

## NSQF QUALIFICATION FILE FOR DIPLOMA COURSE IN CIVIL ENGINEERING

### CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

**Name and address of submitting body:**

Punjab State Board of Technical Education and Industrial Training  
Plot-I A, Sector-36 A, Chandigarh - 160036

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

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

Curriculum Document (**Annexure I**)

## NSQF QUALIFICATION FILE FOR DIPLOMA COURSE IN CIVIL ENGINEERING

### SUMMARY

<b>Qualification Title</b>	3 year diploma course in Civil Engineering
<b>Qualification Code</b>	-
<b>Nature and purpose of the qualification</b>	To provide skilled manpower required for middle level management at level V in the field of Civil Engineering
<b>Body/bodies which will award the qualification</b>	Punjab State Board of Technical Education and Industrial Training, Plot-I A Sector-36A, Chandigarh- 160036
<b>Body which will accredit providers to offer courses leading to the qualification</b>	AICTE/NBA
<b>Body/bodies which will carry out assessment of learners</b>	<p>Assessment of learners shall be regulated by the Punjab State Board of Technical Education &amp; Industrial Training.</p> <p>Knowledge aspect of learners will be assessed by the assessors from the Institute offering the programme whereas the Skill aspect will be assessed by appointing internal and external assessors. Internal Assessors will be from the Institute offering the programme whereas External Assessors will be appointed from the Institutes/Sector Skill Councils/Industry/Assessment Centres deputed and approved by the regulatory authority.</p>
<b>Occupation(s) to which the qualification gives access</b>	<ol style="list-style-type: none"> <li>1. Junior Engineer in Govt./Private Sector</li> <li>2. Supervisor in Govt./Private Sector</li> <li>3. Supervisor in Private Sector</li> <li>4. Inspector of works in Railways</li> <li>5. Technician in Testing Lab</li> <li>6. Vocational teacher in education department</li> <li>7. Building Inspector in Municipal Committee</li> </ol>
<b>Licensing requirements</b>	N.A.
<b>Level of the qualification in the NSQF</b>	Level V

## NSQF QUALIFICATION FILE FOR DIPLOMA COURSE IN CIVIL ENGINEERING

<b>Anticipated volume of training/learning required to complete the qualification</b>	3840 hrs + 150 hrs for industrial training
<b>Entry requirements and/or recommendations</b>	10+
<b>Progression from the qualification</b>	The learner will either take up job in the industry or go for higher studies at level VI.
<b>Planned arrangements for the Recognition of Prior learning (RPL)</b>	Presently, there is no such arrangement
<b>International comparability where known</b>	Existence of any official document suggesting the comparability of the qualification with the qualifications in other countries is not known.
<b>Formal Structure of the Qualification</b>	As per <b>Annexure II</b>
<b>Date of planned review of the qualification.</b>	Year 2020

# NSQF QUALIFICATION FILE FOR DIPLOMA COURSE IN CIVIL ENGINEERING

## **SECTION 1** **ASSESSMENT**

### **Body/Bodies which will carry out assessment:**

Assessment of learners shall be regulated by the Punjab State Board of Technical Education & Industrial Training.

Knowledge aspect of learners will be assessed by the assessors from the Institute offering the programme whereas the Skill aspect will be assessed by appointing internal and external assessors. Internal Assessors will be from the Institute offering the programme whereas External Assessors will be appointed from the Institutes/Sector Skill Councils/Industry/Assessment Centres approved by the regulatory authority.

### **How will RPL assessment be managed and who will carry it out?**

Presently there is no such arrangements. However, it is envisaged that RPL assessment will be managed by the authority specified by the NSDA by taking into account the following parameters:-

- Professional Knowledge
- Professional Skills
- Core Skills
- Responsibility
- Process/Type of Job handled

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

### **ASSESSMENT GUIDELINES:**

- The assessment is carried out by conducting formative assessment and end-of-semester examinations.
- The internal assessments for theory subjects and practical are conducted by the concerned teachers/instructors for evaluating the knowledge, skill and attitudes acquired by students as per the specified learning outcomes.
- Assessment is carried out in various subject areas to ensure achievement of Learning Outcome.
- This assessment is primarily carried out by collecting evidence of competence gained by students to assess understanding and by evaluating records and reports, and sessional marks are awarded to them.
- The question papers for the theory examinations contain a combination of objective type questions, short answer type questions and descriptive type questions
- Assessment is mainly based on following criterion :  
Theory Test : Knowledge, comprehension, application, analysis and synthesis  
Practical Test : Manipulative Skills, Accuracy, finish, speed, sequence of performance, economical use of material, quality of workmanship, neatness

### **ELIGIBILITY TO APPEAR IN THE EXAM:**

75 % attendance is compulsory for students to appear for the assessment.

### **ASSESSORS:**

- The assessment papers are developed by Subject Experts appointed by Punjab State Board of Technical Education to ensure fair, valid and reliable assessment.
- The assessors are provided with assessors guide developed by the Subject Expert as per the assessment framework.
- To hire assessors with integrity, reliability and fairness. Each assessor signs a document by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessment.

### **MARKING PATTERN:**

Marking Pattern and distribution of marks for various courses/subjects are given in study and evaluation scheme of the curriculum documents.

### **PASSING MARKS:**

Pass criteria for the qualification is that every student must score a minimum of 40 % both in Theory and Practical.

### **RESULTS AND CERTIFICATION:**

The assessment results are backed by evidences collected by assessors. Successful students are awarded certificates of three year diploma course by State Board of Technical Education, Punjab.

### **ASSESSMENT EVIDENCE:**

- Answer sheets of assessment
- Experiments performed in laboratories
- Jobs carried out in workshops
- Assignments
- Viva –voce
- Quiz test.
- Report Writing
- Presentation
- Record book/Practical Note book/Daily Diary
- Attendance and punctuality

## NSQF QUALIFICATION FILE FOR DIPLOMA COURSE IN CIVIL ENGINEERING

### ASSESSMENT EVIDENCE

In this section, you are asked to show how the assessment tools you will use will cover all the outcomes and criteria in the qualification.

Assessment evidence in tabular form describing the assessment tools to be used for assessing the learning outcomes is attached at **Annexure III**

## **NSQF QUALIFICATION FILE FOR DIPLOMA COURSE IN CIVIL ENGINEERING**

### **SECTION 2**

#### **EVIDENCE OF LEVEL**

**Awarding bodies will enter a proposed NSQF level for the qualification in the Qualification File Summary. This section asks for the evidence on which that proposal is based. The evidence must refer to the level descriptors of the NSQF.**

Evidence of the level describing the title of the subjects, corresponding NSQF level, learning outcome, relation of learning outcome with NSQF level is attached at **Annexure IV**



### SECTION 3

#### EVIDENCE OF NEED

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

Samples of advertisement from the potential employers are attached at **Annexure V**

The pass out students get absorbed in different types of industries. A list of employers along with contact person details is attached at **Annexure VI**.

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

Around 11000 students in Civil Engineering are trained every year to acquire the qualifications. It has been found that at National Level there is an incremental gap between demand and supply of the Technical manpower at Level-V in this field. To bridge this gap and to match the needs of the industry the above estimated number of students will be trained.

This programme is being offered in various polytechnic colleges in Punjab State ( Refer website punjabteched.com) approved by AICTE, Delhi ([www.aicte-india.org/ApprovedInst16-17.php](http://www.aicte-india.org/ApprovedInst16-17.php))

##### **What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?**

Inspections of the Institute offering this programme will be carried out at regular intervals. Academics Committees will be constituted for Periodical review of the curriculum.

Placement Data and Technological advancement related to the field will be used as the basis for revision and updation of the curriculum.

Such information will be collected from respective Sector Skill Councils and the Industry. The data so collected will be used as the basis for revision/updation of the Qualification.

Continuous monitoring of the curriculum will be carried out and comprehensive review of the curriculum will be undertaken in the year 2020.

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

**What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?**

While designing this qualification, extensive inputs were obtained by involving experts from Academic Institutions/Industry/Representatives of State Govt./NSDA and Faculty of National Institute of Technical Teachers' Training and Research (NITTTR), Chandigarh.

The students passing out from diploma programme in Civil Engineering are eligible for admission (lateral entry) to bachelor's degree in Civil Engineering. A sample copy of the Govt. Notification for admission to degree courses through lateral entry system is attached on **Annexure VII**

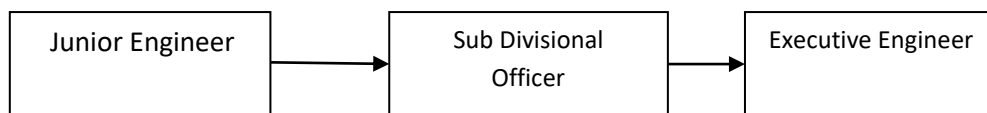
To ensure progression to other qualifications, the following points have been kept in mind while developing the curriculum :

- i) The learning outcomes have been spelled out keeping in mind professional knowledge, skills, life long learning, entrepreneurship development and self study.
- ii) The outcomes have been spelled out at programme level and course level and provide scope for higher learning opportunities.

#### **Progression of Diploma holder in Civil Engineering :**

1. The qualifying student will be absorbed initially as Junior Engineer or Supervisor in Govt./Private Sector. After 5 years, he will be working as Sub Divisional Officer. After 10 years, he will work as Executive Engineer.

The progression of diploma holder in Civil Engineering is given as follows.



## Annexure-II

## FORMAL STRUCTURE OF THE QUALIFICATIONS

Sr.	Title of Subject/Unit	Mandatory (M)/ Optional (O)	Estimated Size Learning Hours		NSQF Level		
			Theory	Practical	4	5	6
<b>FIRST SEMESTER</b>							
1.1	English and Communication Skills – I	M	48	32		5	
1.2	Applied Mathematics - I	M	80	-		5	
1.3	Applied Physics – I	M	64	32		5	
1.4	Applied Chemistry – I	M	64	32		5	
1.5	Basics of Information Technology	M	-	48		5	
1.6	Engineering Drawing – I	M	-	96		5	
1.7	General Workshop Practice – I	M	-	96			
<b>Student Centred Activities</b>		M	-	48		5	
<b>Total</b>			256	384			

<b>SECOND SEMESTER</b>							
2.1	English and Communication Skills - II	M	48	32		5	
2.2	Applied Mathematics – II	M	80	-		5	
2.3	Applied Physics-II	M	64	32		5	
2.4	Applied Chemistry-II	M	64	32		5	
2.5	Environmental Studies	M	48	-		5	
2.6	Engineering Drawing-II	M	-	96		5	
2.7	General Workshop Practice – II	M	-	96		5	
<b>Student Centred Activities</b>		M	-	48		5	
<b>Total</b>			304	336			

<b>THIRD SEMESTER</b>							
3.1	Fluid Mechanics	M	48	32		5	
3.2	Applied Mechanics	M	48	32		5	
3.3	Surveying - I	M	48	96		5	
3.4	Construction Material	M	64	32		5	
3.5	Building Construction	M	80	32		5	
3.6	Building Drawing	M	-	96		5	
<b>Student Centred Activities including Energy Conservation Awareness Camp</b>		M	-	32		5	
<b>Total</b>			288	352			

<b>FOURTH SEMESTER</b>							
4.1	Concrete Technology	M	48	32		5	
4.2	Water Supply and Waste Water Engineering	M	80	32		5	
4.3	Irrigation Engineering	M	64	-		5	
4.4	Surveying – II	M	48	64		5	
4.5	Structural Mechanics	M	48	32			6
4.6	Public Health & Irrigation Engineering Drawing	M	-	64		5	
4.7	Generic Skills and Entrepreneurship Development	M	48	-			6
<b>Student Centred Activities including Entrepreneurial Awareness Camp</b>		M	-	64		5	
<b>Total</b>			352	288			

<b>FIFTH SEMESTER</b>							
5.1	Reinforced Concrete Design	M	80	-		5	
5.2	Highway Engineering	M	80	32		5	
5.3	R.C.C. Drawings	M	-	64		5	
5.4	Survey Camp	M	-	-		5	
5.5	Computer Applications in Civil Engineering	M	-	64		5	
5.6	Railways, Bridges and Tunnels	M	80	-		5	
5.7	Soil and Foundation Engineering	M	64	32		5	
5.8	Minor Project Work	M	-	64		5	
	Industrial Training	M	-	-		5	
<b>Student Centred Activities including Personality Development Camp</b>		M	-	80		5	
<b>Total</b>			304	336			

<b>SIXTH SEMESTER</b>							
6.1	Steel Structures Design	M	80	-			6
6.2	Earthquake Resistant Building Construction	M	48	-		5	
6.3	Steel Structures Drawing	M	-	64			6
6.4	Quantity Surveying & Valuation	M	80	-		5	
6.5	Construction Management & Accounts	M	80	-		5	
6.6a	Repair and Maintenance of Buildings	O	48	-			6
6.6.b	Advanced Construction Technology	O	48	-			6
6.6.c	Green Buildings	O	48	-			6
6.7	Major Project Work	M	-	192		5	
	<b>Student Centred Activities</b>	M	-	48		5	
	<b>Total</b>		336	304			

**Grand Total Number of Education & Training (excluding examination) = (1840 + 2000) = 3840 Hrs**



## Annexure-III

## ASSESSMENT EVIDENCE

Sr.	Title of Subject/Unit	Learning Outcomes to be Assessed	Assessment Criteria	Means of Assessment	NSQF Level		
					4	5	6
1.	English and Communication Skills	Communicate effectively in English with others	As per Evaluation Strategy given in curriculum	<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, model/prototype making, assembly and disassembly exercises and viva-voce</li> <li>• Report writing, presentation and viva-voce</li> </ul>		5	
2.	Applied Mathematics	Apply basic principles of mathematics to solve engineering problems		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> </ul>		5	
3.	Applied Physics	Apply basic principles of physics to solve engineering problems		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, exercises and viva-voce</li> </ul>		5	
4.	Applied Chemistry	Apply basic principles of Chemistry to solve engineering problems		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, exercises and viva-voce</li> </ul>		5	

5.	Engineering Drawing	Prepare and interpret drawings of engineering components		<ul style="list-style-type: none"> <li>• Design and drawing</li> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> </ul>		5	
6.	General Workshop Practice	Use cutting tools, equipment and tooling for fabrication of jobs by following safe practices at the workplace		<ul style="list-style-type: none"> <li>• Workshop job</li> <li>• Report writing, presentation and viva-voce</li> </ul>		5	
7.	Basics of Information Technology	Prepare computerized reports, presentations using IT tools and computer application software		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> <li>• Software installation, operation, development and viva-voce</li> </ul>		5	
8.	Fluid Mechanics	Use basic concepts and principles of fluid mechanics as applied to civil engineering practices.		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, model/prototype making, assembly and disassembly exercises and viva-voce</li> </ul>		5	
9.	Applied Mechanics	Apply concepts of mechanics to solve Engineering problems		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, model/prototype making, assembly and disassembly exercises and viva-voce</li> </ul>		5	

10.	Surveying	Carry out various types of surveying like levelling, plane tabling, theodolite surveying, and tachometry and contouring; and use modern surveying techniques like total station, remote sensing and GIS.		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> </ul>		5	
11.	Environmental Studies	Use appropriate procedures for energy conservation and preventing environmental pollution		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> </ul>		5	
12.	Construction Material	Use various types of construction materials as per their suitability and uses, availability and cost.		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, model/prototype making and viva-voce</li> </ul>		5	
13.	Building Construction	Supervise various building construction works from substructure to superstructure and their finishing operations		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, model/prototype making, exercises and viva-voce</li> </ul>		5	
14	Building Drawing	Prepare, read and interpret building drawings		<ul style="list-style-type: none"> <li>• Design and drawing</li> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> </ul>		5	

15.	Concrete Technology	Supervise production, placement and quality control of concrete operations		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, exercises and viva-voce</li> </ul>		5	
16.	Water Supply and Waste Water Engineering	Carry out layout plan of water supply, sewerage and sanitary systems and monitor quality of water		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, exercises and viva-voce</li> </ul>		5	
17.	Irrigation Engineering	Supervise constructional aspects pertaining to irrigation structures		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, exercises and viva-voce</li> </ul>		5	
18.	Structural Mechanics	Analyse and design simple structural elements		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, exercises and viva-voce</li> </ul>			6
19.	Public Health & Irrigation Engineering Drawing	Prepare, read and interpret public health and irrigation engineering drawings		<ul style="list-style-type: none"> <li>• Design and drawing</li> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making and viva-voce</li> </ul>		5	

20.	Generic Skills and Entrepreneurship Development	Plan and execute given task and project as a team member or a leader		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> </ul>			6
21.	Reinforced Concrete Design	Analyse and design simple structural elements of R.C.C.		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> </ul>		5	
22.	Highway Engineering	Supervise constructional aspects pertaining to highway engineering		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, model/prototype making, exercises and viva-voce</li> </ul>		5	
23.	R.C.C. Drawing	Prepare, read and interpret R.C.C. drawings		<ul style="list-style-type: none"> <li>• Design and drawing</li> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making, exercises and viva-voce</li> </ul>			
24.	Computer Applications in Civil Engineering	Use various computer softwares such as STAADPro, Primavera, BIM etc. in the field of civil engineering		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> <li>• Software installation, operation, development and viva-voce</li> </ul>		5	
25.	Railways, Bridges and Tunnels	Supervise constructional aspects pertaining to railways, bridges and tunnels		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making, exercises and viva-voce</li> </ul>		5	

26.	Soil and Foundation Engineering	Analyse and use various types of soils for foundation purpose		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making</li> <li>• Actual laboratory and practical work, exercises and viva-voce</li> </ul>		5	
27.	Steel Structure Design	Analyse and design simple structural elements of steel		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making, exercises and viva-voce</li> </ul>			6
28	Earthquake Resistant Building Construction	Apply basic principles of earthquake resistant construction		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making, exercises and viva-voce</li> </ul>		5	
29	Steel Structure Drawing	Prepare, read and interpret steel structure drawings		<ul style="list-style-type: none"> <li>• Design and drawing</li> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making, exercises and viva-voce</li> </ul>			6
30.	Quantity Surveying and Valuation	Prepare material estimates as per CSR, costing, valuation and tender documents as per given drawings.		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> </ul>		5	
31.	Construction Management & Accounts	Apply basic principles of construction management techniques and accounts in civil engineering		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> </ul>		5	

32.	Repair and Maintenance of Buildings	Carry out repair and maintenance of buildings as per requirement		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests</li> </ul>			6
33.	Advanced Construction Technology	Use various advanced constructional techniques for construction of various structures		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making, development and viva-voce</li> </ul>			6
34.	Green Buildings	Use various eco-friendly building material for construction of buildings		<ul style="list-style-type: none"> <li>• Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making, development and viva-voce</li> </ul>			6
35.	Minor Project Work	Plan and execute minor projects related to civil engineering		<ul style="list-style-type: none"> <li>• Project development, model/prototype making</li> <li>• Report writing, presentation and viva-voce</li> </ul>		5	
36.	Major Project Work	Apply all the knowledge and skills gained through various courses in solving live problems/projects in the field		<ul style="list-style-type: none"> <li>• Project development, model/prototype making</li> <li>• Report writing, presentation and viva-voce</li> </ul>		5	

Minimum passing marks for Practical is 40%

Minimum pass marks for theory is 40%

## Annexure-IV

## EVIDENCE OF LEVEL

Sr.	Title of Subject/Unit	Learning Outcome	Relation of Learning Outcome with NSQF Level	NSQF Level		
				4	5	6
1.	English and Communication Skills	Communicate effectively in English with others	<ul style="list-style-type: none"> <li>Desired understanding of skills of communication</li> </ul>		5	
2.	Applied Mathematics	Apply basic principles of mathematics to solve engineering problems	<ul style="list-style-type: none"> <li>Desired cognitive and mathematical skills to solve problems</li> </ul>		5	
3.	Applied Physics	Apply basic principles of physics to solve engineering problems	<ul style="list-style-type: none"> <li>Desired cognitive and applied skills to solve problems</li> </ul>		5	
4.	Applied Chemistry	Apply basic principles of Chemistry to solve engineering problems	<ul style="list-style-type: none"> <li>Desired cognitive and applied skills to solve problems</li> </ul>		5	
5.	Engineering Drawing	Prepare and interpret drawings of engineering components	<ul style="list-style-type: none"> <li>A range of cognitive and practical skills required to draw, read and interpret drawings and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	
6.	General Workshop Practice	Use cutting tools, equipment and tooling for fabrication of jobs by following safe practices at the workplace	<ul style="list-style-type: none"> <li>A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	



7.	Basics of Information Technology	Prepare computerized reports, presentations using IT tools and computer application software	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> <li>• Collecting and organising information and communication</li> <li>• Responsibility for own work and learning and some responsibility for others' works and learning</li> </ul>		5	
8.	Fluid Mechanics	Use basic concepts and principles of fluid mechanics as applied to civil engineering practices.	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	
9.	Applied Mechanics	Apply concepts of mechanics to solve Engineering problems	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	
10.	Surveying	Carry out various types of surveying like levelling, plane tabling, theodolite surveying, and tachometry and contouring; and use modern surveying techniques like total station, remote sensing and GIS.	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	

11.	Environmental Studies	Use appropriate procedures for energy conservation and preventing environmental pollution	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> </ul>	5	
12.	Construction Material	Use various types of construction materials as per their suitability and uses, availability and cost.	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> <li>• Responsibility for own work and learning and some responsibility for others' works and learning</li> </ul>	5	
13.	Building Construction	Supervise various building construction works from substructure to superstructure and their finishing operations	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> <li>• Responsibility for own work and learning and some responsibility for others' works and learning</li> </ul>	5	
14	Building Drawing	Prepare, read and interpret building drawings	<ul style="list-style-type: none"> <li>• A range of cognitive and practical skills required to draw, read and interpret drawings and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>	5	
15.	Concrete Technology	Supervise production, placement and quality control of concrete operations	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by use of information</li> <li>• Responsibility for own work and learning and some responsibility for others' works and learning</li> </ul>	5	

16.	Water Supply and Waste Water Engineering	Carry out layout plan of water supply, sewerage and sanitary systems and monitor quality of water	<ul style="list-style-type: none"> <li>• Factual and theoretical knowledge in broad contexts within a field of work or study</li> <li>• A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study</li> </ul>		5	
17.	Irrigation Engineering	Supervise constructional aspects pertaining to irrigation structures	<ul style="list-style-type: none"> <li>• Factual and theoretical knowledge in broad contexts within a field of work or study</li> <li>• A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study</li> </ul>		5	
18.	Structural Mechanics	Analyse and design simple structural elements	<ul style="list-style-type: none"> <li>• Factual and theoretical knowledge in broad contexts within a field of work or study</li> <li>• A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study</li> </ul>			6
19.	Public Health & Irrigation Engineering Drawing	Prepare, read and interpret public health and irrigation engineering drawings	<ul style="list-style-type: none"> <li>• A range of cognitive and practical skills required to draw, read and interpret drawings and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	
20.	Generic Skills and Entrepreneurship Development	Plan and execute given task and project as a team member or a leader	<ul style="list-style-type: none"> <li>• Responsibility for own work and learning and full responsibility for other's works and learning</li> </ul>			6
21.	Reinforced Concrete Design	Analyse and design simple structural elements of R.C.C.	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools and information</li> </ul>		5	

22.	Highway Engineering	Supervise constructional aspects pertaining to highway engineering	<ul style="list-style-type: none"> <li>• Factual and theoretical knowledge in broad contexts within a field of work or study</li> <li>• A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study</li> </ul>		5	
23.	R.C.C. Drawing	Prepare, read and interpret R.C.C. drawings	<ul style="list-style-type: none"> <li>• A range of cognitive and practical skills required to draw, read and interpret drawings and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	
24.	Computer Applications in Civil Engineering	Use various computer softwares such as STAADPro, Primavera, BIM etc. in the field of civil engineering	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools and information</li> </ul>		5	
25.	Railways, Bridges and Tunnels	Supervise constructional aspects pertaining to railways, bridges and tunnels	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	
26.	Soil and Foundation Engineering	Analyse and use various types of soils for foundation purpose	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>		5	

27.	Steel Structure Design	Analyse and design simple structural elements of steel	<ul style="list-style-type: none"> <li>• Factual and theoretical knowledge in broad contexts within a field of work or study</li> <li>• A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study</li> <li>• Reasonable good in mathematical calculation</li> <li>• Responsibility for own work and learning and full responsibility for other's works and learning</li> </ul>			6
28	Earthquake Resistant Building Construction	Apply basic principles of earthquake resistant construction	<ul style="list-style-type: none"> <li>• Factual and theoretical knowledge in broad contexts within a field of work or study</li> <li>• A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study</li> </ul>		5	
29	Steel Structure Drawing	Prepare, read and interpret steel structure drawings	<ul style="list-style-type: none"> <li>• A range of cognitive and practical skills required to draw, read and interpret drawings and solve problems by selecting and applying basic methods, tools, materials and information</li> </ul>			6
30.	Quantity Surveying and Valuation	Prepare material estimates as per CSR, costing, valuation and tender documents as per given drawings.	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> <li>• Desired mathematical skill; understanding and some skill of collecting and organising information,</li> </ul>		5	

31.	Construction Management & Accounts	Apply basic principles of construction management techniques and accounts in civil engineering	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools and information</li> <li>• Desired mathematical skill; understanding of social, political; and some skill of collecting and organising information, communication</li> </ul>		5	
32.	Repair and Maintenance of Buildings	Carry out repair and maintenance of buildings as per requirement	<ul style="list-style-type: none"> <li>• Factual knowledge of field of knowledge or study</li> <li>• Responsibility for own work and learning</li> </ul>			6
33.	Advanced Construction Technology	Use various advanced constructional techniques for construction of various structures	<ul style="list-style-type: none"> <li>• Factual knowledge of field of knowledge or study</li> <li>• Responsibility for own work and learning</li> </ul>			6
34.	Green Buildings	Use various eco-friendly building material for construction of buildings	<ul style="list-style-type: none"> <li>• Factual and theoretical knowledge in broad contexts within a field of work or study</li> <li>• Responsibility for own work and learning and full responsibility for other's works and learning</li> </ul>			6
35.	Minor Project Work	Plan and execute minor projects related to civil engineering	<ul style="list-style-type: none"> <li>• Factual and theoretical knowledge in broad contexts within a field of work or study</li> <li>• A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study</li> <li>• Reasonable good in mathematical calculation, understanding and reasonably good in data collecting, organising information, and logical communication</li> <li>• Responsibility for own work and learning and full responsibility for other's works and learning</li> </ul>		5	

36.	Major Project Work	Apply all the knowledge and skills gained through various courses in solving live problems/projects in the field	<ul style="list-style-type: none"> <li>• Knowledge of facts, principles, processes and general concepts, in a field of work or study</li> <li>• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information</li> <li>• Desired mathematical skill; understanding and some skill of collecting and organising information, communication</li> <li>• Responsibility for own work and learning and some responsibility for others' works and learning</li> </ul>		5	
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