GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

**COMPETENCY BASED CURRICULUM**

# PHYSIOTHERAPY TECHNICIAN

**(Duration: One Year)**

## CRAFTSMEN TRAINING SCHEME (CTS)

## NSQF LEVEL- 4

## SECTOR – HEALTHCARE

Directorate General of Training

# PHYSIOTHERAPY TECHNICIAN

## (Non-Engineering Trade)

**(Revised in 2019)**

**Version: 1.2**

## CRAFTSMEN TRAINING SCHEME (CTS)

## NSQF LEVEL - 4

Developed By

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

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# 1. COURSE INFORMATION

During the one-year duration of “Physiotherapy Technician” trade, a candidate is trained on Professional Skill, Professional Knowledge and Employability Skill related to job role. In addition to this, a candidate is entrusted to undertake project work, extracurricular activities and on-the-job training to build up confidence. The broad components covered under Professional Skill subject are as below:-

The trainee learns to operate suitable tools and equipment and evaluate the basic outline of Physiotherapy, develops a vocabulary of appropriate terminology; trainee will be able to analyze and assemble the components of skeleton system, study of joints by using X-Ray films and also be able to differentiate various muscles. Trainee will be able to recognize basic cell structure and its organelles and also able to identify the major neural tissues. Trainee will be able to relate the anatomical position of circulatory system on mannequin. Trainee will able to categorize foods according to nutrients and assemble organs of digestive system, illustrate respiratory system and also able to arrange organs on dummy of excretory and reproductive system. They will perform Physiotherapy treatment, design treatment plan for stiff parts of body and also illustrate the effects of IRR. They will plan and execute remedial effects of cryotherapy, abstract benefits of SWD, lay out therapeutic uses of UTS and also plan a regimen to stimulate muscle. Trainee will be able to assess and create a message therapy.

The trainee will be able to carry out Physiotherapy assessment and treatment, develop exercise regimen, establish a treatment plan and also able to examine the strength of muscles. Trainee will be able to design remedy for back pain and also able to perform gait training. They will prepare assessment chart and rehabilitation protocol.

# 2. TRAINING SYSTEM

## 2.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of economy/ Labour market. The vocational training programmes are delivered under the aegis of Directorate General of Training (DGT). Craftsman Training Scheme (CTS) with variants and Apprenticeship Training Scheme (ATS) are two pioneer schemes of DGT for strengthening vocational training.

'Physiotherapy Technician' trade under CTS is one of the popular courses delivered nationwide through the network of ITIs. The course is of one year duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while Core area (Employability Skills) imparts requisite core skill, knowledge and life skills. After passing out the training programme, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

### Trainee broadly needs to demonstrate that they are able to:

- Read and interpret parameters/ documents, plan and organize work processes, identify necessary materials and tools.
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations.
- Apply professional skill, knowledge & employability skills while performing jobs.
- Check the job/ assembly as per drawing for functioning identify and rectify errors in job/ assembly.
- Document the parameters related to the task undertaken.

## 2.2 PROGRESSION PATHWAYS

- Can join industry as Physiotherapy Technician and will progress further as Senior Physiotherapy Technician, Supervisor and can rise up to the level of Physiotherapist.
- Can become Entrepreneur in the related field.
- Can join Apprenticeship programme in different types of industries leading to National Apprenticeship Certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming an instructor in ITIs.
- Can join Advanced Diploma (Vocational) courses under DGT as applicable.

## 2.3 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 | Professional Skill (Trade Practical) | 1200 |
| 2 | Professional Knowledge (Trade Theory) | 240 |
| 3 | Employability Skills | 160 |
| | **Total** | **1600** |

## 2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

a) The **Continuous Assessment** (Internal) during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute have to maintain individual trainee portfolio as detailed in assessment guideline. 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. The All India Trade Test for awarding NTC will be conducted by Controller of examinations, DGT as per the guidelines. The pattern and marking structure is being notified by DGT from time to time. **The learning outcome and assessment criteria will be basis for setting question papers for final assessment. The examiner during final examination will also check** individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

### 2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%. 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 assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/wastage as per procedure, behavioral attitude, sensitivity to 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 the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examination 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 produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices | • Demonstration of good skills and accuracy in the field of work/ assignments.<br>• A fairly good level of neatness and consistency to accomplish job activities.<br>• Occasional support in completing the task/ job. |
| (b)Weightage in the range of 75% - 90% to be allotted during assessment | |
| For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety | • Good skill levels and accuracy in the field of work/ assignments.<br>• A good level of neatness and consistency to accomplish job activities. |

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| procedures and practices | • Little support in completing the task/ job. |
| (c) Weightage in the range of above 90% to be allotted during assessment | |
| For performance in this grade, the candidate, with minimal or no support in organization, execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship. | • High skill levels and accuracy in the field of work/ assignments.<br>• A high level of neatness and consistency to accomplish job activities.<br>• Minimal or no support in completing the task/ job. |

## 3. JOB ROLE

**Assistant Physiotherapist;** in the Healthcare Industry is also known as Physical Therapist Assistant (PTA). Assistant Physiotherapist works alongside qualified physiotherapists, assisting in the rehabilitation of patients suffering from reduced mobility. Key tasks of an Assistant Physiotherapist include setting up equipment, preparing clients for therapy and demonstrating mobility aids and exercises. Other duties may include keeping the department tidy and basic administration work.

**Reference NCO-2015:** 3255.0101- Assistant Physiotherapist

## 4. GENERAL INFORMATION

| | |
|---|---|
| **Name of the Trade** | **Physiotherapy Technician** |
| **Trade Code** | DGT/1038 |
| **NCO - 2015** | 3255.0101 |
| **NSQF Level** | Level-4 |
| **Duration of Craftsmen Training** | One Year (1600 Hours) |
| **Entry Qualification** | Passed 10$^{th}$ class examination |
| **Minimum Age** | 14 years as on first day of academic session. |
| **Eligibility for PwD** | Not considered as medical trade |
| **Unit Strength (No. of Students)** | 24(There is no separate provision of supernumerary seats) |
| **Space Norms** | 100 Sq. m |
| **Power Norms** | 3.0 KW |
| **Instructors Qualification for:** | |
| **(i) Physiotherapy Technician** | B.Voc/Degree in physiotherapy from UGC recognised university/ board with one year experience in the relevant field.<br>**OR**<br>Diploma (Minimum 2 years) in physiotherapy from recognised university/ board of education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field.<br><br>NTC/NAC passed in the Trade of "Physiotherapy Technician" With three years' experience in the relevant field.<br><br>**<u>Essential Qualification</u>:**<br>Relevant National Craft Instructor Certificate (NCIC) in any of the variants under DGT.<br><br>***Note: Out of two Instructors required for the unit of 2(1+1), one must have Degree/Diploma and other must have NTC/NAC*** |

| | |
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| | ***qualifications.*** **However, both of them must possess NCIC in any of its variants.** |
| **(ii) Employability Skill** | MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability Skills from DGT institutes.<br>(Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above)<br>OR<br>Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills from DGT institutes. |
| **(iii) Minimum Age for Instructor** | 21 Years |
| **List of Tools and Equipment** | As per Annexure – I |

**Distribution of training on Hourly basis: (Indicative only)**

| Total hrs. /week | Trade Practical | Trade Theory | Employability Skills |
|---|---|---|---|
| 40 Hours | 30 Hours | 6 Hours | 4 Hours |

# 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 LEARNING OUTCOME (TRADE SPECIFIC)

1. Operate using suitable tools and equipments with basic outline of physiotherapy and develop a vocabulary of appropriate terminology following safety precautions.
2. Analyze and assemble the components of skeleton system.
3. Analyze the joints by using X-Ray films.
4. Differentiate various muscles.
5. Recognize basic cell structure and its organelles.
6. Identify the major neural tissues.
7. Relate the anatomical position of circulatory system on mannequin.
8. Categorize foods according to nutrients and assemble organs of digestive system.
9. Illustrate respiratory system.
10. Arrange organs on dummy of excretory and reproductive system.
11. Design a treatment plan for stiff parts of body.
12. Illustrate the effects of IRR.
13. Execute remedial effects of cryotherapy.
14. Enumerate the benefits of SWD.
15. Test and lay out therapeutic uses of UST.
16. Plan a regimen to stimulate muscles.
17. Asses and create a massage therapy.
18. Carry out physiotherapy assessment and develop exercise regimen.
19. Develop remedial measures for back pain and abnormal gaits.
20. Prepare assessment chart and rehabilitation protocol.

## 6. ASSESSMENT CRITERIA

| LEARNING OUTCOMES | ASSESSMENT CRITERIA |
|---|---|
| 1. Operate using suitable tools and equipments with basic outline of physiotherapy and develop a vocabulary of appropriate terminology following safety precautions. | Identify tools, modalities and equipments to be used in physiotherapy. |
| | Perform anatomical and fundamental positions. |
| | Explain the divisions and sub-divisions of human body. |
| | Clarify terms used in relation to trunk, neck, face, upper and lower limb. |
| | |
| 2. Analyze and assemble the components of skeleton system. | Identify the bones of the body. |
| | Assemble bones of upper limb. |
| | Assemble bones of lower limb. |
| | Differentiate bones of left and right side. |
| | Recognize all parts of bones. |
| | |
| 3. Analyze the joints by using X-Ray films. | Identify the bones and joints on X-Ray films. |
| | Arrange bones to form joints of upper and lower limb. |
| | Recognize the views of X-Ray films. |
| | Distinguish normal and abnormal X-Rays. |
| | Identify the bones and joints on X-Ray films. |
| | Arrange bones to form joints of upper and lower limb. |
| | |
| 4. Differentiate various muscles. | Recall the names of major muscles of lower limb, upper limb, trunk, abdomen, neck and face. |
| | Categorize types of muscles according to their structure. |
| | Perform movements of all joints and relate them with muscle's actions. |
| | |
| 5. Recognize basic cell structure and its organelles. | Identify human cell and its organelles. |
| | Able to give presentation on different types of tissues. |
| | List the name of skin layers. |
| | |
| 6. Identify the major | Memorize all parts of brain and spinal cord. |

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| | Perform superficial and deep reflexes. |
| | Write reports for cranial and spinal nerves. |
| | Demonstrate the body parts supplied by peripheral nerves. |
| | Perform assessment of pain by using pin prick etc. |
| | |
| 7. Relate the anatomical position of circulatory system on mannequin. | List the names of chambers of heart. |
| | Demonstrate the physiology of heart with its valves by using charts. |
| | Check radial and femoral pulse. |
| | Measure blood pressure by using sphygmomanometer. |
| | |
| 8. Categorize foods according to nutrients and assemble organs of digestive system. | Differentiate food and nutrition. |
| | Find the images of patients suffering from deficiency of nutrients. |
| | Exemplify food items according to nutrients. |
| | Recognize and arrange organs of digestive system on dummy. |
| | |
| 9. Illustrate respiratory system. | List the name of organs of respiratory system. |
| | Memorize ribs movements. |
| | Assesses respiratory rate, inspiration and expiration of chest. |
| | |
| 10. Arrange organs on dummy for excretory system and reproductive system. | Read about the organs of excretory system and human reproductive system. |
| | Assemble organs on dummy. |
| | |
| 11. Design a treatment plan for stiff parts of body. | Set up hot packs in a hydrocollator tank. |
| | Prepare and apply hot packs with proper precautions. |
| | Check patient's skin sensitivity before applying hot packs and wax bath. |
| | Illustrate the procedure of hot packs and wax bath. |
| | Make a proper covering over wax with cloth or newspaper. |
| | Demonstrate the procedure of removal of wax bath/hot pack and place them back into wax bath tub/ hydrocollator tank respectively. |
| | |
| 12. Illustrate the effects of IRR. | Knows the concept of IRR. |
| | Consider indications of IRR before treatment. |
| | Demonstrate the positioning of patient during treatment. |

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| | Plan a proper distance of IRR placement from skin of patient with precautions. |
| | |
| 13. Execute remedial effects of cryotherapy. | Assess skin or tissue injury before applying ice. |
| | Select the relevant method of icing according to the injury and contour of human body. |
| | Record the timing of the icing. |
| | |
| 14. Enumerate the benefits of SWD. | Check all the parts of SWD. |
| | Check the position of cable and electrodes. |
| | Prepare positioning of patient. |
| | Perform testing of modality. |
| | Perform different methods of application of electrodes. |
| | Demonstrate how to wind up the machine after the procedure. |
| | |
| 15. Test and lay out therapeutic uses of UST. | Select the frequency for superficial and deep tissues. |
| | Demonstrate the procedure of ultrasonic modality in different frequencies with precautions. |
| | Present how to apply ultrasonic gel and phonophoresis. |
| | Perform different methods of testing of modality. |
| | |
| 16. Plan and regimen to stimulate muscles. | Illustrate the test of muscle stimulator, TENS and IFT. |
| | Demonstrate the working of muscle stimulator for different muscle conditions. |
| | Check all the leads of modality before applying. |
| | Prepare positioning of patient. |
| | Present position of electrodes of TENS, IFT in pain conditions. |
| | Check patient's skin sensitivity before applying modalities. |
| | Perform a practice on different areas of body. |
| | Perform different methods of application of IFT. |
| | |
| 17. Assesses and create a message therapy. | Assemble the materials to be used in massage (e.g. sheets, oil, powder etc.) |
| | Plan a proper positioning of patient and therapist during massage of trunk, face, upper and lower limb. |
| | Demonstrate different techniques of message with precautions. |
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| 18. Carry out Physiotherapy | Demonstrate exercises to increase ROM manually or by using |

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| assessment and develop exercise regimen. | CPM. |
| | Schedule measurement of range of motion by using goniometer, inclinometer and inch tape. |
| | Perform active and active assisted movements. |
| | Plan exercises according to patient strength. |
| | Perform strengthening exercises for quadriceps and hamstrings muscles on Quadriceps chair. |
| | Exhibit equilibrium and non-equilibrium tests for coordination. |
| | Demonstrate exercises with shoulder wheel, pulleys, Swiss ball, hand dynamometer etc. |
| | Test and measure inspiration and expiration of chest with inch tape and practice postural drainage and breathing exercise. |
| | Perform practice to make muscle flexible. |
| | Plan and execute PNF techniques and MMT. |
| | |
| 19. Develop remedial measures for back pain and abnormal gaits. | Prepare a chart of relaxation techniques with its therapeutic indications. |
| | Recognize traction table. |
| | Demonstrate testing of traction for cervical and lumbar region. |
| | Perform various methods of traction e.g manual traction, static, intermittent, mechanical, positioning traction etc. |
| | Presentation of calculation of body weight to be used for traction. |
| | Demonstrate normal and abnormal gait patterns. |
| | Perform gait patterns with walking aids for weight and non-weight bearing. |
| | Demonstrate assistance provided by therapist to patient during mobility. |
| | |
| 20. Prepare assessment chart and rehabilitation protocol. | Demonstrate personal history of a patient. |
| | Apply clinical reasoning through the process of assessment, problem identification and treatment planning. |
| | Use the observations, examinations and medical history to evaluate the patient's condition and needs. |
| | Prepare an assessment chart for orthopaedic, neurological and cardio pulmonary conditions. |
| | Make a differential diagnosis with relevant tests. |
| | Make a provisional diagnosis. |

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| | Plan and prepare intervention program for various conditions. |
| | Understand the rule of nine of burn. |
| | Memorize the classification of obesity with BMI calculation. |
| | Plan exercises for gynaecological conditions and bring them into practice. |
| | Evaluate a patient's home or workplace activities and identify how it can be better suited to the patient's health needs. |
| | |

## 7. TRADE SYLLABUS

| SYLLABUS FOR PHYSIOTHERAPY TECHNICIAN TRADE | | | |
|---|---|---|---|
| **DURATION: ONE YEAR** | | | |
| **Duration** | **Reference Learning Outcome** | **Professional Skills (Trade Practical) With Indicative Hours** | **Professional Knowledge (Trade Theory)** |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Operate using suitable tools and equipments with basic outline of physiotherapy and develop a vocabulary of appropriate terminology following safety precautions. | 1. Identify electrotherapy modalities (03 hrs.)<br>2. Cataloging of exercise tools and equipments. (04 hrs.)<br>3. Draw human body and label its parts. (07 hrs.)<br>4. Demonstrate planes, axis, anatomical and fundamental positions. (08 hrs.)<br>5. Sketch planes, anatomical and fundamental positions. (08 hrs.) | **Introduction**<br>a) Definition of Physiotherapy, terms of Physiotherapy: Electrotherapy, Exercise-therapy, Massage-Therapy, Ergonomics, Rehabilitation.<br>b) Definition of Electrotherapy, safety precautions in Electrotherapy.<br>c) Name of modalities which are used in physiotherapy.<br>**Introduction to Anatomy/Physiology**<br>a) Definition and subdivisions of anatomy.<br>b) Anatomical and fundamental position.<br>c) Anatomical regions, section and planes. The descriptive anatomical terms. (06 hrs) |
| Professional Skill 60 Hrs;<br><br>Professional Knowledge | Analyze and assemble the components of skeleton system. | 6. Demonstrate skeleton system. (15 hrs.)<br>7. List the names, side determination and parts of all bones of | **Osteology**<br>a) Skeleton system.<br>b) Structure, functions and classification of bone and cartilage. |

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| 12 Hrs | | upper limb and lower limb. (20 hrs.)<br>8. Identify side determination and parts of bones of skull, vertebral column and thorax. (25 hrs.) | c) Name of human bones.<br>d) Side determination and parts of bones of upper limb, lower limb, skull, vertebral column and thorax.<br>(12 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Analyze the joints by using X-Ray films. | 9. Prepare presentation of joints formation by using bones. (12 hrs.)<br>10. Identify the major joints of human body. (13 hrs.)<br>11. Perform X-Ray practical by using X-Ray films-<br>➢ Recognize bones.<br>➢ Identify of joints.<br>➢ Demonstration of some normal and abnormal X-ray plates. (05 hrs.) | **Orthology**<br>a) Definition and classification of joints.<br>b) The terms related to the movements of joints.<br>c) Description of joints of upper and lower extremities with their ligaments.<br>(06 hrs) |
| Professional Skill 60 Hrs;<br><br>Professional Knowledge 12 Hrs | Differentiate various muscles. | 12. Show muscles structure with proper labelling. (12 hrs.)<br>13. Demonstrate major muscles of upper limb. (12 hrs.)<br>14. Demonstrate major muscles of lower limb. (12 hrs.)<br>15. Identify major muscles of abdomen trunk, thorax, neck and face with diagram. (24 hrs.) | **Myology**<br>a) Macroscopic and microscopic structure of muscle.<br>b) Classification of muscles.<br>c) Parts of muscle.<br>d) Neuromuscular junction.<br>e) Sliding contraction theory.<br>f) Description of all major muscles with their origin, insertion, nerve supply and action.<br>(12 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Recognize basic cell structure and its organelles. | 16. Sketch labelled picture of cell. (10 hrs.)<br>17. Prepare Microscopic diagram of different tissues e.g. Connective tissues, muscular tissues, nervous tissues etc. (11 | a) **Cell-** definition, structure and function, cellular organelles.<br>b) **Tissue-** Structure and function.<br>**Skin and temperature regulation** |

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| | | hrs.)<br>18. Prepare postures of skin. (06 hrs.)<br>19. Identify cell structure. (03 hrs.) | a) Structure of skin.<br>b) Function of skin.<br>c) Temperature regulation system.<br>(06 hrs) |
| Professional Skill 60 Hrs;<br><br>Professional Knowledge 12 Hrs | Identify the major neural tissues. | 20. Idea of reflexes and their examination. (12 hrs.)<br>21. Demonstrate and A.V. display. (12 hrs.)<br>22. Prepare Display charts of Nervous system (09 hrs.)<br>23. Represent neuron, brain, spinal cord, reflex arc, and plexus. (12 hrs.)<br>24. Perform Pain assessment (15 hrs.) | **Neurology**<br>a) Parts of nervous system.<br>b) Structure and function of Nervous, types of neurological cells.<br>c) Structure and function of Brain and spinal cord.<br>d) Reflex Arc, blood-brain barrier.<br>e) Structure of a nerve, Cranial nerves (names and functions) and spinal nerves (Introduction).<br>f) Nerve plexus of the body with their distributions (cervical plexus, brachial plexus, lumbosacral plexus).<br>g) About the nerve fibres, motor and sensory.<br>h) Blood circulation of brain and spinal cord. (12 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Relate the anatomical position of circulatory system on mannequin. | 25. Prepare of charts of heart structure and circulation. (06 hrs.)<br>26. Identify heart location and position by using mannequin.(06 hrs.)<br>27. Identify A.V. display of blood circulation.(06 hrs.)<br>28. Prepare for Pulse and blood pressure examination.(12 hrs.) | **Circulatory system**<br>a) Structure and function of heart.<br>b) Nodes of heart, heart rates and heart sound.<br>c) Physiology of heart circulation.<br>d) Blood pressure and the influencing factors.<br>e) Composition and function of blood.<br>f) Circulatory system of |

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| | | | body. (06 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Categorize foods according to nutrients and assemble organs of digestive system. | 29. Prepare balance diet chart for different age graphs. (06 hrs.)<br>30. Display the organs of digestive system on mannequin. (06 hrs.)<br>31. Demonstrate A.V. display. (06 hrs.)<br>32. Recognise Figuration of main and accessory organs of digestive system. (12 hrs.) | **Food and nutrition**<br>a) Definition of food and nutrition.<br>b) Carbohydrate, protein, fat, minerals, vitamins, water with example and brief description.<br>c) Balanced diet.<br>**Digestive system**<br>a) Structure and functions of digestive organs.<br>b) Absorption and metabolism (in brief) (06 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Illustrate respiratory system. | 33. Demonstrate the organs of respiratory system on mannequin. (06 hrs.)<br>34. Prepare Display respiratory mechanism by using videos. (06 hrs.)<br>35. Measure chest inspiration and expiration with inch tape. (06 hrs.)<br>36. Check Respiratory rate examination. (06 hrs.)<br>37. Check Portrait charts of organs of respiratory system. (06 hrs.) | **Respiratory system**<br>a) Structure and function.<br>b) Process of respiration.<br>c) Cardio-respiratory relation.<br>d) Artificial respiration.<br>e) Neurological control.<br>f) Volumes and capacities values of respiration.<br>**Endocrinology**<br>a) Definition, character and function of Hormones.<br>b) About the hormone secreting glands (in brief). (06 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Arrange organs on dummy of excretory and reproductive system. | 38. Identify parts of excretory and reproductive system on mannequin. (12 hrs.)<br>39. Perform the Presentation and A.V. videos of | **Excretory system**<br>a) Structure and function of kidney.<br>b) Organs of excretory system.<br>c) Structure of nephron.<br>d) Formation of Urine<br>e) Micturition<br>**Gynaecology and obstetrics** |

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| | | excretory system. (06 hrs.)<br>40. Identify Micturition reflex by showing charts. (12 hrs.) | a) Pelvic floor muscles( names)<br>b) Introduction of human reproductive system (in brief).<br>c) Physiology of pregnancy. (06 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Design a treatment plan for stiff parts of body. | 41. Prepare hot packs. (05 hrs.)<br>42. Preparation of patient.(03 hrs.)<br>43. Apply hot packs at different regions of body. (03 hrs.)<br>44. Plan precautions while giving treatment to patient. (03 hrs.)<br>45. Assessment of the affected part before applying wax bath. (05 hrs.)<br>46. Perform Techniques of wax bath for instance with brush, bowl etc. (05 hrs.)<br>47. Apply wax bath with precautions and proper layering and thickness, removal of wax. (06 hrs.) | **Thermotherapy**<br>Superficial heating agents<br>a) **Hot packs:** Physiological effects, indications and contraindications. Types of hot packs (hydrocollators, hot water bag, electrical heating pads) with their techniques of application<br>b) **Wax bath:** Description of a wax bath unit, composition and method of preparation of wax bath, physiological effects, techniques of application, indications and contra indications.<br>(06 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Illustrate the effects of IRR. | 48. Apply IRR with precautions. (18 hrs.)<br>49. Demonstrate different positions of patient during treatment. (06 hrs.)<br>50. Placement of IRR at proper distance from skin. (06 hrs.) | **a) Infra-Red Radiation:** About the infra-red rays, sources of infra-red rays, technical data, physiological effects, techniques of application, termination of IRR, Indications and contra indications.<br>(06 hrs) |

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| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Execute remedial effects of cryotherapy. | 51. Practice on preparation and application of ice pack, cold pack, ice towels, ice bath, ice cube massage according to the contour of the body. (12 hrs.)<br>52. Practice of preparation of patient.(06 hrs.)<br>53. Plan precautions while giving treatment. (12 hrs.) | **Cryotherapy**<br>a) Physiological effects.<br>b) Methods of application (Ice pack, cold pack, ice towels, ice bath, ice cube massage, vapo coolant sprays)<br>c) Cryokinetics.<br>d) Indications and contraindications.<br>(06 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Enumerate the benefits of SWD. | 54. Explain all parts of SWD. (06 hrs.)<br>55. Testing of SWD. (04 hrs.)<br>56. Positioning of patient and placement of electrodes. (06 hrs.)<br>57. Draw Flow chart of SWD circuit. (06 hrs.)<br>58. SWD cable methods. (06 hrs.)<br>59. Precautions. (02 hrs.) | **Deep heating agents**<br>**A) S.W.D.**: meanings of Short-wave & Diathermy, Effects of S.W.D. Technical data, Descriptions of a S.W.D Instrument, Method of application, Positioning of Electrode pads During, Treatment, Dose & Duration of treatment, Indications & Contraindications.<br>(06 hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 06 Hrs | Test and lay out therapeutic uses of UST. | 60. Methods of testing. (06 hrs.)<br>61. Methods of application. (06 hrs.)<br>62. Handling and operating of UST modality with precautions. (12 hrs.)<br>63. Precaution of patient. (06 hrs.) | **B) M.W.D-** Introduction.<br>**C)U.S.T-** About the Ultra sound,<br>Effects of U.S.T in Human body, Technical data, Descriptions of an U.S.T.<br>Instrument, Description about different types of Coupling medium, Method of application of U.S.T, Dose & Duration of treatment, Indications & Contraindications. (06 hrs) |
| Professional Skill 90 Hrs; | Plan a regimen to stimulate muscles. | 64. Practice on muscle stimulator for major | **Stimulators-**<br>a) **Faradic** - About the |

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| Professional Knowledge 18 Hrs | | muscles of upper limb and lower limb. (15 hrs.)<br>65. Preparation of patient (05 hrs.)<br>66. Demonstration of muscles stimulator on face. (05 hrs.)<br>67. Plan precautions during treatment. (15 hrs.)<br>68. Practice on placement of electrodes with using proper gel. (15 hrs.)<br>69. Create difference between TENS and IFT for pain producing conditions. (12 hrs.)<br>70. Demonstrate on placement of TENS and IFT pads for radiating and local pain respectively. (13 hrs.)<br>71. Methods of treatment. (05 hrs.)<br>72. Testing methods of all modalities. (05 hrs.) | Faradic type of current, Technical data's, Description of a Faradic Stimulator & Electrodes, Physiological effects, Method of application, Application of continuous & Surged Faradic, Dose & Duration of treatment, Indications & Contraindications.<br>b) **Galvanic-** About the Galvanic type of current, Technical data, Descriptions of a Galvanic Stimulator, Physiological effects, Method of application, application of continuous & Interrupted Galvanic, Dose & duration of treatment, Indications & Contraindications.<br>c) **T.E.N.S-** Meaning of 'Transcutaneous', Description of a T.E.N.S., Physiological effects (along with pain gate Theory), Method of application (Trigger point stimulation method, Acupuncture point stimulation method etc.), Placements of T.E.N.S electrodes, Application of |

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| | | | continuous, surged & burst mode. Dose & Duration of treatment, Indications & contraindications.<br>d) **I.F.T-** Introduction, application, Indications & Contraindications.<br>(18 hrs) |
| Professional Skill 60 Hrs;<br><br>Professional Knowledge 12 Hrs | Asses and create a massage therapy | 73. Positioning of patient and therapist. (06 hrs.)<br>74. Techniques used in massage for upper and lower limb. (12 hrs.)<br>75. Illustrate a practical of massage on face. (07 hrs.)<br>76. Elaborate methods of trunk massage. (09 hrs.)<br>77. Precautions while giving massage. (08 hrs.)<br>78. Rules and direction of massage. (03 hrs.)<br>79. Direction of using materials (oil, powder etc.) during massage. (03 hrs.)<br>80. Therapeutic application of massage. (12 hrs.) | **MASSAGE THERAPY & REHABILITATION**<br>a) Definition of Massage<br>b) Aim of Massage<br>c) Physiological effects of Massage<br>d) Therapeutic uses of Massage.<br>e) Contraindications of Massage<br>f) Materials used in Massage (oil, powder, ice etc.)<br>g) Rules & direction of Massage<br>h) Types of Massage<br>(12 hrs) |
| Professional Skill 210 Hrs;<br><br>Professional Knowledge 42 Hrs | Carry out physiotherapy assessment and develop exercise regimen. | 81. Show positioning of patient and therapist. (06 hrs.)<br>82. Perform Practical of different exercises. (06 hrs.) | **<u>EXERCISE THERAPY AND YOGA</u>**<br>**1. <u>Fundamental of exercise:</u>**<br>a. Definition of therapeutic exercise. |

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| | | 83. Rules and directions of exercises. (06 hrs.)<br>84. Demonstrate exercise to increase ROM by using continuous passive movement equipments. (06 hrs.)<br>85. Presentation of passive movements (manually). (07 hrs.)<br>86. Assessment of range of motion of major joints by using goniometer scales. (07 hrs.)<br>87. Perform measurement of spine ROM by using inch tape. (05 hrs.)<br>88. Exhibit active and active-assisted movements. (03 hrs.)<br>89. Illustrate strengthening exercises by using weight-cuffs for upper and lower limb joints. (03 hrs.)<br>90. Perform strengthening exercises by utilizing thera bands/ thera tubes. (07 hrs.)<br>91. Demonstrate resisted exercises (manually). (05 hrs.)<br>92. Representation of quadriceps and hamstring resisted exercises on quadriceps chair and multipurpose chair. (08 hrs.)<br>93. Practical use of different | b. Benefits of exercise.<br>c. Classification of exercise- active, passive, resistive, isometric, functional, stretching, isokinetic, closed-chain, open-chain etc.<br>**2. <u>Applied exercise therapy</u>**<br>a. Passive movements.<br>b. Goniometry.<br>c. Exercise with instrument.<br>d. Active movements, active-assisted movements.<br>e. Resistive exercise.<br>f. Co-ordination and balance.<br>g. Stretching exercise.<br>h. Techniques for chest physiotherapy.<br>i. Manual muscle testing.<br>j. Techniques of PNF (brief).<br>k. Indications and contraindications of passive movements.<br>l. Indications and contraindications of breathing exercise.<br>m. Grades of MMT.<br>n. Precautions while performing these exercises on patient.<br>(42 hrs) |

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| | | exercise equipments (e.g. Shoulder wheel, shoulder pulley, Swiss ball etc.) (09 hrs.)<br>94. Assessment of coordination and balance. (05 hrs.)<br>95. Describe equilibrium and non-equilibrium tests. (06 hrs.)<br>96. Schedule exercise programs for stretching of major muscles (Manually). (10 hrs.)<br>97. Elaborate methods of stretching (Static, mechanical etc.) (06 hrs.)<br>98. Explain positioning of patient during postural drainage. (06 hrs.)<br>99. Collaborate massage techniques with postural drainage. (06 hrs.)<br>100. Prepare a chart of measurements of chest inspiration and expiration by using hands and inch tape at different chest levels. (10 hrs.)<br>101. Perform resistive exercises for thorax muscles. (10 hrs.)<br>102. Practical based on breathing exercises. (10 hrs.)<br>103. Illustrate a practical on | |

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| | | PNF techniques for upper and lower limbs. (brief) (12 hrs.)<br>104. Presentation of PNF techniques for trunk, face and neck. (brief) (10 hrs.)<br>105. Explanation of $D_1$ and $D_2$ patterns of PNF (brief)(07 hrs.)<br>106. Determination of grades of MMT for upper and lower limb. (12 hrs.)<br>107. Practical based on grading of MMT for trunk and abdominals. (12 hrs.)<br>108. Identify MMT exercises for face. (10 hrs.) | |
| Professional Skill 180 Hrs;<br><br>Professional Knowledge 36 Hrs | Develop remedial measures for back pain and abnormal gaits. | 109. Proper demo of relaxation techniques by using pillows. (12 hrs.)<br>110. Execute testing of traction. (06 hrs.)<br>111. Demonstrate positioning of patient while giving traction.(10 hrs.)<br>112. Teach how to calculate patient's weight to be used in treatment.(08 hrs.)<br>113. Develop different methods of application of traction.(10 hrs.)<br>114. Impart skills of manual cervical and lumbar traction.(10 hrs.) | **Exercise Physiology**<br>1. Thermoregulation and exercise organs:<br>a. Conduction, convection & evaporation.<br>b. Homeostasis<br>c. Physiological thermoregulation<br>2. Respiration:<br>a. Muscles for inspiration and expiration.<br>b. Static and Dynamic Lung volume.<br>c. Gaseous exchange.<br>3. Cardiovascular |

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| | | 115. Instruct normal gait patterns. (10 hrs.)<br>116. Presentation of gate phases on floor. (13 hrs.)<br>117. Perform abnormal gaits.(17 hrs.)<br>118. Demonstrate a practical on walking aids (eg. Crutches, walker). (25 hrs.)<br>119. Give a brief idea of parts of wheelchair. (08 hrs.)<br>120. Give guidelines for walking aids' usage for patients (eg. Two step, three step etc.). (17 hrs.)<br>121. Design gait pattern for weight bearing and non-weight bearing. (17 hrs.)<br>122. Performance of gait training. (17 hrs.) | adaptations:<br>a. Sub maximal exercise.<br>b. At maximal exercise.<br>4. Fatigue: Types, symptoms, recovery.<br>5. Endurance: Definition, endurance training.<br>6. Kinesiology & Biomechanics: Basic terminologies.<br>7. Relaxation exercises.<br>8. TRACTION: Introductions, contraindications, therapeutic uses and effects.<br>9. Activities of daily living (in brief).<br>10. Gait: Definition, phases, abnormal gait patterns (in brief).<br>11. Walking aids: Types, indications, precautions.<br>(36 hrs) |
| Professional Skill 120 Hrs;<br><br>Professional Knowledge 24 Hrs | Prepare assessment chart and rehabilitation protocol. | 123. Display videos showing causes of clinical conditions. (06 hrs.)<br>124. Perform observational assessment in various conditions. (06 hrs.)<br>125. Perform clinical examination. (04 hrs.)<br>126. Demonstrate various orthopaedical tests. (06 hrs.) | **Applied Anatomy:**<br>Causes, Deformity, loss of functions in following conditions:<br>a. Carpal tunnel syndrome.<br>b. Erb's and kulmpke palsy<br>c. De Quervain's disease.<br>d. Rotator cuff |

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| | | 127. Demonstrate various neurological tests. (05 hrs.)<br>128. Prepare a chart of orthopaedic, neurology assessment. (03 hrs.)<br>129. Make a cardiopulmonary assessment chart. (05 hrs.)<br>130. Make a diagnosis after assessment. (07 hrs.)<br>131. Plan a rehabilitation program for patients. (10 hrs.)<br>132. Develop home exercise programs.(07 hrs.)<br>133. Demonstrate precautions to be considered during and after treatment. (07 hrs.)<br>134. Develop ergonomics. (07 hrs.)<br>135. Evaluate the prognosis. (07 hrs.)<br>136. Make postures showing diagrammatical calculation of burn. (08 hrs.)<br>137. Calculate obesity according to BMI. (08 hrs.)<br>138. Illustrate precautions related to treatment. (08 hrs.)<br>139. Clinical presentation in hemiplegia, hemiparesis to differentiate it. (08 | syndrome.<br>e. Wrist drop.<br>f. Trendelenburg's sign.<br>g. Tarsal tunnel syndrome.<br>h. Genu valgum/varum.<br>i. Coxa valgus/ varus.<br>j. Foot drop.<br>**<u>ORTHO-NEURO-GENERAL</u>**<br>**Orthopaedical condition: Etiology, C/F & physiotherapy management of the followings:**<br>(i) Kyphosis, Lordosis & Scoliosis<br>(ii) Cervical & Lumbar Spondylosis<br>(iii) Ankylosing Spondylosis<br>(iv) Tennis Elbow<br>(v) Golfer's Elbow<br>(vi) Gout<br>(vii) Osteoarthritis<br>(viii) Rheumatoid Arthritis<br>(ix) Frozen Shoulder<br>(x) Fracture (brief)<br>(xi) Dislocation & subluxation<br>(xii) Sprain<br>(xiii) Tendonitis<br>(xiv) Rickets<br>(xv) Osteomalacia<br>(xvi) Osteomyelitis<br>(xvii) Calcaneal Spar<br>(xviii) Flatfoot.<br><br>**Neurological Condition:** |

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| | | hrs.)<br>140. Plan antenatal and postnatal exercises. (08 hrs.) | **Etiology, C/F, & Physiotherapeutic Management of the following:**<br>i. Cerebral palsy<br>ii. Hemiplegia<br>iii. Paraplegia<br>iv. Quadriplegia<br>v. Myalgia<br>vi. Fibromysitis<br>vii. Polio Myelitis<br>viii. Parkinsonism<br>ix. Bell's palsy<br>x. C.V.A (brief)<br>xi. Upper & Lower Motor Neuron diseases<br>xii. Peripheral Nerve Injury<br>xiii. Spinal Cord Injury<br>xiv. Sciatica<br>**General Condition:**<br>Etiology, C/F, Investigations & Physiotherapeutic Management of the following:<br>i. Obesity<br>ii. Burns<br>(24 hrs) |

**Project work/ Case Study**

**Broad Areas:**

a) Perform practical of different exercises.
b) Assessment of range of motion of major joints by using goniometer scales.
c) Prepare a chart of measurements of chest inspiration and expiration by using hands and inch tape at different chest levels.
d) Execute testing of traction.
e) Prepare a chart of orthopaedic, neurology assessment.
f) Calculate obesity according to BMI.

| SYLLABUS FOR CORE SKILLS |
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| **1. Employability Skills (Common for all CTS trades) (160 hrs)** |

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

## ANNEXURE-I

| List of Tools & Equipment | | | |
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| **PHYSIOTHERAPY TECHNICIAN (For batch of 24 Candidates)** | | | |
| **S No.** | **Name of the Tools and Equipment** | **Specification** | **Quantity** |
| 1. | Diagram of –<br>(i) Human Organs<br>(ii) Exercises Charts | | 1 set |
| 2. | Wax bath | | 1 no. |
| 3. | I. R. Radiator | | 1 no. |
| 4. | Short wave Diathermy unit | | 1 no. |
| 5. | Electric Muscle Nerve Stimulator | | 1 no. |
| 6. | Battery | 6 V & 12V | 2 nos. |
| 7. | Battery Eliminator | 6 V, 9 V, 12 V | 2 nos. |
| 8. | Traction table, Weight Machine | | 1 set |
| 9. | Apparatus for various exercises- Shoulder Wheel, Shoulder pulley, Wall ladder, Swiss ball, Pronator - Supirator exercises | | 1 set assorted |
| 10. | Durra mats | | 12 nos. |
| 11. | Table | | 1 no. |
| 12. | Chair with Desk | | 24+1 nos. |
| 13. | Cupboard | | 2 nos. |
| 14. | IFT (Interferential Therapy) | | 1 no. |
| 15. | TENS (Trans Electronic Nerve Stimulator) | | 1 no. |
| 16. | Ultrasonic m/c | | 1 no. |
| 17. | Weight cuffs | | 1 set |
| 18. | Hydrocollator Pack | | 2 set |
| 19. | Quadriceps Chair | | 1 no. |

**Note:**

1. Internet facility is desired to be provided in the class room.

## ANNEXURE-II

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts, trainers of ITIs, NSTIs, faculties from universities 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 Members participated for finalizing the course curriculum of Physiotherapy Technician held on 18.05.2017 at NIT Centre, New Delhi** | | | |
|---|---|---|---|
| **S No.** | **Name & Designation Sh/Mr/Ms** | **Organization** | **Remarks** |
| 1. | Dr. Ritesh Garg, M.B.B.S., D.M.R.D. | Shivam Diagnostics & Cancer Research Institute, C- 41 Mahendru Enclave Lane, Delhi-110033 | Chairman |
| 2. | C. Shibu, Faculty | -Do- | Member |
| 3. | Dr. Sushil Gupta, M.B.B.S, D.M.R.D. | -Do- | Member |
| 4. | Dr. Anil Grover, M.B.B.S, M.D. | -Do- | Member |
| 5. | Dr. Rajneesh Aggarwal, M.B.B.S., D.M.R.D. | -Do- | Member |
| 6. | Dr. Gaurav Mathur, Consultant | -Do- | Member |
| 7. | Dr. Patwinder Bedi, Consultant | -Do- | Member |
| 8. | Dr. Veerpal Nathoo, Surgeon | Singh's Dental Hospital (On panel C.G.H.S, Govt. of India) | Member |
| 9. | Dr. Rachna, BDS, MIDA | -Do- | Member |
| 10. | Dr. Anamika Singh, B.D.S., M.I.D.A. | -Do- | Member |
| 11. | Dr. Ritu, Faculty | -Do- | Member |
| 12. | Dr. Madhavi Raj, Faculty | -Do- | Member |
| 13. | Pooja Rana, Faculty | -Do- | Member |
| 14. | Dr. Priyanka, Faculty | -Do- | Member |
| 15. | Dr. Nisha Gulia, Faculty | Govt. General Hospital, Bahadurgarh, HR | Member |
| 16. | Dr. Sumit Nigam, BPT, Director | Dynamic Physiotherapy Services, 5495, 2nd Floor Shorakothi Paharganj, New Delhi- 110055 | Member |
| 17. | Dr. Sonia, BPT | -Do- | Member |
| 18. | Dr. Rohit, MPT | -Do- | Member |
| 19. | Dr. Rashmi Lohia, BPT | -Do- | Member |

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| 20. | Dr. S.K. Yadav, B.P.T., M.P.T. (Ortho), M.I.A.P, D.C.P | -Do- | Member |
| 21. | Dr. Sushanta Kapoor, B.D.S. | Kapoor Dental Care, C-18, Model Town-III, Delhi-110009 | Member |
| 22. | Kirti Sharma, Faculty | National Industrial Training Centre, Dwarka, New Delhi | Member |
| 23. | Mukta Singh, Faculty | -Do- | Member |
| 24. | Geeta Deswal, Faculty | -Do- | Member |
| 25. | Preeti Singh, Faculty | -Do- | Member |
| 26. | Akash Kumar, Faculty | -Do- | Member |
| 27. | Bhawna, Instructor | -Do- | Member |
| 28. | Dr. Urvashi Jain, M.D. | -Do- | Member |
| 29. | Ramesh Kumar Garg, M.B.B.S, M.D. | -Do- | Member |
| 30. | Dr. P.K. Anand, Faculty | -Do- | Member |
| 31. | Amit Sethi, Consultant | -Do- | Member |
| 32. | L. K. Mukherjee, DDT | CSTARI, Kolkata | Member |
| 33. | P. K. Bairagi, T.O. | -Do- | Coordinator/ Member |
| 34. | K.V.S. Narayana, T.O. | -Do- | Coordinator/ Member |

## ABBREVIATIONS

| | |
|---|---|
| CTS | Craftsmen Training Scheme |
| ATS | Apprenticeship Training Scheme |
| CITS | Craft Instructor Training Scheme |
| DGT | Directorate General of Training |
| MSDE | Ministry of Skill Development and Entrepreneurship |
| NTC | National Trade Certificate |
| NAC | National Apprenticeship Certificate |
| NCIC | National Craft Instructor Certificate |
| LD | Locomotor Disability |
| CP | Cerebral Palsy |
| MD | Multiple Disabilities |
| LV | Low Vision |
| HH | Hard of Hearing |
| ID | Intellectual Disabilities |
| LC | Leprosy Cured |
| SLD | Specific Learning Disabilities |
| DW | Dwarfism |
| MI | Mental Illness |
| AA | Acid Attack |
| PwD | Person with disabilities |


कौशलं बलम्