TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY
Approved by AICTE & Affiliated to Rajasthan Technical University

www.technonjr.org

NJR Knowledge Campus, Plot-SPL-T, Bhamashah (RIICO) Industrial Area, Kaladwas, Udaipur - 313003 (Raj.)
Tel. : +91 2942650214-17 Fax :+91 2942650218, Email : technonjr@gmail.com, director@technonjr.org

Date: 15/09/2021

Notice: Academic Calendar 2021-2022

RAJASTHAN TECHNICAL UNIVERSITY KOTA

Academic Calendar for Odd Semester for Session 2021-22

Course: Bachelor of Technology (B.TECH.)

Semester	I	III	V	VII
Induction Program	•			
Commencement of Classes	•	20.09.2021	20.09.2021	01.09.2021
Commencement of First Mid Term	•	28.10.2021	25.10.2021	04.10.2021
Commencement of Second Mid Term	•	08.12.2021	29.11.2021	15.11.2021
Last Working Day	•	15.01.2022	24.12.2021	15.12.2021
Commencement of Practical Exams	•	17.01.2022	20.01.2022	16.12.2021
Commencement of Theory Exams	•	27.01.2022	05.01.2022	06.01.2022
Winter Break	Not Applicable			
Commencement of Classes for Even Semesters (2020-21)	II	IV	VI	VIII
	•	10.02.2022	27.01.2022	10.01.2022

Academic Calendar Odd Semester 2021-22				
Particulars	**B. Tech- I**	**B. Tech- III**	**B. Tech- V**	**B. Tech- VII**
Commencement of classes	*	20-09-2021	20-09-2021	01-09-2021
Last Working Day	*	15-01-2022	24-12-2021	15-12-2021
Course Progression Report-I	*	20-10-2021	20-10-2021	20-10-2021
First Mid Term Exam	*	28-10-2021	25-10-2021	25-10-2021
Remedial Class-I	*	08-11-2021	08-11-2021	08-11-2021
Course Progression Report-II	*	04-12-2021	20-11-2021	20-11-2021
Second Mid Term Exam	*	08-12-2021	29-11-2021	22-11-2021
Remedial Class-II	*	16-12-2021	09-12-2021	09-12-2021
Commencement of Theory Exam	*	27-01-2022	05-01-2022	06-01-2022
Commencement of Practical Exam	*	17-01-2022	20-01-2022	16-12-2021

For Techno India NJR Institute of Technology
पंकज पोरवाल
Dr. Pankaj Kumar Porwal
(Principal)

Techno India NJR Institute of Technology

Course File

BASIC CIVIL ENGINEERING (1FY3-09)

Rakesh Yadav
Department of Civil Engineering

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

I & II Semester

Common to all branches of UG Engineering & Technology

1FY3-09/ 2FY3-09: Basic Civil Engineering

SN	CONTENTS
1	**Introduction to objective, scope and outcome the subject**
2	**Introduction:** Scope and Specialization of Civil Engineering, Role of civil Engineer in Society, Impact of infrastructural development on economy of country.
3	**Surveying:** Object, Principles & Types of Surveying; Site Plans, Plans& Maps; Scales & Unit of different Measurements. Linear Measurements: Instruments used. Linear Measurement by Tape, Ranging out Survey Lines and overcoming Obstructions; Measurements on sloping ground; Tape corrections, conventional symbols. Angular Measurements: Instruments used; Introduction to Compass Surveying, Bearings and Longitude & Latitude of a Line, Introduction to total station. Levelling: Instrument used, Object of levelling, Methods of levelling in brief, Contour maps.
4	**Buildings:** Selection of site for Buildings, Layout of Building Plan, Types of buildings, Plinth area, carpet area, floor space index, Introduction to building byelaws, concept of sun light and ventilation. Components of Buildings & their functions, Basic concept of R.C.C., Introduction to types of foundation.
5	**Transportation:** Introduction to Transportation Engineering; Traffic and Road Safety: Types and Characteristics of Various Modes of Transportation; Various Road Traffic Signs, Causes of Accidents and Road Safety Measures.
6	**Environmental Engineering:** Environmental Pollution, Environmental Acts and Regulations, Functional Concepts of Ecology, Basics of Species, Biodiversity, Ecosystem, Hydrological Cycle; Chemical Cycles: Carbon, Nitrogen& Phosphorus; Energy Flow in Eco-systems. Water Pollution: Water Quality standards, Introduction to Treatment & Disposal of Waste Water. Reuse and Saving of Water, Rain Water Harvesting. Solid Waste Management: Classification of Solid Waste, Collection, Transportation and Disposal of Solid. Recycling of Solid Waste: Energy Recovery,Sanitary Land fill, On-Site Sanitation.

	Air& Noise Pollution: Primary and Secondary air pollutants, Harmful effects of Air Pollution, Control of Air Pollution. Noise Pollution, Harmful Effects of noise pollution, control of noise pollution, Global warming& Climate Change, Ozone depletion, Green House effect	
		TOTAL

The course has certain outcomes by virtue of which the students will get an idea of the subject Basic Civil Engineering.

The Course Outcomes (COs) are as follows:

Analysis of CO l -

CO1. Students will be able to describe and write the Role of civil engineer and impact of infrastructure on society.

Bloom's Level	Mapping with respect to CO1
Create	To develop a relationship between civil engineering branch to other branches.
Evaluate	To plan the execution of a construction work.
Analyze	To relate the reflexes needed for being a civil engineering in comparison to other engineering branches.
Apply	To solve the problems related site work.
Understand	To summarize how infrastructure effects a country's economy.
Remember	Defining the roles of an engineers for execution of any project efficiently.

Lecture Sl. No.	Topic	Unit based mapping
1	INTRODUCTION: to objective, scope and outcome the subject	1
2	Scope and Specialization of Civil Engineering, Role of civil Engineer in Society	1
3	Impact of infrastructural development on economy of country.	1

Analysis of CO 2 –

CO2. Students will be able to write & outline the Principles of surveying and levelling will be known to student.

Bloom's Level	Mapping with respect to CO2
Create	To develop a complete knowledge of levelling for excavation project.
Evaluate	To plan the cutting and filling volumes for a highway project.
Analyze	To relate the types of ranging done for surveying.
Apply	To solve the problems related to determining Reduced Level of a point on ground.
Understand	To summarize how one can determine the bearings of a line in field.
Remember	Defining the important precautions required at the time of angular & Linear Measurements.

Lecture Sl. No.	Topic	Unit based mapping
4	SURVEYING: Object, Principles; Types of Surveying; Site Plans	2
5	Plans; Maps; Scales & Unit of different Measurements.	2
6	Linear Measurements: Instruments used. Linear Measurement by Tape,	2
7	Ranging out Survey Lines and overcoming Obstructions	2
8	Angular Measurements: Instruments used	2
9	Introduction to Compass Surveying, Bearings and Longitude, Latitude of a Line	2
10	Introduction to total station. Levelling: Instrument used,	2

Analysis of CO 3 –

CO3. Student will be able to differentiate between types of building.

Bloom's Level	Mapping with respect to CO3
Create	To develop a concept of types of building.
Evaluate	To plan the usage of a particular habitat on the basis of its aim of work and materials available.
Analyze	To relate the difference between various types of Industrial building.

Apply	To solve the problems related to determining types of occupancy according to specific place's law.
Understand	To summarize the parts of residential building according to IBC.
Remember	Defining the types of building.

Lecture Sl. No.	Topic	Unit based mapping
11	BUILDINGS: Selection of site for Buildings, Layout of Building Plan, Types of buildings, Plinth area, carpet area, floor space index	3
12	Introduction to building byelaws.	3

Analysis of CO 4 –

CO4. Students will be able to classify the Importance of traffic engineering will be known to students.

Bloom's Level	Mapping with respect to CO4
Create	To develop a concept of types of transportation systems.
Evaluate	To plan the usage of a particular transport system based on the resources available.
Analyze	To relate the difference between various types transportation system.
Apply	To solve the problems related to traffic rules and regulations.
Understand	To summarize the parts of 3 E's (Engineering, Enforcement & Educations).
Remember	Defining the causes of accident.

Lecture Sl. No.	Topic	Unit based mapping
13	Introduction to Transportation Engineering; Traffic and Road Safety: Types and Characteristics of Various Modes of Transportation	4
14	Various Road Traffic Signs, Causes of Accidents and Road Safety Measures.	4

Analysis of CO 5 –

CO5. Students will be able to express and review about problem related to environment.

Bloom's Level	Mapping with respect to CO4
Create	To develop a concept of types of pollution and their source and control.
Evaluate	To plan the usage of a various equipment's in industries according to Environmental Laws.
Analyze	To relate the understanding of various cycles in nature. (Oxygen/Nitrogen Cycle etc)
Apply	To solve the problems related to generation of waste water and its management.
Understand	To summarize the concept of solid waste management.
Remember	Defining the Biodiversity and parts of ecosystem.

Lecture Sl. No.	Topic	Unit based mapping
15	ENVIRONMENTAL ENGINEERING: Environmental Pollution.	5
16	Functional Concepts of Ecology, Basics of Species,	5
17	Biodiversity, Ecosystem, Hydrological Cycle;	5
18	Water Pollution: Water Quality standards	5
19	Introduction to Treatment & Disposal of Waste Water.	5
20	Solid Waste Management: Classification of Solid Waste, Collection, Transportation.	5
21	Air; Noise Pollution: Primary and Secondary air pollutants, Harmful effects of Air Pollution, Control of Air Pollution.	5
22	Noise Pollution, Harmful Effects of noise pollution, control of noise pollution,	5

CO-PO Mapping:

Basic Civil Engineering Year of study: 2020-21														
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO11FY309.1	2	0	0	0	2	2	2	0	0	2	0	2	0	0	0
CO11FY309.2	3	2	3	2	2	0	0	2	3	2	3	3	0	0	0
CO11FY309.3	3	2	0	2	0	2	2	3	2	2	0	2	0	0	0
CO11FY309.4	2	0	0	2	0	2	3	3	0	3	3	3	0	0	0
CO11FY309.5	2	3	2	3	3	3	3	3	2	3	3	2	0	0	0
C11FY309 (AVG)	2.40	1.40	1.00	1.80	1.40	1.80	2.00	2.20	1.40	2.40	1.80	2.40	0.00	0.00	0.00

Text Books:

Satheesh Gopi, "Basic Civil Engineering Book", Pearson Education India.

Assessment Methodology -

1. Assignments

2. Quiz

3. Viva-Voce based on subject

4. Mid Term (twice during the semester)

5. End Term

TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY UDAIPUR

Civil Engineering Department

B. TECH I-YEAR (I/II SEM)

SUBJECT 1FY3-09 BASIC CIVIL ENGINEERING

ASSIGNMENT 1

Answer all questions. Each question carries 5 marks

1. Explain the role of civil engineering on site. [CO1]

2. Explain the effect of infrastructure on the economy of a country. [CO1]

3. Describe what a chain is? And also write its types. [CO2]

4. Explain the process of Levelling and instruments used in it. [CO2]

5. Explain what are building by laws. [CO3]

6. What are the types of building? [CO3]

TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY UDAIPUR

Civil Engineering Department

B. TECH I- YEAR (I/II SEM)

SUBJECT 1FY3-09 BASIC CIVIL ENGINEERING

ASSIGNMENT 2

Answer all questions. Each question carries 5 marks

1. Explain the role of a transportation system in a country.   [CO4]

2. Explain what are the different types of transportation system?   [CO4]

3. Describe what are the causes of accident?   [CO4]

4. Explain what air &water pollution are?   [CO5]

5. Explain what an ecosystem is?   [CO5]

6. What do you understand by Solid waste management?   [CO5]

VIVA-VOCE

UNIT-1 [CO-1]

Q.1: What are the branches of Civil Engineering?

Q.2: What is the role of a civil engineer?

Q.3: Describe the scope of civil engineering?

UNIT-2 [CO-2]

Q.1: What are the types of bearing system?

Q.2: What do you understand by fore bearing & Back Bearing?

Q.3: What is a datum, Bench mark and reduced level?

UNIT-3 [CO-3]

Q.1 Explain Building by laws.

Q.2 Explain classes of residential building by IBC?

Q.3 Explain the types of Industrial building?

UNIT-4 [CO-4]

Q.1: What are 3E's in traffic engineering?

Q.2: What can be the causes of an accident?

Q.3: Which is efficient, a waterways or railways or airways transportation system also state why?

UNIT-5 [CO-5]

Q.1: Explain Noise pollution with its sources and its control.

Q.2: Describe the process of Global warming.

Q.3: What do you understand by Biodiversity and why is it necessary?

QUIZ 1

1. The carbon content of steel is:

a) Less than 0.15%

b) 2% – 4%

c) 0.08%

d) 0.002% – 2.1%

2. The main principle of surveying is to work

A. from part to the whole

B. from whole to the part

C. from higher level to the lower level

D. from lower level to higher level.

3. On a diagonal scale, it is possible to read up to

A. One dimension

B. Two dimensions

C. Three dimensions

D. Four dimensions.

4. While measuring a chain line between two stations A and B intervened by a raised ground

A. vision gets obstructed

B. chaining gets obstructed

C. both vision and chaining get obstructed

D. all the above.

5. In chain surveying field work is limited to

A. linear measurements only

B. angular measurements only

C. both linear and angular measurements

D. all the above.

6. Chain surveying is well adopted for

A. small areas in open ground

B. small areas with crowded details

C. large areas with simple details

D. large areas with difficult details.

7. Determining the difference in elevation between two points on the surface of the earth, is known as

A. levelling

B. simple levelling

C. differential levelling

D. longitudinal levelling.

8. When the bubble of the level tube of a level, remains central

A. line of sight is horizontal

B. axis of the telescope is horizontal

C. line of collimation is horizontal

D. geometrical axis of the telescope is horizontal.

9. The imaginary line passing through the intersection of cross hairs and the optical centre of the objective, is known as

A. line of sight

B. line of collimation

C. axis of the telescope

D. none of these.

10. The back staff reading on a B.M. of R.L. 500.000 m is 2.685 m. If foresight reading on a point is 1.345 m, the reduced level of the point, is

A. 502.685 m

B. 501.345 m

C. 501.340 m

D. 504.030 m

ANSWER KEY

1. Answer: d

Explanation: Cast iron contains 2-4% of carbon, wrought iron contains less than 0.15% of carbon and stainless steel contains maximum 0.08% carbon.

2. B. from whole to the part

3. C. Three dimensions

4. A. vision gets obstructed

5. A. linear measurements only

6. A. small areas in open ground

7. C. differential levelling

8. A. line of sight is horizontal

9. B. line of collimation

10. C. 501.340 m

QUIZ 2

1. A metallic tape is made of

a) Steel

b) Invar

c) Linen

d) Cloth and wires

2. The correction for sag is

a) Always additive

b) Always subtractive

c) Always zero

d) Sometimes additive and sometimes subtractive

3. The maximum tolerance in a 20 m chain is

a) ±2 mm

b) ±3 mm

c) ±5 mm

d) ±8 mm

4. For accurate work, the steel band should always be used in preference to chain because the steel band

a) is lighter than chain

b) is easier to handle

c) is practically inextensible and is not liable to kinks when in use

d) can be easily repaired in the field

5. The length of a chain is measured from

a) Centre of one handle to centre of other handle

b) Outside of one handle to outside of other handle

c) Outside of one handle to inside of other handle

d) Inside of one handle to inside of other handle

6. Select the incorrect statement.

a) The true meridians at different places are parallel to each other.

b) The true meridian at any place is not variable.

c) The true meridians converge to a point in northern and southern hemispheres.

d) The maps prepared by national survey departments of any country are based on true meridians

7. If the true bearing of a line AB is 269° 30′, then the azimuth of the line AB is

a) 0° 30′

b) 89° 30′

c) 90° 30′

d) 269° 30′

8. In the prismatic compass

a) The magnetic needle moves with the box

b) The line of the sight does not move with the box

c) The magnetic needle and graduated circle do not move with the box

d) The graduated circle is fixed to the box and the magnetic needle always remains in the N-S direction

9. The horizontal angle between the true meridian and magnetic meridian at a place is called

a) azimuth

b) Declination

c) Local attraction

d) Magnetic bearing

10. Theodolite is an instrument used for

a) Tightening the capstan-headed nuts of level tube

b) Measurement of horizontal angles only

c) Measurement of vertical angles only

d) Measurement of both horizontal and vertical angles

ANSWER KEY

1. D) Cloth and wires.

2. B) Always subtractive.

3. C) ±5 mm.

4. C) is practically inextensible and is not liable to kinks when in use.

5. B) Outside of one handle to outside of other handle.

6. A) the true meridians at different places are parallel to each other.

7. C) 90° 30′

8. C) the magnetic needle and graduated circle do not move with the box

9. B) Declination

10. D) Measurement of both horizontal and vertical angles

1E2409

B.Tech. I semester (Main) Examination, Dec. - 2018
ESC
1FY3-09 Basic Civil Engg.

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

*Attempt all five questions from **Part A**, selecting four questions from **Part B** and two from **Part C**. (Schematic diagrams must be shown wherever necessary). Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Part - A

(Short answer questions up to 25 words). All question are **compulsory**.

(5×2=10)

1. Discuss scope of civil engineering and give any two objects of civil engineering.

2. Write down the formula for tape correction due to - temperature and tape correction for sag.

3. Write down the different units of measurements.

4. Explain in brief the term R.C.C.

5. Define levelling and any one objects of levelling.

Part - B

(Analytical/Problem Solving Questions). Attempt any **four** question. (4×10=40)

1. Convert the following whole circle Bearing of lines in to quadrantal Bearing system as :

   i)   35°

   ii) 115°

   iii) 210°

   iv) 315°

2. The following readings were observed with a 4 metre levelling staff and a dumpy level. Calculate the reduced level by Height of Instrument (H.I.) method. Also apply a arithmetical check. The reading given in table as :

STATION	B.S.	I.S	F.S	H.I.	R.L	REMARK
A	3.25				210.00	B.M.
B		3.15				
C		3.25				
D		2.95				
E			2.85			

3. Explain Fundamental principles of surveying upon which the various methods of surveying is based? Explain how will you fix a point C in the field in relation to two points 'A' and 'B' which is already fixed in the filed.

4. What are the various safety measures will you take during accidents, in civil construction and in Traffic.

5. Describe impact of Infrastructural development on economy of country and role of civil engineer in society.

6. Explain Hydrological cycle with neat sketch.

Part - C

(Descriptive/Analytical/Problem Solving/Design Question). Attempt any **two** question. (2×15=30)

1. Explain various components of buildings along with their functions.

2. State Building Bye laws. Explain various types of buildings along with their functions.

3. Describe Reuse and saving of water. Also explain Rain water harvesting with neat sketch.

2E2305

2E2305

B. Tech. II Sem. (Main) Exam., May – 2018

CE -103 Basic Civil Engineering

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks: 28

Instructions to Candidates:

*Attempt any **five questions** including Question No. 1, which is Compulsory. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL _____ 2. NIL _____

Q.1 Compulsory, Answers for each sub-question be given in about 25 words. [8×2=16]

(a) What is the object of surveying?

(b) What is Representative fraction?

(c) Explain the indirect ranging?

(d) What is Magnetic declination?

(e) Explain the height of instrument?

(f) Define the floor space index?

(g) What is the main function of alumina in brick?

(h) What is the initial setting time for ordinary portland cement as per IS specifications?

Q.2 (a) What is local attraction? How is it detected and eliminated? [8]

(b) The length of a line measured with a 20 meter chain was found to be 250 meters.

Calculate the true length of the line, if the chain was 10 cm too long? [4]

(c) Write a short note on total station. [4]

Q.3 (a) Explain the importance of a Civil Engineer in society? [8]

(b) What are the various uses of stones? [4]

(c) Mention the uses of cement. [4]

Q.4 (a) What should be the planning for proper sunlight and ventilation in a

building? [8]

(b) Explain the basic concept of R.C.C.? [4]

(c) Write the components of a building. [4]

Q.5 (a) Explain the various road traffic signs. [8]

(b) Define levelling. Explain spirit levelling. [4]

(c) Write a short note on building bye-laws? [4]

Q.6 (a) Explain ranging out survey lines. [8]

(b) What are the impacts of infrastructural development on economy of country? [4]

(c) What are the qualities of good bricks? [4]

Q.7 (a) Write the characteristics of various modes of transportation [8]

(b) What are the basic systems of notation of bearings? [4]

(c) Write a short note on road safety measures [4]

[8020]