

SYLLABUS FOR THE TRADE
OF
EXCAVATOR OPERATOR
(MINING)
(SEMESTER PATTERN)

UNDER
CRAFTSMAN TRAINING SCHEME (CTS)

Designed in: 2013

By
Government of India
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
Directorate General of Employment & Training
Ministry of Labour & Employment
EN-Block, Sector-V, Salt Lake
Kolkata-700 091

List of members of Trade Committee meeting for the trade of “EXCAVATOR OPERATOR (Mining)” held on 25th September 2012 at CSTARI, KOLKATA-91.

SL. NO.	NAME & DESIGNATION S/SHRI	REPRESENTING ORGANISATION	REMARKS
1.	R.N. Bandyopadhyaya, Director	CSTARI, Kolkata.	Chairman
2.	Alok Mitra, General Manager	Technocon Services	Member
3.	Nisith Bhattacharya, Ex. Dy. Director of Trg.	DIT, West Bengal	Member
4.	Sanjay Kant, Jt. Director of Trg.	R.D.A.T., Kolkata.	Member
5.	Asitava Bhattacharjee, Dy. Director	DIT, West Bengal	Member
6.	N.R. Anavindan, Dy. Director of Trg.	FTI, Jamshedpur	Member
7.	Priyatosh Majumdar, Consultant	Bengal Park Chamber	Member
8.	Khamtilal Kuli, Jt. Director of Trg.	CSTARI, Kolkata.	Member
9.	S.B. Sardar, Asstt. Director of Trg.	CSTARI, Kolkata.	Member
10.	M.N. Ghosh, Dy.General Manager (Mat'l).	Braithwait Ltd.	Member
11.	N. Nath, Asstt. Director of Trg.	CSTARI, Kolkata.	Member
12.	Satyabrata Saha, Dy. Director of Trg.	DIT, West Bengal	Member
13.	L.K. Mukherjee, Dy. Director of Trg.	CSTARI, Kolkata.	Member
14.	P. Biswas, Draughtsman	CSTARI, Kolkata.	Member
15.	Hemant Kujur, Draughtsman	CSTARI, Kolkata.	Member
16.	Mohan Singh, Training Officer	CSTARI, Kolkata.	Member
17.	M.K. Batabyal, Training Officer	CSTARI, Kolkata.	Member

List of members attended the Workshop to finalize the syllabi of existing CTS into Semester Pattern held from 6th to 10th May'2013 at CSTARI, Kolkata.

Sl. No.	Name & Designation	Organisation	Remarks
1.	R.N. Bandyopadhyaya, Director	CSTARI, Kolkata-91	Chairman
2.	K. L. Kuli, Joint Director of Training	CSTARI, Kolkata-91	Member
3.	K. Srinivasa Rao, Joint Director of Training	CSTARI, Kolkata-91	Member
4.	L.K. Mukherjee, Deputy Director of Training	CSTARI, Kolkata-91	Member
5.	Ashoke Rarhi, Deputy Director of Training	ATI-EPI, Dehradun	Member
6.	N. Nath, Assistant Director of Training	CSTARI, Kolkata-91	Member
7.	S. Srinivasu, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
8.	Sharanappa, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
9.	Ramakrishne Gowda, Assistant Director of Training	FTI, Bangalore	Member
10.	Goutam Das Modak, Assistant Director of Trg./Principal	RVTI, Kolkata-91	Member
11.	Venketesh. Ch. , Principal	Govt. ITI, Dollygunj, Andaman & Nicobar Island	Member
12.	A.K. Ghate, Training Officer	ATI, Mumbai	Member
13.	V.B. Zumbre, Training Officer	ATI, Mumbai	Member
14.	P.M. Radhakrishna pillai, Training Officer	CTI, Chennai-32	Member
15.	A.Jayaraman, Training officer	CTI Chennai-32,	Member
16.	S. Bandyopadhyay, Training Officer	ATI, Kanpur	Member
17.	Suriya Kumari .K , Training Officer	RVTI, Kolkata-91	Member
18.	R.K. Bhattacharyya, Training Officer	RVTI, Trivandrum	Member
19.	Vijay Kumar, Training Officer	ATI, Ludhiana	Member
20.	Anil Kumar, Training Officer	ATI, Ludhiana	Member
21.	Sunil M.K. Training Officer	ATI, Kolkata	Member
22.	Devender, Training Officer	ATI, Kolkata	Member
23.	R. N. Manna, Training Officer	CSTARI, Kolkata-91	Member
24.	Mrs. S. Das, Training Officer	CSTARI, Kolkata-91	Member
25.	Jyoti Balwani, Training Officer	RVTI, Kolkata-91	Member
26.	Pragna H. Ravat, Training Officer	RVTI, Kolkata-91	Member
27.	Sarbojit Neogi, Vocational Instructor	RVTI, Kolkata-91	Member
28.	Nilotpal Saha, Vocational Instructor	I.T.I., Berhampore, Murshidabad, (W.B.)	Member
29.	Vijay Kumar, Data Entry Operator	RVTI, Kolkata-91	Member

GENERAL INFORMATION

1. Name of the Trade : EXCAVATOR OPERATOR
2. N.C.O. Code No. :
3. Duration of Craftsmen Training : 06 months
4. Power Norms : 2 KW
5. Space norms : a) Workshop: 60 m² + 1000 m² for practicing driving & parking Excavator.
b) Class room: 30 sq.meter.
6. Entry Qualification : Passed 8th Class Examination.
7. Unit size (No. of student) : 20
8. Instructor's /Trainer's qualification (A): Degree in Mechanical Engineering/Technology with one year experience in the relevant field.
OR
Diploma in Mechanical Engg. With two year experience in the relevant field.
OR
ITI Pass out in the relevant trade with three year experience in the field. And with License in excavator operation.

(B) Desirable qualification
: Preference will be given to a candidate with Craft Instructor's Certificate.

* **Note:** At least one Instructor must have Degree/Diploma in Mechanical Engg.

Syllabus for the Trade of “EXCAVATOR OPERATOR (MINING)”
under Craftsman Training Scheme (C.T.S.)

Duration : SIX MONTH

First Semester

Code: EOM-Sem-I

Week No.	Practical	Theory
1	Induction training: - Familiarization with the Institute. - Importance of trade Training - Machinery used in the trade. - Introduction to safety equipment and their use etc. Training on simulator to know & get feel of all control levers & know-how of an Excavator.. - Starting of excavator & switching off.	- General discipline in the Institute - Elementary First Aid. - Safety in Manual - Introduction to excavator, its types and various uses of it. - OSH related to excavator operation and various preventive measures. -Answer questions related to simulator training w.r.t. practical issues during simulator training.
2-3	- Simple running of excavator. - Familiarization with various switches, meter and levers. - Familiarization of diesel and fitting shop.	- Excavator Equipments, tools and accessories . - Different sizes and capabilities of excavators. - Various excavator operations and its applications . - Rules & regulation.
4-5	- Pre-operation check. - Simple running of excavator.	- Identification of components and their functions & basic standard. - Different design aspect of excavator as per the surface for which to be used.
6-7	- Simple running of excavator and familiarization of various moving parts. - Checking engine and pneumatic system.	- Basics of IC engine and its operations - Principle of Diesel engine operation.
8-9	- Identification of various road indicators & signals.	- Driving rule. - Road indicators and highway signaling. - Basic concept of different soil & its properties.
10-11	- Practice on hydraulic & pneumatic trainer. - Self loading. - Practice on running of excavator.	- Basic concept of centre of gravity and load balancing. - Basics of hydraulics & Pneumatics. - Knowledge of cooling system in the excavator.
12-13	- Practice on setting and changing RPM.	- RPM. - Changing of RPM and setting RPM.
14-15	- Practice on loading with excavator. - Practice of labeling.	- Load assessment. - Ground clearance.
16-17	- Practice on loading with excavator. - Loading, excavating, digging, lifting.	- Application of front loader and back loader.
18-19	- Practice on loading with excavator and dumping the same.	- Application of different accessories of excavator.
20-21	- Practice on extreme condition. - Practice on practical loading in actual field.	- Understanding of preventive maintenance like avoidance of excess engine heating. - Understanding of ideal parameters.
22	- Practice as per operation manual.	- Reading and understanding the operator manual.
23-24	Driving Practice & apply for Driving licence.	
25	Revision	
26	Examination	

“EXCAVATOR OPERATOR (MINING)”

Tools & Equipments for 20 trainees + one

A. Trainees Kit – (As per the below table)

SL.NO	NAME OF THE ITEMS	QUANTITY
01	Double end Spanner : 6X7	10 nos.
02.	Double end Spanner : 8X9	10 nos.
03.	Double end Spanner : 10x11	10 nos.
04.	Double end Spanner : 12X13	10 nos.
05.	Double end Spanner : 14X17	10 nos.
06.	Double end Spanner : 19X22	10 nos.
07.	Double end Spanner : 30X32	10 nos.
08.	Double end Spanner : 36X41	10 nos.
09.	Ring Spanner 30X32, 24X27 and 12X13	10 set each
10.	Socket No.: 24,27 and 36	10 set each
11.	Combination Pliers - 6"	10 nos.
12.	Screw Driver 6m x 250 mm	10 nos.
13.	Wheel Spanner 27x30	10 nos.
14.	Tommy Bar	1 no.
15.	Allen Key Set	05 sets
16.	Adjustable Spanner 10"	10 nos.
17.	Double end spanner - 24 x 27	10 nos.
18.	Ring spanner : 14x15	10 nos.
19.	Socket No. : 11 and 29	10 nos. each
20.	Filter remover	1 no.
21.	Grease Gun	2 nos.
22.	Hydraulic Pressure Gauge : 400 bar	01no.
23.	Hydraulic Pressure Gauge - 40 bar	02nos.
24.	Digital Multi Meter	1 no
25.	Air Flow Meter	1 no
26.	Contact less Tachometer.	01no.

B. General Machinery Shop Outfit (as per the table)

SL.NO	NAMES & DESCRIPTION OF TOOLS / EQUIPMENTS	QUANTITY
01	Excavator with all types of accessories and material handling equipment. Min capacity of Excavator:	1 no.
02	Hydraulic trainer	1 no.
03	Pneumatic trainer	1 no.
04	Pressure gauge	02 nos.
05	Signalling Band	2 sets.
06	Mining and highway signal	2 sets.
07	Working bench	1 no.

C. Workshop Furniture

SL.NO	NAMES & DESCRIPTION OF FURNITURE	QUANTITY
1.	Work bench 250x120x75 with four vices of 12.5 cm	4
2.	Locker with 8 drawers (standard size)	2
3.	Metal Rack 180x150x45cm	2
4.	Steel almirah	1
5.	Black board and easel	1
6.	Instructor's Desk or table	1
7.	Chair	1