

TEACHING & EVALUATION SCHEME

DISCIPLINE: CIVIL ENGINEERING

FOURTH SEMESTER

Sl.No.	SUBJECT	Evaluation Scheme							Total Marks
		L	P	THEORY			PRACTICAL		
				END EXAM	INTERNAL ASSESSMENT		End Examination	Sessional	
Class Test	Assignment								
	THEORY								
1.	Structural Analysis	5	--	80	15	5	--	--	100
2.	Transportation Engineering- I	5	--	80	15	5	--	--	100
3.	Geotechnical engineering	5	--	80	15	5	--	--	100
4.	Irrigation Engineering	5	--	80	15	5	--	--	100
5.	Estimating- I	4	--	80	15	5	--	--	100

PRACTICAL/SESSIONAL

1.	Civil Engineering Drawing -II	--	7	--	--	--	50	50	100
2.	Estimating Practice-I	--	4	--	--	--		50	50
3.	CAD Lab.	--	4	--	--	--	50	50	100
		24	15	400	75	25	100	150	750

NOTE: Evaluation for I.A.(Theory)& Sessional /Practical to be made as per guidelines of SCTE&VT.

STRUCTURAL ANALYSIS (Th-1)

Period per week:5 Total Marks:100 Evaluation scheme:

Total periods:75 Theory-3Hrs.

End Term Examination:80marks

Internal Assessment: 15 + 5(Assign.)=20Marks.

Topic wise Distribution of Periods:

Sl. No.	Topics	No. of Periods
1	TRUSSES	08
2	SLOPE AND DEFLECTION	15
3	FIXED BEAM	10
4	CONTINUOUS BEAM	12
5	SLOPE DEFLECTION METHOD	12
6	MOMENT DISTRIBUTION METHOD	12
7	THREE HINGED ARCH	06

COURSE CONTENTS :

1.0 TRUSSES

- 1.1 Introduction –Type of trusses, statically determinate and indeterminate trusses/frames, distinction between beams and determinate trusses, important uses of determinate frames.
- 1.2 Methods of analysis –a) Analytical method (Method of joints, method of Section & Tension Coefficient Method) b)Graphical Method (Space Diagram, load diagram, Bow's notation, Vector Diagram, Polar diagram, Funicular Polygon, Maxwell's Diagram)

2.0 SLOPE AND DEFLECTION

- 2.1 Introduction : Shape and nature of elastic curve (deflection curve). Importance of slope and deflection. Relation between slope, deflection and radius of curvature.(no derivation)
- 2.2 Expression for slope and deflection of cantilever and simply supported beams under concentrated and uniformly distributed load (by Double Integration method, Macaulay's method). Principles of superposition for deflection and rotation.
- 2.3 Determine the slope and deflection at a point of beams under loads and support conditions. Solve problems of propped cantilevers from superposition of deflection at the prop.
- 2.4 Moment Area Method - Determination of slope and deflection for following cases
 - i) Cantilever beam subjected to point load and uniformly distributed loads,
 - ii) Simple supported beam subjected to to point load and uniformly distributed loads.

3.0 Fixed Beam

- 3.1 Advantages of fixed beam, Analysis of Fixed Beam-Determination of Fixed End Moments. Bending Moment & Shear Force diagram under central and eccentric point load and uniformly distributed load.

4.0 Continuous Beam

- 4.1 Analysis of continuous beam (without sinking of support) by application of Three Moment Equation(no derivation) for simply supported ends, fixed end and overhangs under action of point load and u.d.l. Bending Moment and Shear Force diagram for the above cases.

5.0 SLOPE DEFLECTION METHOD

- 5.1 Assumptions, sign convention, slope deflection equation and its application for analysis of continuous beams and symmetrical portal frame (without sway). Shear force and Bending Moment diagram.

6.0 MOMENT DISTRIBUTION METHOD

- 5.1 Sign convention, carry over factor, stiffness factor, distribution factors, its application for the analysis of various types of continuous beams with fixed end supports and overhang. Shear force and Bending Moment diagram.

7.0 ARCHES:

- 6.1 Types of arches, practical applications. Analysis of symmetrical three hinged parabolic arch subjected to point load and u.d.l.

RECOMMENDED BOOKS:

1. Theory of structure - R. S.Khurmi,
2. Theory of structure - S.Rammrutham,
3. Analysis of Structures-Vol.I&II -V.N.Vazirani & M.M. Rathwani
4. Theory of Structure - Timoshenko and Young.

TRANSPORTATION ENGINEERING – I (Th-2)

Period per week:5 Total Marks:100 Evaluation scheme:

Total periods:75 Theory-3Hrs.

End Term Examination:80marks

Internal Assessment: 15 + 5(Assign.)=20Marks

Topic wise Distribution of Periods:

Sl. No.	Topics	No. of Periods
01.	Introduction	02
02.	Road Geometric	15
03.	Road Materials0	10
04.	Road Pavements	10
05.	Hill Roads	08
06.	Road Drainage	07
07.	Road Maintenance	08
08.	Construction equipments	05
09.	Traffic studies	05
10.	Land scaping and Aboriculture	05

COURSE CONTENTS :

1.0 Introduction

- 1.1 Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.
- 1.2 Functions of Indian Roads Congress
- 1.3 IRC classification of roads
- 1.4 Organisation of state highway department

2.0 Road Geometric :

- 2.1 Glossary of terms used in geometric and their importance, right of way, formation width, road margin, road shoulder, carriage way, side slopes, kerbs, formation level, camber and gradient
- 2.2 Design and average running speed, stopping and passing sight distance
- 2.3 Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods o f providing super – elevation

3.0 Road Materials ;

- 3.1 Difference types of road materials in use : sol, aggregates, binders
- 3.2 Function of soil as highway subgrade
- 3.3 California Bearing Ratio : methods of finding CBR valued in the laboratory and at site and their significance
- 3.4 Testing aggregates : Abrasion test, impact test, crushing strength test, water absorption test & soundness test
- 3.5 Aggregates : Availability of road aggregates in India, Requirements of road aggregates as per IS specifications
- 3.6 Binders : common binders : cement, bitumen and Tar, propertied as per IS specifications, penetration and viscosity test of bitumen, procedure and a significance cut back and emulsion and their uses

4.0 Road Pavements

4.1 Road Pavement : Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components

4.2 Sub-grade preparation :

Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment, construction of embankment, compaction, stabilization, preparation of subgrade, methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation

4.3 Flexible pavements : necessity of sub base, stabilized sub base: purpose of stabilization(no designs)

Types of stabilization “

- a. Mechanical stabilization
- b. Lime stabilization
- c. Cement stabilization
- d. Fly ash stabilization

4.4 Base Course :

Preparation of base course

- a. Brick soling
- b. Stone soling
- c. Metalling : Water Bound Macadam and Bituminous Macadam

4.5 Surfacing :

Types of surfacing

- a. Surface dressing
- b. (i) Premix carpet
(ii) Semi dense carpet
- c. Bituminous concrete
- d. Grouting

Methods of constructions as per Ministry of Surface Transport, specifications and quality control

4.6 Rigid Pavements :

Construction of concrete roads as per IRC specifications : From laying, mixing and placing the concrete, compacting and finishing, curing, joints in concrete pavement, equipment used

5.0 Hill Roads :

5.1 Introduction :

Typical cross0sections showing all details of a typical hill road in cut, partly in cutting and partly in filling

5.2 Breast Walls, Retaining walls, different types of bends

6.0 Road Drainage :

6.1 Necessity of road drainage work, cross drainage works

6.2 Surface and sub-surface drains and storm water drains. Location, specing and typical details of side drains, side ditches for surface drainage, intercepting drains, pipe drains in hill roads, details of drains in cutting embankment, typical cross sections

7.0 Road Maintenance :

7.1 Common types of road failures – their causes and remedies

- 7.2 Maintenance of bituminous road such as patch work and resurfacing
- 7.3 Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices

8.0 Construction equipments :

Output and use of the following plant and equipment :

- 8.1 Hot mixing plant
- 8.2 Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers, shovels, graders, roller dragline
- 8.3 Asphalt mixer and tar boilers
- 8.4 Road pavers
- 8.5 Modern construction equipments for roads.

9.0 Traffic studies :

- 9.1 Basic concept of traffic study
- 9.2 Traffic safety and traffic control signal
- 9.3 Road junctions
- 9.4 Traffic island and refuge island; advantages and disadvantages

10.0 Land scaping and Aboriculture

- 10.1 Meaning of land scaping and aboriculture
- 10.2 Aesthetics in road side development

RECOMMENDED BOOKS:

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|--|----------------------------|
| 1. Principles of Traffic Engineering | -Garber and Hoel,CENGAGE |
| 2. A Text Book Of Transportation Engineering | - S.P.Chandola. |
| 3. Highway Engineering | - Dr.N.K.Vaswani. |
| 4. Highway Engineering | -S.K.Khanna & C.E.G. Justo |
| 5. A course on Highway engineering | - S.P.Bindra. |

GEOTECHNICAL ENGINEERING (Th- 3)

Period per week:5 Total Marks:100

Evaluation scheme:

Total periods:75

Theory-3Hrs.

End Term Examination:80marks

Internal Assessment: 15 + 5(Assign.)=20Marks.

Topic wise Distribution of Periods:

Sl. No.	Topics	No. of Periods
01.	Introduction	02
02.	Preliminary Definitions and relationship	10
03.	Index Properties of Soil	05
04.	Classification of Soils	10
05.	Permeability	05
06.	Seepage Analysis	05
07.	Compaction & Consolidation	08
08.	Shear Strength	10
09.	Earth Pressure on Retaining Structure	10
10.	Foundation Engineering	10

Course Contents:

1.0-Introduction

- 1.1- Soil and Soil Engineering.
- 1.2- Scope of Soil Mechanics.

2.0- Preliminary Definitions and relationship.

- 2.1- Soil as a three Phase system.
- 2.2- Definition and derivation of expressions for the following terms: Water Content, Density, Unit Weight of soil solids, Specific gravity, Voids ratio, Porosity, Percentage of air voids, air content, degree of saturation, density Index, Bulk/Saturated/dry/submerged density.

3.0-Determination of Index properties.

- 3.1- Water Content(Oven drying, Sand bath, Pycnometer method)
- 3.2- Specific Gravity
- 3.3- Particle size distribution ,Sieve analysis, Wet mechanical Analysis(Pipette method).
- 3.4 – Consistency of Soils- Atterberg's Limits(Liquid limit, Plastic Limit, Shrinkage Limit, Plasticity Index, Consistency Index, Liquidity Index.)

4.0-Classification of Soil.

- 4.1- General.
- 4.2- Particle size Distribution.
 - Textural Classification.
 - HRB Classification.
 - Unified Soil Classifications.
 - I.S. Classification.

5.0-Permeability.

- 5.1- Define Permeability, Co-efficient of Permeability, Darcy's Law.
- 5.2- State and Explain the factors affecting Permeability.
- 5.3- Constant head permeability and falling head permeability Test.

6.0-Seepage analysis.

- 6.1- Define seepage pressure and explain the phenomenon of quick sand condition.
- 6.2- Concept and Properties of flow-net.

7.0- Compaction and consolidation.

- 7.1- Define compaction, Describe Standard Proctor Test and explain Optimum Moisture Content of Soil.
- 7.2- Factors affecting Compaction.
- 7.3- Different field compaction methods and their suitability.
- 7.4- Consolidation, distinction between compaction and consolidation.
- 7.5- Spring Analogy, Pressure-void ratio curve, Idea about normally consolidated, under consolidated and over consolidated soil, Laboratory Consolidation Test, Co-efficient of Consolidation, Time Factor, Estimation of consolidation settlement using formula only.

8.0- Shear Strength.

- 8.1- Define i)-Shear strength, ii)-Cohesion, iii)-Angle of internal friction.
- 8.2- State and explain the Mohr- Coulomb failure theory.
- 8.3- Study of strength envelope for different type of soil.

9.0- Earth pressure on retaining structures.

- 9.1- i) active earth pressure, ii)Passive earth pressure, iii) Earth pressure at rest.
- 9.2- Use of formula for the following cases (cohesionless soil only)
 - i) Backfill with no surcharge, , ii)backfill with uniform surcharge. iii)submerged backfill

10.0- Foundation Engineering.

- 10.1- Define and state the functions of foundations. Differentiate between shallow and deep foundation,different type of shallow and deep foundations with sketches.
- 10.2- Define bearing capacity of soil, determine bearing capacity of soils using Rankine's(for cohesion less soil) &Terzaghi's formulae(No derivation) for strip , Circular and square footings only.

RECOMMENDED BOOKS:

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| 1. Geotechnical Engineering, | -T.N.Ramamurthy& T.G.Sitaram. |
| 2. Soil Mechanics & Foundation Engineering | -Dr. B.C.Punmia. |
| 3. Soil Mechanics& Foundation Engineering | -Dr. K.R.Arora |
| 4. Soil Mechanics& Foundation Engineering,Vol-I | -Dr. V.N.S. Murthy |
| 5. Textbook of Geotechnical Engineering | -Braja M. Das |
| 6. Principle of Foundation Engineering | -Braja M. Das |
| 7. Geotechnical Engineering,Principles & Practice | -Conduto |

IRRIGATION ENGINEERING (Th- 5)

Period per week:5 Total Marks:100

Evaluation scheme:

Total periods:75

Theory-3Hrs.

End Term Examination:80marks

Internal Assessment: 15 + 5(Assign.)=20Marks.

Topic wise Distribution of Periods:

Sl. No.	Topics	No. of Periods
01.	INTRODUCTION	02
02.	Hydrology	08
03.	WATER REQUIREMNT OF CROPS	07
04.	FLOW IRRIGATION	05
05.	DIVERSION HEAD WORKS	07
06.	REGULATORY WORKS	08
07.	CROSS DRAINAGE WORKS	08
08.	DAMS	15
09.	WATER LOGGING AND DRAINAGE	05
10.	GROUND WATER HYDROLOGY	10

RATIONALE :

Many diploma holders in Civil Engineering supervise the construction or perform the maintenance of canals, head – works, river training works, cross drainage works, regulatory and other works. Some of diploma holders are also engaged for preventing water logging and irrigation by tube-wells.

OBJECTIVES :

On completion of the subject a student will be able to –

- i) Estimate the water requirement of different crops and duty of water
- ii) Explain the function of the components of diversion head work
- iii) Describe the method of construction and maintenance of distribution works
- iv) Understand the different types of cross drainage works
- v) Know the various types of lift irrigation adopted in India
- vi) Describe the causes and remedial measures for water logging

COURSE CONTENTS:

1.0 INTRODUCTION :

- 1.1 Definition of irrigation
- 1.2 History of development of irrigation in India
- 1.3 Types of irrigation
- 1.4 Sources of irrigation water

2.0 Hydrology

- 2.1 Hydrology Cycle
- 2.2 Rainfall: types, intensity, hyetograph
- 2.3 Estimation of rainfall, rain gauges, types- automatic and Non-automatic
- 2.4 Concept of catchment area, types, run-off-defination, estimation of flood discharge by Dicken's and Ryve's formulae
- 2.5 Concepts of Hydrograph, definition and explanation, unit hydrograph and simple problem on it

3.0 WATER REQUIREMENT OF CROPS

- 3.1 DEFINITION OF CROP SEASON
- 3.2 Duty, Delta and base Period, their relationship
- 3.3 Gross command area, culturable command area, Intensity of Irrigation, irrigable area
- 3.4 Field capacity, Permanent wilting point, frequency of irrigation

4.0 FLOW IRRIGATION ;

- 4.1 Irrigation canals
- 4.2 Perennial irrigation
- 4.3 Different parts of irrigation canals and their functions
- 4.4 Sketches of different canal cross-sections
- 4.5 Classification of canals according to their alignment
- 4.6 Various types of canal lining – Advantages and disadvantages

5.0 DIVERSION HEAD WORKS

- 5.1 Definition, necessity and objectives
- 5.2 General layout, functions of different parts of barrage
- 5.3 Difference between weir and barrage

6.0 REGULATORY WORKS :

- 6.1 Functions and Explanation of terms used
- 6.2 Cross and Head regulators
- 6.3 Falls
- 6.4 Energy dissipaters
- 6.5 Outlets – different types
- 6.6 Escapes

7.0 CROSS DRAINAGE WORKS :

- 7.1 Functions and necessity of the following types : aqueduct, siphon, super-passage, level crossing, inlet and outlet
- 7.2 Constructional detail with working principle of each with help of neat sketch

8.0 DAMS

- 8.1 Necessity dam , Classification; Earthen, masonry and Concrete dams
- 8.2 Earthen dams : types, necessity, advantages of earthen dams, materials used in construction, compaction of soil, drainage problem, cause of failure and protection against failures
- 8.3 Masonry and concrete dams : Forces acting on the dam, stress developed at the base, solution of numerical problems
- 8.4 Cross section of gravity dam, spillways-types and main functions
- 8.5

9.0 WATER LOGGING AND DRAINAGE :

- 9.1 Definition, causes and effects, detection, prevention and remedies

10.0 GROUND WATER HYDROLOGY :

- 10.1 Introduction, occurrence and quantity of ground water, explanation of terms- water table, aquifer- confined and unconfined aquifers, aquiclude, radius of influence, depression head, cone of depression etc
- 10.2 Types of wells – shallow and deep well, construction of open wells and tube wells, Yield of an open well
- 10.3 Types of tube wells and their choice-cavity, strainer and slotted type
- 10.4 Method of construction – boring, installation of well assembly, development of well, pump selection, installation and maintenance.

RECOMMENDED BOOKS:

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| 1. | Irrigation Engineering; | -R.K.Sharma&T.K.Sharma. |
| 2. | Introductory Irrigation Engineering | -Dr. B.C.Punmia, |
| 3. | Irrigation Engineering | -N.N.Basak.. |
| 4. | Fundamentals of Irrigation Engineering | -Bharat Singh. |
| 5. | Irrigation Engineering & Hydraulics Structures | -S.K.Garg. |
| 6. | Irrigation & Water Power Engineering | -Das nad Saikia |

ESTIMATING – I (Th 5)

Period per week:4 Total Marks:100

Evaluation scheme:

Total periods:60

Theory-3Hrs.

End Term Examination:80marks

Internal Assessment: 15 + 5(Assign.)=20Marks.

Topic wise Distribution of Periods:

Sl. No.	Topics	No. of Periods
01.	INTRODUCTION	05
02.	DETAILED ESTIMATE OF BUILDING AS PER PWD SPECIFICATIONS / STANDARDS	30
03.	ANALYSIS OF RATES	20
04.	ADMINISTRATIVE SET-UP OF ENGINEERING ORGANISATIONS	05

COURSE CONTENTS :

1.0 INTRODUCTION :

- 1.1 Types of estimates – Plinth area, floor area / carpet area
- 1.2 Units and modes of measurements as per IS 1200
- 1.3 Use of standard estimating forms
- 1.4 Accuracy of measurement for different item of work

2.0 DETAILED ESTIMATE OF BUILDING AS PER PWD SPECIFICATIONS / STANDARDS ;

- 2.1 Single storeyed flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it.
- 2.2 Two storeyed building with a all items of work
- 2.3 A simple inclined roof building with gabled / hipped roof and A.C. sheet / G.C.I. sheet proofing

3.0 ANALYSIS OF RATES :

- 3.1 Calculation of dry materials, for cement concrete, brick masonry in C.M., laterite stone masonry in C.M., cement plaster, white washing, A.S. flooring, concrete flooring, different R.C.C. items, Painting of doors and windows etc.
- 3.2 Calculation of lead, lift, conveyance charges, royalty of materials, etc. as per Orissa P.W.D. system
- 3.3 Analysis of rates for the above items of work
- 3.4 Abstract of cost of estimate.

4.0 ADMINISTRATIVE SET-UP OF ENGINEERING ORGANISATIONS:

- 4.1 Different Govt./Public Sector organizations employing Civil Engg. Diploma holders.
- 4.2 Duties of responsibilities of Junior Engineers and Asstt. Engineers.

RECOMMENDED BOOKS:

1. Estimating, Costing, specification & Valuation in Civil Engineering - M.Chakraborty.
2. A text Book of Estimating & Costing -D.Kohli &R.C Kohli,
3. Estimating &Costing -B.N.Dutta.
4. Estimating &Costing -Birdi &Ahuja.
- 5.Latest Orissa PWD Schedule of Rates & Analysis of rates.

CIVIL ENGINEERING DRAWING – II WITH AUTOCAD (Pr - 1)

Period per week:7 Total Marks:100

Evaluation scheme:

Total periods:105

End Term Examination:50marks

Sessional-50marks

RATIONALE :

This subject deals with drawings of different components of culverts, irrigation structures and public health engineering. This also relates to preparation of working drawing as required for actual use in the field for execution of the work.

OBJECTIVES:

On completion of the subject a student will be able to –

- i) Understand the different engineering drawings culverts / Irrigation structures/ water supply and sanitary installations
- ii) Draw the above mentioned drawings and its different views

COURSE CONTENT: ALL THE DRAWINGS SHOULD BE DRAWN USING AUTOCAD SOFTWARE

1.0 Detailed drawing of culvert

- 1.1 Half foundation plan and half top plan, cross sectional elevation and longitudinal section of
 - i) Hume pipe culvert with right angled wing wall **42**
 - ii) Hume pipe culvert with splayed wing wall
 - iii) RCC Slab Culvert with right angled wing wall
 - iv) RCC Slab Culvert with splayed wing wall

2.0 Irrigation Structures

- 2.1 Detail drawing of a vertical drop type fall (Sarada Type) from given specifications 35
- 2.2 Drawing of a canal siphon from given specifications
- 2.3 Drawing of a I siphon aqueduct from given specifications

3 PH connection and fittings of a two room building **14**

4 Detailed drawing of septic tank up to 50 users with necessary connection from the water closet. **14**

RECOMMENDED BOOKS:

- 1.)Civil Engg. Drawing -M.Chakrobarty.
- 2.)Civil Engineering drawing &House Planning -B.P.Verma.
- 3.Civil Engineering drawing Manual -TTTI,Bhopal.
- 4.IS12556-1967,10713-1983&I.S-696-1972 of BIS Publication.
5. Civil Engineering drawing Manual -V.Thanikachalan &K. V Natarajan.
6. Harnessing AutoCAD - Autodesk Manual
7. Auto Cad -Omura
8. AutoCAD (Architecture) 2010 -William G. Wyatt

ESTIMATING PRACTICE– I (Pr- 2)

Period per week:4 Total Marks:50 Evaluation scheme:

Total periods:60

Sessional-50marks

- 1.0 Preparation of plinth area estimate & detailed estimate for the following ; **30**
- 1.1 Single storeyed two roomed building with giving specification as per Orissa P.W.D. schedule of rates and analysis of rates
- 1.2 A two storeyed pucca Building with given specification as per Orissa P.W.D. schedule of rates and analysis of rates
- 1.3 A two roomed gabled / hipped roof building on wooden king post truss with tiled/ A.C. sheet / G.C.I. Sheet roofing as per Orissa P.W.D. schedule of rates and analysis of rates
- 2.0 Analysis of rates in detail for the above items of works basing on Orissa Govt. analysis of rate with help of **MS Excel software**. **15**
- 3.0 Calculation of dry materials for different items of building basing on Orissa Govt. analysis of rate with help of **MS Excel software** **10**
- 4.0 Preparation of abstract of cost and bill of quantities of the estimates as per item no. 1.0 above with help of **MS Excel software** **05**

RECOMMENDED BOOKS:

1. Estimating, Costing, specification & Valuation in Civil Engineering - M.Chakraborty.
2. A text Book of Estimating & Costing -D.Kohli &RC Kohli,
3. Estimating & Costing -B.N.Dutta.
4. Estimating & Costing -Birdi &Ahuja.
5. Latest Orissa PWD Schedule of Rates & Analysis of rates.

COMPUTER AIDED DESIGN AND DRAFTING LABORATORY (Pr – 3)

Period per week:4 Total Marks:100

Evaluation scheme:

Total periods:60

End Exam- 50 marks

Sessional-50marks

1.0 Revit Architecture Software: **40**

- 1.1 Basics- Modify, Wall, Door, Window, Component, Room, Roof, Floor, Grid, Lines, Dimension, Section, Level, Text, View
- 1.2 Modelling- Ramp, Railing, Stair
- 1.3 Site- Topo surface- Parking Component, Site Component,
- 1.4 Align, Split, Trim, offset, Match type, Line work, Paint
- 1.5 Scale, Unit
- 1.6 3D View
- 1.7 Preparation of approval drawing of a double storied residential building from given specifications with its 3D view using above commands

2.0 Introduction to STADD Pro Software: **20**

- 1.1 2-D Modelling of structures using Structure wizard, Geometry, Property, Support, Analysis
- 1.2 Analysis of a Continuous beam with more than two span subjected to udl and point load

Softwares Required:

- | | | |
|----|--|-------------------|
| 1) | AutoCAD Revit Architecture Suite(latest Version) | -15 user licence |
| 2) | STADD-Pro(latest Version) | -15 user licence |
| 3) | AutoCAD (Architecture) 2010 (Book) | -William G. Wyatt |