style="list-style-type: none"> • Daily & periodical maintenance.
<p>Practical 32Hrs</p> <p>Theory 12Hrs</p>	<p>Review performance of grain handling, seed treating and drying equipment. & assess preparation of log books of Tractor & agricultural machinery.</p>	<p>106. Operate grain drying and storing plant.</p> <p>107. Practice different aspects of the construction, adjustments, and controls.</p> <p>108. Practice operation of grain handling seed treating and drying equipment.</p> <p>109. Practice of silo structure.</p>	<ul style="list-style-type: none"> • Working of fans and blowers. • Purpose of grain auger, bucket elevator etc. • Constructional details and working of a grain drier. Grain storage structure i.e. concrete and sheet metal bins (silo structure). • Methods and instruments used for measuring moisture contents of grains. • Equipment and methods used for treating and fumigating seeds and grains.
		<p>110. Practice Preparation of Log books.</p> <p>111. Practice of necessary records i.e. Log books of tractors, combines etc.</p> <p>112. Practice Preparation of service schedules.</p> <p>113. Practice Off season storage of farm equipment.</p>	<ul style="list-style-type: none"> • Operation of transporting and handling equipment i.e. Tractor, tractor trailer, power tiller & combine harvester.
<p>Practical 16 Hrs</p> <p>Theory 06 Hrs</p>	<p>Plan & organize service schedule of Farm machinery (Off season storage).</p>	<p>114. Practice of farm records, accounts and log books.</p> <p>115. Practice Service schedule of farm machinery.</p> <p>116. Practice Off season storing of farm equipment.</p> <p>117. Preparing layout and list of equipment of a typical farm workshop.</p>	<ul style="list-style-type: none"> • Procedure and principle for efficient management and organization of a farm. • Discussion on different farm shop layout.

SYLLABUS FOR CORE SKILLS
1. Workshop Calculation & Science(Common for all Engineering CITS trades) (80 Hrs)
2. Engineering Drawing (Group I) (120Hrs)
3. Training Methodology (Common for all trades) (320Hrs + 200Hrs)

Learning outcomes, assessment criteria, syllabus and Tool List of above Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in



Skill India
 कौशल भारत - कुशल भारत

7. ASSESSMENT CRITERIA

LEARNING OUTCOME	ASSESSMENT CRITERIA
TRADE TECHNOLOGY (TT)	
<p>1. Analyse & implement the quality management techniques and safe working practices in workplace; evaluate measurement of tractor's dimensions.</p>	<p>Analyze, plan & execute procedures to achieve a safe working environment in line with occupational health and safety regulations.</p> <p>Demonstrate implementation of safety precaution, 5 S techniques, 7QC techniques in the MAM workshop.</p> <p>Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.</p> <p>Demonstrate management of store/dispose off dangerous goods and substances according to site policy and procedures following safety regulations and requirements.</p> <p>Analyze measurement of dimensions of tractor and explain procedures for servicing of diesel engine.</p> <p>Monitor dismantling & assembling of hydraulic pump & distributor. Set and adjust hydraulic pressure at ideal rpm of engine.</p>
<p>2. Manage independently the servicing of diesel engine, perform daily periodical maintenance of tractor & hitching of agricultural implements with tractor.</p>	<p>Plan & demonstrate the sequence of hitching of agriculture implements.</p> <p>Plan & execute work processes with due consideration to safety precautions during hitching practice.</p> <p>Monitor Field operation & adjustments of trailed & mounted type implements.</p>
<p>3. Monitor checking, repairing, servicing & replacement of major components and assemblies of different types of ploughs, rotavator, disc harrow, cultivator, Tracer, leveller, ditcher & bund former.</p>	<p>Review the selection of tools & equipments and demonstrate care and safety measures in the way specified by manufacturers to dismantle and assemble Mould Board plough/ disc plough/ chisel plough/ rotavator/ disc harrows (Offset type/Single & Double action)/ cultivator (spring/rigid)/ scraper/blade, ditchers & bund former/ lazer leveller.</p> <p>Analyze the Technical data to be followed during removal and replacement procedures of Mould Board Plough.</p> <p>Evaluate measure and adjustment of Horizontal & Vertical suction.</p> <p>Assess measurement and adjustment of disc and tilt angle.</p> <p>Plan & execute hitching of sub soiler/ chisel plough.</p> <p>Plan & carry out workshop adjustments, hitching & field operation of rotavator.</p> <p>Check measurements and adjustment of gang angle as per given specification.</p> <p>Plan & carryout adjustment of the cultivator with the help of</p>

	<p>floor diagrams.</p> <p>Explain to carryout Setting of shovels and sweeps.</p>
<p>4. Perform and manage independently installation, testing, servicing & replacement of major components & assemblies of various types of digger, seed drill machine, planter machine, transplanter Fertilizer applicator, and assess the calibration of seed drill machine, Planter Machine.</p>	<p>Dismantle & Assemble components/sub assemblies of trench digger machine/ Seed drill machine/ Planter machine/ Vegetable transplanter/ Paddy transplanter/ fertilizer applicators in a manner appropriate to the location & their functionality.</p> <p>Take all stipulations into account in setting up the work piece.</p> <p>Record & evaluate servicing of post hole digger as per technical Manual.</p> <p>Demonstrate review of workshop & hitching adjustment & practical field operation.</p> <p>Assess the calibration of seed & fertilizer metering devices rates.</p> <p>Plan & execute workshop & hitching, field operation & adjustments of special drills such as zero till, strip drill/roto drill & Happy seeder.</p> <p>Monitor and assess the practice of field operation of special drills.</p> <p>Select & implement care and use of safety while dismantling and assembling of trencher & post hole digger/ planters/ vegetable transplanter/ paddy transplanter/ fertilizer applicators.</p> <p>Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of trencher & post hole digger/ planters/ vegetable transplanter/ paddy transplanter/ fertilizer applicators.</p> <p>Explain & demonstrate care and use of PPE while dismantling and assembling of seed drills.</p> <p>Plan & execute to carryout calibration of seed & fertilizer rates/ Planter machine/ Vegetables transplanter/ Fertilizer applicator/ paddy transplanter.</p> <p>Select tools and materials for the job and make this availablefor use in a timely manner.</p> <p>Analyze& carryout setting of planters with different seed plates & adjust for planting/ vegetable transplanter/Paddy transplanter.</p> <p>Plan & carryout veg. transplanter adjustments/ workshop adjustments of fertilizer applicator.</p>
<p>5. Review the installation, testing, repair & servicing of different types of pump, irrigation valve & hydrants, Power tiller &Power weeder.</p>	<p>Select & implement the care and use of safety measures while dismantling and assembling of volute type centrifugal pump.</p> <p>Plan & prepare foundations and installing a pumping set.</p> <p>Demonstrate selection & use of the tools and equipment as</p>

	<p>per the specifications set by the manufacturers to dismantle and assemble volute type centrifugal pump/ submersible pump.</p> <p>Review the technical data removal and replacement procedures legal requirements while dismantling and assembling volute type centrifugal pump.</p> <p>Carryout independently adjustments of centrifugal pump.</p> <p>Plan & carryout installation /servicing of submersible Pump/ HDPE/ QRC/PVC / dipper pipe line/ sprinkler and fogger/ pop-up and drippers/ drippers on level/ hilly ground/ Power tiller/power weeder.</p> <p>Select tools and materials for the job and make this available for use in a timely manner</p> <p>Ensure implementation of care and use of safety measures while servicing of irrigation valves and hydrants.</p> <p>Apply use of the tools and equipment in the way specified by manufacturers for servicing of irrigation valves and hydrants.</p> <p>Plan & carryout installation of sprinkler, fogger, pop-up and dippers by reviewing Technical data removal and replacement procedures legal requirements.</p> <p>Plan & execute field operation & adjustment (angular/ full circle).</p>
<p>6. Monitor testing, repairing, servicing & replacement of major components and assemblies of farming tools, equipments & machines.</p>	<p>Plan & perform the servicing, dismantling & assembling of Knapsack Sprayer & Duster/ reaper/ straw reaper / reaper binder machine/ thresher/ maize Sheller & groundnut decorticator /rotary harvester/hay bailer/ groundnut digger, potato/onion digger.</p> <p>Analyze & evaluate calibration of sprayer & duster.</p> <p>Plan & execute servicing of fogging machine/ cutter bar assembly, feeder unit, threshing unit/ separating unit.</p> <p>Test, repair & replace the defective components of the machine or equipment.</p> <p>Assemble components of different systems of combine harvester.</p> <p>Carryout Field adjustment and operation of sprayers and Dusters.</p> <p>Perform hitching & fitting with prime movers/ attachment of diggers with prime movers.</p>
<p>7. Manage independently operations, adjustments, periodical maintenance & care of winnower, cleaner & grader.</p>	<p>Operate and handle adjustments of winnower, cleaner & grader.</p> <p>Perform fitting with prime mover attachment.</p> <p>Plan & execute care & periodical maintenance procedure.</p> <p>Carry out optimum & effective servicing of winnower, cleaner & grader.</p>

8. Plan & execute independently servicing of rice huller, polisher, feed grinder-cum-mixer, hammer mill.	Explain functions & working process of huller, polisher, feed grinder cum mixer, hammer mill.
	Demonstrate the operations and servicing of huller, polisher, feed grinder cum mixer, hammer mill.
	Plan & organize workshop adjustments & operations.
9. Review performance of grain handling, seed treating and drying equipment. & assess preparation of log books of Tractor & agricultural machinery.	Apply care and use of safety measures while operating grain handling, seed treating and drying equipment.
	Perform operations on grain drying & storing plant.
	Analyze different aspects of the construction, adjustments, controls.
	Demonstrate effective practice of Silo Structure.
	Plan & Prepare service schedule for the machineries.
	Plan & prepare log books for necessary records of data.
	Record & evaluate necessary specifications in Log books of tractors, combines etc.
	Care and use of safety while operating log books of Tractor, combine & Agricultural machinery.
Carryout their procedures & legal requirements.	
10. Plan & organise service schedule of Farm machinery (Off season storage).	Maintain farm records, accounts & log books.
	Develop Service schedule of farm machinery.
	Plan & execute Off season storing of farm equipment.
	Demonstrate care and use of safety measures while operating service schedule of agricultural machinery (Off season storage).
	Plan & prepare layout and list of equipment of a typical farm workshop.
Carryout required procedures for Off season storage.	

कौशल भारत - कुशल भारत

8. INFRASTRUCTURE

LIST OF TOOLS AND EQUIPMENT FOR "MECHANIC AGRICULTURAL MACHINERY" (CITS)			
For batch of 25 candidates			
S No.	Items	Specification	Quantity
A. TRAINEES TOOL KIT			
1.	Caliper spring inside	15 cm	25+1 nos.
2.	Caliper spring outside	15 cm	25+1 nos.
3.	Centre punch	100 mm	25+1 nos.
4.	Chisel cold flat	20 mm x 150 mm	25+1 nos.
5.	Feeler Gauge	26 blades(Metric)	25+1 nos.
6.	Hammer sledge	4 & 5 Kg	25+1 nos.
7.	Hammer Cross peen	0.5 kg	25+1 nos.
8.	Hammer ball peen	0.5 kg	25+1 nos.
9.	Hammer copper with handle.	1 kg	25+1 nos.
10.	Hammer plastic with handle.	0.25 kgs	25+1 nos.
11.	Hammer, Planishing.		25+1 nos.
12.	File square second cut	20 cm.	25+1 nos.
13.	File square rough.	30 cm	25+1 nos.
14.	Hand file second cut flat	20 cm	25+1 nos.
15.	Hand file second cut half-round	20 cm	25+1 nos.
16.	Hand file smooth triangular	20 cm	25+1 nos.
17.	Hand file Round	30 cm	25+1 nos.
18.	Hand file Bastard	30 cm	25+1 nos.
19.	Pliers Circlip flat nose	15 cm	25+1 nos.
20.	Pliers Circlip round nose (Internal & external)	15& 20 cm	25+1 nos.
21.	Pliers side cutting	15 cm	25+1 nos.
22.	Screw driver	150 mm x 8 mm	25+1 nos.
23.	Screw driver	200 mm x 9 mm	25+1 nos.
24.	Screw driver	300 mm x 9 mm	25+1 nos.
25.	Steel rule	15 cm	25+1 nos.
26.	Steel rule	30 cm	25+1 nos.

27.	Steel tool box with lock and key (folding type)	400 x 200 x 150 mm	25+1 nos.
28.	Dividers spring	15 cm	25+1 nos.
29.	Pipe wrench	350 mm	25+1 nos.
30.	Cleaning Tray	45 x 30 cm	25+1 nos.
31.	Plier combination	15 cm	25+1 nos.
32.	Plier side cutting	15 cm	25+1 nos.
33.	Plier round nose	15 cm	25+1 nos.
34.	Scriber bit with scribing block universal	15 cm	25+1 nos.
35.	Spanner, double ended	set of 12 metric sizes 6 mm to 32 mm.	25+1 nos.
36.	Spanner, ring	set of 12 metric size 6 mm to 32 mm	25+1 nos.
37.	Spanner socket	6-32 mm.	25+1 nos.
B. MEASURING INSTRUMENT SHOP OUTFIT			
38.	Allen key	set of 12 pieces (2 mm to 14 mm)	4 set
39.	Bearing puller screw powered/ hydraulic powered with attachments	Max spread 80, 200 and 300 mm	2 nos.
40.	Spanner socket pneumatic/power tool kit		2 sets
41.	Blow lamp.		2 nos.
42.	Cage Wheel		1 set
43.	Chain and pulley block electric type	3000 kg. Capacity	1 no.
44.	Chisel cross cut	9 x 3 mm	1 set
45.	Chisel diamond point	9 mm	1 set
46.	Chisel half round	9 mm	2 nos.
47.	Chisel cross cut	200 mm x 6 mm	2 nos.
48.	Pliers Circlip long nose internal and external type	15 cm	2 nos.
49.	Pliers Circlip long nose internal and external type	20 cm	2 nos.
50.	Dial test indicator	to read 0.25 mm	2 each
51.	Drift punch copper	15 cm	2 each
52.	Drill post.		1 each
53.	Drill twist	metric 3 mm to 12 mm x 1 mm	1 no.
54.	Drill twist	S.S. 1/8" to 1/2" x 1/64" set	1 no.

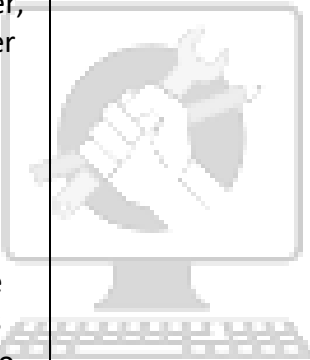
55.	Drilling machine bench 1 H.P.	to drill up to 12 mm dia	2 nos.
56.	Dynamo and voltage regulator		2 nos.
57.	Engineers square	15 cm blade	1 no.
58.	Engineers stethoscope		2 nos.
59.	Ex-tractor stud	(EZYOUT TYPE)	1 no.
60.	Fire buckets with stand		2 nos.
61.	Fire extinguisher		2 nos.
62.	Hand Drill Pneumatic type / Elect.		1 no.
63.	Hand reamers adjustable	10.5 to 11.25 mm, 11.25 to 12.75 mm, 12.75 to 14.25 mm, and 14.25 to 15.75 mm	1 no.
64.	Hand vice	37 mm	2 nos.
65.	Hand vice	up to 3.75 cm	2 nos.
66.	Hollow punch	set of seven pieces 6 mm to 15 mm	
67.	Horses and wheel choke		1 no.
68.	Hydraulic jack Hi-Lift type with trolley	capacity 3 Ton	1 no.
69.	Hydraulic Pump, control valves	(two types)	1 no.
70.	Inspection lamp with guard and wandering lead	50 ft. length	1 no.
71.	Lifting jack screw type	3050 kg.	2 nos.
72.	Lockers with 8 drawers	(standard size)	1 no.
73.	Magnet spanner set.		1 no.
74.	Mallet	(Wooden/plastic)	1 no.
75.	Marking out table	90 x 60 x 90 cm.	1 no.
76.	Mechanical jack		2 nos.
77.	Metal rack	180 x 150 x 45 cm	1 no.
78.	Vernier caliper set 10" or 8" inside and outside, depth to read inches and mm.		2 set
79.	Spanner Ring & open ended	36 to 41 mm	1 set
80.	Spanner socket pneumatic/Power tool kit		1 set
81.	Spanner, T-flax for screwing up and screwing in accessible position.		1 no.
82.	Spanners adjustable	15 cm	2 nos.
83.	Surface plate	60 x 60 cm	1 no.

84.	Taps and dies complete set in Box B.A., B.S.W., B.S.F. American and Metric.		1 set each.
85.	Tacho meter (counting type)		5 nos.
86.	Toe-in, toe-out gauge		2 nos.
87.	Torque wrench	(0 to 20 kg. meter)	1 no.
88.	Torque wrench	12-68 Nm	1 no.
89.	Tray cleaning assorted sizes.		5 nos.
90.	Triple leg grip puller with bearings attachment screw/ hydraulic powered	max. spread 80, 160, 250, 450 mm	1 no.
91.	Twist drills for ratchet brace	6 to 20 by 1.5 cm.	1 set
92.	Vernier caliper set inside and outside, depth to read inches and mm.	10" or 8"	1 no.
93.	Vice grip pliers		4 nos.
94.	Wheel alignment gauge		1 no.
95.	Wing compass	25 cm	2 nos.
96.	Screw jack double lift	4 ton capacity	4 nos

C. GENERAL INSTALLATION /MACHINERY

97.	Tractor power steering with AC Cabin	60 HP	1 no.
98.	Tractor	45 HP	1 no.
99.	Mould Board Plough	2/3 Bottom	1 no.
100.	Disc Plough	3 Bottom	1 no.
101.	Disc Plough reversible	2 Bottom	1 no.
102.	Chisel Plough	5/7 tine	1 no.
103.	Rotavator	5.5' cutting Width	1 no.
104.	Sub solier	24 -30 inch	1 no.
105.	Disc Harrow	8x8 trailed type	1 no.
106.	Disc Harrow (Mounted type) off set	14 Discs	1 no.
107.	Paddy harrow (mounted type)	14 Discs	1 no.
108.	Pulverizing Roller (Tractor Mounted) with spring loaded cultivator	9/11tyne	1 no.
109.	Bund maker (disc/blade type)		1 no.
110.	Leveler/spike Leveler	3 meter width	1 no.
111.	Laser Leveler complete with		1 set

	transmitter, receiver, control box, survey equipment		
112.	Tractor operator Front mounted dozer with Hydraulic single cylinder		1 no.
113.	Tractor operator scraper and bucket scraper		1 no.
114.	Tractor Operator ditcher		1 no.
115.	Trencher	10" to 16" Width & 4 ft depth	1 no.
116.	Tractor Operator post hole digger		1 no.
117.	Tractor Operator Zero/ strip till Seed cum fertilizer drill	9/11 rows	1 no.
118.	Tractor PTO operated multi - crop direct sowing happy seeder		1 no.
119.	Tractor Operator Seed cum fertilizer drill cum planter		1 no.
120.	Tractor operated two rows Semi /automatic potato planter		1 no.
121.	Tractor operated bed farmer cum three rows planter		1 no.
122.	Tractor operated two rows vegetable trans planter	(semi automatic)	1 no.
123.	Paddy transplanter		1 no.
124.	Sugar cane transplanter		1 no.
125.	Centrifugal Pump with electric motor		1 Unit
126.	Submersible Pump complete unit		1 no.
127.	<p>Sprinkler type and drip irrigation systems complete sets. Pipes(Different materiel & Sizes) Such as :- PVC, HDPE, QRC & Poly Tubing Dripper(Different materiel & Sizes) Jets, Foggers & Mister</p> <ul style="list-style-type: none"> • Sprinkler(Mini, Micro, angular and circular type) • Lawn sprinkler and garden pop-ups • Accessories and fitting for spray pop-ups • Low volume &High 		As per requirement

	<p>volume rain gun range 15 to 30 meter die</p> <ul style="list-style-type: none"> • Accessories and fitting for rain gun • Compression Fittings (Elbow, Elbow Treaded, Joiner, Tee, End Cap, adopter Male.) • HDPE fittings (Elbow, Elbow Treaded, Joiner, Tee, End Cap, adopter Male.) • PVC Fittings (Elbow, Elbow Treaded, Joiner, Tee, End Cap, adopter Male.) • PVC Control valve different sizes • Air Release Valve different sizes • Butterfly / G.M. Gate Valves different sizes • Fertigation Tank 30 to 160 litres • Fertigation Equipment Pump 30 to 160 litres • Filters (Primary filter) Sand, Hydro cyclone, Screen, Plastic/metal & Disc and Drip line • Poly joiner , reducer, Tee, Elbow ,End stop different sizes • Grommet hole plug different sizes • Pressure gauge • Three way cock for gauge • PVC valve box different sizes • Water meter, Brase pressure regulator and irrigation drum • Jain spanner repair tool kit & Drip line binder • Single phase electric 	 <p>India</p> <p>कुशल भारत - कुशल भारत</p>	
--	---	--	--

	motor 3 HP high speed (Booster)		
128.	Tractor PTO operated sprayer for cotton		1 no.
129.	Self propelled high clearance sprayer	20 hp diesel engine	1 no.
130.	Tractor PTO operated aero blast spray		1 no.
131.	Power operated fogging machine		1 no.
132.	Knapsack /foot sprayer	16 Liter Cap.	1 no.
133.	Power operated manure spreader		1 no.
134.	Rotary duster		1 no.
135.	Mechanical Power Weeder		1 each
136.	Tractor trailer with hydraulic system		1 no.
137.	Multi crop thresher		1 no.
138.	Groundnut decorticator		1 no.
139.	Winnowing		1 no.
140.	Self propelled riding type Reaper/Reaper winder		1 no.
141.	Straw reaper		1 no.
142.	Rotary grass mower/Grass Cutter		1 no.
143.	Power Tiller /weeder	Up to 10 HP	1 no.
144.	Prime movers	Engine Stationery type	1nos.
145.	Engine - for walking and riding type reapers		2nos.
146.	Self-propelled Combine Harvester axial flow/Track type combine Harvester fitted with AC cabin.		1 no.
147.	Tractor Operated paddy straw chopper cum spreader,		1 no.
148.	Tractor Operated Straw/HayBaler.		1 no.
149.	Chaff cutter and silage cutter		1each
150.	Field crops like wheat, Soya bean, paddy etc.		As per requirement
151.	Fodder Harvester		1 no.
152.	Tractor operated potato planter		1 no

153.	Tractor operated potato digger		1 no.
154.	Tractor operated ground nut digger		1 no.
155.	Tractor operated onion digger		1 no.
156.	Power operated Grader (wheat, maize)		1 no.
157.	Power operated potato Grader		1 no.
158.	Power Operated Cleaner		1 no.
159.	Drier (Solar/Heater)		1 no.
160.	Dal Mill		1 no.
161.	Rice Mill/Paddy dehusker		1 no.
162.	Rice Polisher		1 no.
163.	Flour Mill		1 no.
164.	Wind mill		1 no.
165.	Solar street light		1 no.
166.	Weighing balance		2 nos.
167.	Measuring tape		4 nos.
168.	Sewing Machine		1 no.
169.	Electric motor 3 Phase	10 H.P	1 no.
170.	Electric motor 3 Phase	7.5 H.P	1 no.
171.	Laptop Computers with Trade Related Software		2 nos.
172.	Desktop computer	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	13 nos.
173.	Air conditioner 1.5 ton & 2 ton		As required

D. GENERAL MACHINERY

174.	Air Compressor double pressure	12c.ft. piston type with pressure gauge	1 no.
175.	Diesel GEN Set with AMF facility	25-50 KVA	1 no
176.	Electric Arc welding Set portable (inverter type)		1 set

177.	Electric pedestal grinder with two 18 cm Wheel	18cm	1 no.
178.	Grinder with two 18 cm wheels with twist drill grinding attachment	18 cm	1 no.
179.	Mounted type three bottom mould Board 30 cm. size with coulter and jointer.	30 cm	1 no.
180.	Washing unit/Car Washer, Tractor 35 to 45 HP	35 to 45 HP	1 no.
181.	Steel Almirah large		1 no.
182.	Locker 8 drawer		1 no.
183.	Work bench with 4 vices 12.5 cm jaw.	295 x 120 x 80 cm	4 nos.
E. CLASS ROOM FURNITURE			
184.	Instructor's table and Chair (Steel)		1 set
185.	Students chairs with writing pads		25 nos.
186.	White board size	1200mm X 900 mm	1 no.
187.	Instructors lap top with latest configuration pre-loaded with operating system. and MS Office package.		1 no.
188.	LCD projector with screen.		1 no.

Skill India
कौशल भारत - कुशल भारत

ANNEXURE – I

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts and all others who contributed in revising the curriculum. Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

List of expert attended a workshop to revise syllabus of Mechanic Agricultural Machinery under CITS.			
Sl. No.	Name & Designation Sh /Mr./Ms	Organization	Remarks
1.	V Krishna Shankar, Gen. Manager	Ashok Leyland	Member
2.	G Satish Kumar, Manager	Ashok Leyland	Member
3.	GM Cholanrajan, Sr. Manager Training	Lansun Toyota, Chennai	Member
4.	M Shanavas Khan	Hinduja Foundaries	Member
5.	Dr. Abhijit KR Mandal	National Automotive Testing and R&D Infrastructure Project, Global, Automotive Research center, Chennai	Member
6.	Vadivelan	National Automotive Testing and R&D Infrastructure Project, Global, Automotive Research center, Chennai	Member
7.	Anatharaman, Proprietor	Care Center, Chennai	Member
8.	MK Gupta	Maruthi Suzuki	Member
9.	Pandey, Director	SRFMTTI, Anathapur	Member
10.	P. Thangapalam, DM- Trg	Dailmer India	Member
11.	S Gopinath, Sr. Manager	Crompton Greaves	Member
12.	RA. Armstrong	TAFE	Member
13.	B Muthukumar	Toyoto Kirloskar, New Delhi	Member
14.	J Dharsan, Asst. Mgr	Toyoto Kirloskar, Bangalore	Member
15.	C Prakash, Sr. Gen. Manager	Ashok Leyland	Member

16.	P Palanivelan, Manger	TVS Sundram Fasteners Ltd.	Member
17.	TN Umashankar, Head Manufacturing	Delphi TVS Ltd.	Member
18.	K Aravind, Regional Trainer	Bosch Ltd., Chennai	Member
19.	K Mohankumar	TAFE	Member
20.	M Sivaraman, Consultant	Delphi TVS	Member
Representatives from Academic/Professional Institutions			
21.	Dr. Ramesh A Professor	D/o Mechanical Engineering Indian Institute of Technology Madras IIT P.O., Chennai 600 036	Member
22.	Dr. A.R. Mohanty	Professor, D/o Mechanical Engg Indian Institute of Technology KharagpurKharagpur India - 721302	Member
23.	Dr. Shankar Ram C S Assistant Profesor	D/o Engineering Design Indian Institute of Technology Madras IIT P.O., Chennai 600 036	Member
24.	Prof. Nilesh J Vasa, Professor	IIT Chennai	Member
25.	Prof. G. Balaganesh, Professor	IIT Chennai	Member
26.	J. Rajakumar, Principal	Brakes India	Member
27.	S Horlyok Chelladurai, Retd.	ITI Principal	Member
DGE&T Coordinator			
28.	Shri T.C. Saravanabava	Deputy Director General (AT), DGET Headquarters	Chairman
29.	Mr. K.S. Rao, JDT	NIMI, Chennai	Member
30.	Mr. Yuvraj, DDT	ATI Chennai	Member
31.	Mr. G. Venkatesh, ADT	ATI Hyderabad	Member
32.	Mr. S.P. Rewaskar	ATI Hyderabad	Member
33.	Mr. T.N. Rudra, TO	ATI, Howrah	Member

34.	Mr. N. Ramesh Kumar, TO	ATI, Chennai	Member
35.	Mr. Akhilesh Pandey, TO	ATI, Mumbai	Member
36.	Mr. Vijayaraju, TO	ATI Hyderabad	Member
37.	Mr. R. Rajesh Kanna, TO	ATI Chennai	Member
Champion ITIs			
38.	Mr. H.S. Kalara, Principal	Govt. ITI, Chandigarh	Member
39.	Mr. A. Duraiswamy, ATO	Govt. ITI, Coimbatore	Member
40.	Mr. W. Nirmal Kumar Israel, ATO	Govt. ITI, Trichy	Member
41.	Mr. K. Thaniarasu, ATO	Govt. ITI, Trichy	Member
42.	Mr. N. Durimurugan, TO	Govt. ITI, Chengalpattu	Member
43.	Mr. Ravindernath	Govt. ITI, Ambattur	Member
44.	Palanikumar	Govt. ITI, Pudukotai, TN	Member

Skill India
कौशल भारत - कुशल भारत

