BUILDINGMATERIALS,CONSTRUCTION ANDPLANNING

Subject Code: **CE302PC**

Regulations: R **22-**JNTUH

Class :II Year B.Tech CE I Semester

Departmentof CivilEngineering

BHARATINSTITUTEOFENGINEERINGANDTECHNOLOGY

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BUILDINGMATERIALS,CONSTRUCTIONANDPLANNING (CE302PC)

COURSEPLANNER

I. COURSEOVERVIEW:

A construction materials course introduces students to materials used in different construction projects from building materials to ground and foundation make-up. Specific materials studied include soil, metals, concrete and wood. This course also covers finishes and materials for the exterior and interior of buildings. Skills are developed to assess the effect materials have on a building projects related to structure, fire safety, building codesas well as market demand.

A large part of construction management has to do with overseeing entire building projects or multiple construction projects. This course helps to develop students' skills in managing projects and people. This course may be taken at different times in a construction management program with an emphasis on residential or commercial construction.

Specific topics mayi nclude record keeping, job-site management, useofsubcontractorsand scheduling. Specific computer software may be used for construction project scheduling. Students typically work on sample projects in order to gain real-world experience in planning and scheduling construction projects.

II. PREREQUISITE(S):

Level	Credits	Periods/Week	Prerequisites
UG	3	4	BuildingMaterials,ConstructionProcess

III. COURSEOBJECTIVES:

Tohowthewood,cement,admixtures isusedforbuildingsandconstructionprocess.

1. Todevelopthebuildingwallsandfoundationsandhowtheyareusefulfor buildings.
2. In these mainly we know about building arches, roofs, doors, windows and ventilators and how they are given for buildings.
3. To develop the form work and finishing work which is used for buildings and to solve the defects of building properties which are able to know with material
4. Painting isalsotakenfor abeautifullookingstructureforthegoodmanner.
6. Thesecoursesexplainaboutthe materialwhichwe want touseand howwewant to useand how to give a good building for ma using purpose

IV. COURSEOUTCOMES:

After completingthiscoursethestudentswillbeableto:

1. Demonstrate the ability to know about different materials such as stones, bricks, Tiles, wood, aluminum, glass & paints and their classification , manufacture and structural requirements
2. Ability to know about thematerials used in making of concrete such as cement and admixtures.

3. Abilityto knowabout testsoncement suchas field and labtestsand usesofcement and admixtures.
4. Graduates will demonstrate an understanding of various building components such as lintels, arches,typesofroofsand joinerysuchasdoors,windowsand the materialsused in making.
5. Graduates will demonstrate various building services such as plumbing services, sanitary and ventilations.
6. Graduates will demonstrate the various types of ventilations, air conditioning, types of air conditioning, fire protection and classification of fire hazards and fire resistant materials used in construction.

7. Graduateswilldemonstratethetypesofmasonry,finishersandformwork ,requirements,standards
8. Graduates should be capable of self-education and clearly understand the value of building planning and principles of building planning, classification of buildings and building bye laws.
9. Graduates will be broadly educated and will have an understanding of the impact of building construction on society and demonstrate awareness of contemporary issues.
10. Graduates will be familiar in applying software methods to analyze civil engineering problems.

V. HOWPROGRAMOUTCOMESAREASSESSED:

ProgramOutcomes		**Level**	**Proficiency assessed**
PO1	An ability to apply knowledge of computing, mathematical foundations, algorithmic principles,andcivilengineeringtheoryindesignofcomputer-basedsystemstoreal-worldproblems	H	Assignments, Tutorials, Exams
PO2	Theabilitytopracticecivilengineeringusingup- to-datetechniques,skills,andtoolsasaresultof life – long learning ability to design and conduct experiments, as well as to analyzeand interpretdata.	N	--
PO3	An ability to design , implement, and evaluate a field program to meet desired needs, within realistic constraintssuchaseconomic,environmental,social, political, health and safety, manufacturability, and sustainability.	H	Assignments, Tutorials, Exams
PO4	Anabilitytodesignasystemorcomponentto satisfystatedorcoderequirementsofCivil Engineering	N	--
PO5	Anabilitytoanalyzeaproblem,identify,formulate and use the appropriate computing and Civil engineeringrequirementsforobtaining its solution.	H	Assignments, Tutorials, Exams

PO6	Anunderstandingofprofessional,ethical,legal, securityandsocial issues and responsibilities.	N	--
PO7	Anabilitytocommunicateeffectively,bothin writingandorally	N	--
PO8	The broad education necessary to analyze the local and global impact of computing and engineering solutionsonindividuals,organizations, and society	N	--
PO9	Recognitionoftheneedfor,andanabilityto engageincontinuingprofessionaldevelopmentand life-long learning	N	--

PO10	Knowledgeofcontemporaryissuesasthey affecttheprofessionalandethicalpractice ofengineering.	N	--
PO11	Anabilitytousecurrenttechniques,skills,andtools necessaryfor computing and engineering practice	H	Assignments and Tutorials, Exams
Po12	Anabilitytodesignanddevelopmentprinciples intheconstructionofCivilEngineering ofvaryingcomplexity.	N	--
PO13	An ability to recognize the importance of civil Engineeringprofessional developmentby pursuing postgraduate studies orface competitive examinations that offer challenging and rewarding careers in computing.	N	--

VI. HOWPROGRAMSPECIFICOUTCOMESAREASSESSED:

Programspecificoutcomes		**Level**	**ProficiencyAssessed**
PSO1	An ability to apply knowledge of computing, mathematicalfoundations,algorithmicprinciples,and civil engineering theory indesign ofcomputer-based systems to real-world problems	H	Lectures, Exercises and Assignments
PSO2	Anabilitytodesign,implement,andevaluateafield programto meetdesired needs, within realistic constraintssuchaseconomic,environmental,social, political, healthand safety, manufacturability,and sustainability.	H	Project
PSO3	Anabilitytousecurrenttechniques,skills,andtools necessary forcomputing and engineering practice	S	Guest lectures

N-None S-Supportive H-HighlyRelated

VII. SYLLABUS:

UNIT-I

StonesandBricks,Tiles: Buildingstones–classificationsandquarrying–properties– structural requirements – dressing.

Bricks–CompositionofBrickearth–manufactureandstructuralrequirements,Flyash, Ceramics.

Timber, Aluminum, Glass, Paints and Plastics: Wood - structure – types and properties – seasoning–defects;alternatematerials forTimber – GI/fibre–reinforcedglassbricks,steel& aluminum, Plastics.

UNIT -II

Cement&Admixtures: Ingredientsofcement–manufacture–Chemicalcomposition–

Hydration-field&lab tests.

Admixtures–mineral&chemicaladmixtures–uses.

UNIT -III

BuildingComponents: Lintels,Arches,walls,vaults–staircases–types offloors,typesof roofs – flat,

curved, trussed ; foundations – types ; Damp Proof Course ; Joinery – doors – windows – materials – types.

Building Services: Plumbing Services: Water Distribution, Sanitary – Lines & Fittings; Ventilations:Functionalrequirementssystemsofventilations.Air-conditioning-Essentials andTypes;Acoustics –characteristic–absorption– Acousticdesign;Fireprotection–Fire Harzards – Classification of fire resistant materials and constructions.

UNIT -IV

Mortars,Masonryand Finishing's

Mortars: LimeandCementMortars

Brickmasonry– types–bonds;Stonemasonry–types;Compositemasonry–Brick-stone composite; Concrete, Reinforced brick.

Finishers: Plastering, Pointing, Painting, Claddings – Types – Tiles – ACP.

Formwork:Types:Requirements–Standards–Scaffolding–Design;Shoring, Underpinning.

UNIT –V

BuildingPlanning: Principles ofBuildingPlanning,ClassificationofbuildingsandBuilding by laws.

SUGGESTEDBOOKS:

TEXTBOOKS

1. BuildingMaterialsandconstruction–Arora&Bindra,DhanpatRoyPublications.
2. B.C.Punmia, AshokKumarJain,ArunKumarJain(2005),BuildingConstruction, Laxmi Publications (P) ltd., New Delhi, India.
3. Buildingmaterials,constructionandplanning byS.MAHABOOBBASHA

REFERENCESBOOKS

1. Building materialsbyDuggal,NewageInternations.
2. BuildingconstructionbyPCverghesePHI.
3. Constructiontechnology–vol-1 &2 byR.chuddy,LongmanUK.
4. BasicsofcivilEnggbySubhashchander;Jainbrothers

NPTELWEB COURSE:

http://nptel.ac.in/courses/105102088/

NPTELVIDEOCOURSE:

http://nptel.ac.in/courses/105102088/#

GATE SYLLABUS:

NotApplicable

RELEVANTSYLLABUSFORIES

1) **Timber**: Different types and species ofstructural timber, density-moisture relationship, strength in different directions, defects, influence of defects on permissible stress, preservation, dry and wet rots, codal provisions for design, Plywood.
2) **Bricks**: Types,Indian Standard classification, absorption, saturation factor, strength in masonry, influence of mortar strength on masonry strength.
3) **Cement**:Compoundsof,differenttypes,settingtimes, strength.

4) **CementMortar**:Ingredients,proportions,waterdemand,mortarsforplasteringand masonry.
5) **Concrete**:ImportanceofW/CRatio,Strength,ingredientsincludingadmixtures, workability,testing forstrength,elasticity, non-destructivetesting, mixdesignmethods.

VIII. COURSEPLAN:

S.No.	Week	Unit	Topicstobe covered	LearningObjective	References
1.	1	**1**	**STONES,BRICKSAND TILES:-** Propertiesofbuilding stones	To understand about building stonesandtheir relations in structures	T1,T3
2.	1	**1**	**STONES,BRICKSAND TILES:-** Propertiesofbuilding stones.	To understand about building stonesandtheir relationsin structures	T1,T3
3.	1	**1**	Classificationofstones	Tounderstand abouttypesof stones	T1,T3
4.	1	**1**	Classificationofstones	Tounderstand abouttypesof stones	T1,T3
5.	2	**1**	Stonequarrying–structural requirements And dressing.	Tounderstandhow the quarrying is done and its precautions	T1,T3
6.	2	**1**	Stonequarrying–structural requirements And dressing.	Tounderstandhow the quarrying is done and its precautions	T1,T3
7.	2	**1**	Compositionofbrickearth, manufacture and structural requirements.	Toknowabout brick earth	T1,T3
8.	2	**1**	Compositionofbrickearth, manufactureandstructural requirements.	Toknowabout brick earth	T1,T3
9.	3	**1**	Compositionofbrickearth, manufacture and structural requirements.	Toknowabout brick earth	T1,T3
10.	3	**1**	Qualities of a good brick, Characteristicsofgoodtile	To understand the qualityofbrick,To know about good tile	T1,T3

11.	3	**1**	Qualities of a good brick, Characteristicsofgoodtile	To understand the qualityofbrick,To know about good tile	T1,T3
12.	3	**1**	**WOOD,ALUMINUM ,GLASSANDPAINTS:** Structure–properties– SeasoningofWood,types of wood and defects	To understand aboutthestructure and properties of wood	T1,T3
13.	4	**1**	Structure – properties – SeasoningofWood,types of wood and defects	To understand aboutthestructure and properties of wood	T1,T3
14.	4	**1**	Structure – properties – SeasoningofWood,types of wood and defects	To understand aboutthestructure and properties of wood	T1,T3
15.	4	**1**	UseofAlternativematerials for wood like , Galvanized Iron,Fiber-reinforcedGlass bricks, steel & aluminum.	To understand about the alternate materialsforwood.	T1,T3
16.	4	**1**	UseofAlternativematerials for wood like , Galvanized Iron, Fiber-reinforced Glassbricks,steel& aluminum.	To understand about the alternate materialsforwood.	T1,T3
17.	5	**2**	**CEMENT &ADMIXTUR ES** Varioustypesofcement andtheirProperties	To understand aboutthecements and its properties	T1,T3
18.	5	**2**	Variousingredientsof Cement Concrete and their importance, manufacture andchemicalcomposition and hydration.	Toknowaboutthe materials used in cements and concrete	T1,T3
19.	5	**2**	Variousingredientsof Cement Concrete and their importance, manufacture andchemicalcomposition and hydration.	Toknowaboutthe materials used in cements and concrete	T1,T3
20.	5	**2**	Variousfieldandlaboratory testsforCement	Tounderstandhow thecementis used	T1,T3

21.	6	**2**	Variousfieldandlaboratory	Tounderstandhow	T1,T3
			testsforCement	thecementis used	
22.	6	**2**	Types of Admixtures-mineral&chemical&its uses	Toknowaboutthe admixtures and chemicals	T1,T3
23.	6	**3**	BUILDING COMPONENTS:-Lintels,Arches,andVaults-staircases–Types	Toknowvarious building structural components	T1,T3
24.	6	**3**	Lintels,Arches,andVaults-stair cases – Types	Toknowvarious buildingstructural components	T1,T3
25.	7	**3**	Lintels,Arches,andVaults-stair cases – Types	To know various buildingstructural components	T1,T3
26.	7	**3**	Different types of floors-Concrete,Mosaic,Terrazzo floors	To know aboutthe floorsanddifferent types used in buildings	T1,T3
27.	7	**3**	Different types of floors-Concrete,Mosaic,Terrazzo floors	To know aboutthe floorsanddifferent types used in buildings	T1,T3
28.	7	**3**	pitched,flatandcurved Roofs Lean-to-Roof, CoupledRoofs	To learn about roofsandtypesof roofs	T1,T3
29.	8	**3**	pitched, flatandcurved RoofsLean-to-Roof, Coupled Roofs	Tolearnabout roofsandtypesof roofs	T1,T3
30.	8	**3**	Doors,windowsandthe materialsusedandtypes	Tounderstand aboutJoinery	T1,T3
31.	8	**3**	BUILDINGSERVICES:-Plumbingservices:water distribution,sanitary–lines and fittings.	To know about variousbuilding services	T1,T3
32.	8	**3**	Plumbing services: water distribution,sanitary–lines and fittings.	To know about variousbuilding services	T1,T3
33.	9	**3**	Plumbingservices:water distribution,sanitary–lines and fittings.	Toknowabout variousbuilding services	T1,T3
34.	9	**3**	Types of ventilations used forbuildingandfunctional requirementsandsystems of ventilation.	To know about Ventilationsused for buildings	T1,T3

35.	9	**3**	Typesofventilations used forbuildingandfunctional	Toknowabout Ventilationsused	T1,T3
			requirementsandsystems ofventilation.	forbuildings	
36.	9	**3**	Types of ventilations used forbuildingandfunctional requirements and systems ofventilation.	To know about Ventilationsused for buildings	T1,T3
37.	10	**3**	Essentialsofair conditioningandtypesof air conditioning	Toknowaboutair conditionings	T1,T3
38.	10	**3**	Essentials of air conditioningandtypesof airconditioning	Toknowaboutair conditionings	T1,T3
39.	10	**3**	Essentialsofair conditioningandtypesof air conditioning	Toknowaboutair conditionings	T1,T3
40.	10	**3**	Characteristicabsorptionof acoustics and acoustic design.	Toknowabout Acoustics	T1,T3
41.	11	**3**	Characteristicabsorptionof acousticsandacoustic design.	Toknowabout Acoustics	T1,T3
42.	11	**3**	Fire hazards and classification of fire resistantmaterialsusedin construction	Toknowaboutfire protection	T1,T3
43.	11	**3**	Fire hazards and classification of fire resistantmaterialsusedin construction	Toknowaboutfire protection	T1,T3
44.	11	**3**	Fire hazards and classification of fire resistantmaterialsusedin construction	Toknowaboutfire protection	T1,T3
45.	12	**4**	MASONRYAND FINISHING'S:-masonry	Toknowabout masonry	T1,T3
46.	12	**4**	masonry	Toknowabout masonry	T1,T3
47.	12	**4**	Typesandbondsusedin brickmasonry	Toknowabout brickmasonry	T1,T3
48.	12	**4**	Typesandbondsusedin brickmasonry	Toknowabout brickmasonry	T1,T3
49.	13	**4**	Types ofstonemasonry	Toknowabout stone masonry	T1,T3

50.	13	**4**	Types ofstonemasonry	Toknowabout stonemasonry	T1,T3
51.	13	**4**	Brick–stonecomposite	Toknowabout	T1,T3
			,concreteandreinforced brick	composite masonry	
52.	13	**4**	Typesoffinishers :plastering,pointing, painting cladding s	Toknowabout finishers	T1,T3
53.	14	**4**	Typesoffinishers :plastering,pointing, painting cladding s	Toknowabout finishers	T1,T3
54.	14	**4**	UsesoftilesandACP	Toknowabout tiles	T1,T3
55.	14	**4**	UsesoftilesandACP	Toknowabout tiles	T1,T3
56.	14	**4**	FORMWORK-Formwork	Toknowabout formwork	T1,T3
57.	15	**4**	Formwork	Toknowabout form work	T1,T3
58.	15	**4**	Scaffolding-standards and requirements	Toknowaboutthe scaffolding	T1,T3
59.	15	**4**	Scaffolding-standards and requirements	Toknowaboutthe scaffolding	T1,T3
60.	15	**4**	UnderPinning	Toknowhowthe Under Pinning is done in building works	T1,T3
61.	16	5	BUILDINGPLANNING: planning	Toknowhow planningisdone	T1,T3
62.	16	5	planning	Toknowhow planningisdone	T1,T3
63.	16	5	Principlesofplanning	Toknowabout planning	T1,T3
64.	16	5	Buildingbylaws	Toknowabout typesofbuildings and laws	T1,T3

IX. MAPPINGCOURSEOUTCOMESLEADINGTOTHEACHIEVEMENTOFPROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

Course	**ProgramOutcomes**	**Program Specific**

Objectives	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
I	H	H										S	H	S	
II	H	H	S										H	S	
III	H	H	S	S									S	H	
IV	H	S											H	S	
V		H			S								H		

X. QUESTION BANK: (JNTUH)
DESCRIPTIVE QUESTIONS
UNIT1:STONESANDBRICKS,TILES
SHORT QUESTIONS:

S.No	Question	Blooms TaxonomyLevel	Course Outcome
1	DefineSeasoning oftimber	Remembering	1,2,3
2	Listoutthedefects intimber	Analyzing	1,2,3
3	Writedownthecharacteristic propertiesofgoodstone?	Remembering	1,2,3
4	Describepropertiesofmildsteel	Remembering	1,2,3
5	Whataretheusesofmild steel	Remembering	1,2,3
6	Whatarethepaintscommonlyusedinbuilding construction?	Remembering	1,2,3
7	Whatarethedifferent typesofpaints?	Remembering	1,2,3
8	Whataretheconstituentsofglass?	Understanding	1,2,3
9	Whatroledoesaluminumplayinbuildingconstruction?	Understanding	1,2,3
10	Writeany fourpropertiesofclayproducts?	Remembering	1,2,3
11	Whatarethepropertiesofglass?	Remembering	1,2,3

LONGQUESTIONS:

S.No	Question	Blooms TaxonomyLevel	Course Outcome
1	What aretheoperationsinvolvedinmanufacturingofbricks?	Creating	1,2,3
2	Differentiatebetweenexogenoustreesandendogenoustrees	Understanding	1,2,3
3	Explainthemanufacturingprocessofaluminum.	Creating	1,2,3
4	ExplaintheclassificationofbricksWithneatsketch.	Remembering	1,2,3
5	WhatdoyouUnderstandaboutthedressingofstonesand explain the	Analyzing	1,2,3
6	Explaininbriefaboutthealternativematerialsforwood.	Understanding	1,2,3
7	Describethegeologicalclassificationofrocks.Giveexample of each	Remembering	1,2,3
8	Describevarioustypesofpaintsandtheirsuitabilityoruse?	Creating	1,2,3

9	What arethevariousmethodsofquarryingofstones?Explain each method briefly.	Remembering	1,2,3
10	Explain indetailthe processofmanufacturingofglass?	Understanding	1,2,3
11	Explainclassificationofbricksbasedonfieldpractice	Understanding	1,2,3
12	Whattestaretobemadeonbricksexplain anythreeofthem	Creating	1,2,3
13	Explainaboutcharacteristicsofgood bricks	Understanding	1,2,3

UNIT2:CEMENT&ADMIXTURES SHORT QUESTIONS:

S.No	Question	Blooms TaxonomyLevel	Course Outcome
1	Listout theingredientsofcement.	Remembering	5,6
2	ListoutthevariousgradesofcementinIndia.	Analyzing	5,6
3	Whatdo youmeanbysettingtimeofcement	Remembering	5,6
4	Enumeratevarioustypesofcement?	Understanding	5,6
5	Whatare admixtures?	Remembering	5,6
6	Whataredifferenttypesofadmixtures	Remembering	5,6
7	Statetheneedofsoundnessofcement.	Remembering	4
8	WhatarethepropertiesofOPC	Remembering	4
9	Describetherole ofadmixtures.	Remembering	4
10	Listharmfulconstituentsincement.	Remembering	4
11	State4importantusesofrapidhardening cement.	Understanding	4
12	Whatischemicaladmixtures	Remembering	4
13	Whatarethedifferenttypesofchemicaladmixture?	Remembering	4
14	Whatareminerаladmixtures?	Remembering	4

LONG QEUSTIONS:

S.No	Question	Blooms TaxonomyLevel	Course Outcome
1	Explainbrieflyaboutthetestsconductedoncementto find its properties	Remembering	4
2	Describein brieflyanytypeofmanufactureofcementwith thehelpofflow diagram.	Remembering	4
3	Explainabout different mineraladmixtures	Remembering	4
4	Explainthefield testsoncement?Writethechemical compositionofordinaryPortlandcement.	Creating	4
5	Explainwhygypsumisaddedduringthe manufactureof cement?	Understanding	4
6	Whatareairentrainingagents?Howtheseairentraining agents help in improving performance of cement?	Remembering	4

7	Differentiatebetweenthefollowing: a) Initialsettingtimeand finalsettingtime b) Clinkerandnodules	Understanding	4
8	What doyouUnderstandbythetermsettingandhardening of cement? What chemical reaction takes place during the processofsetting?	Remembering	4
9	Explainabout differentchemicaladmixtures	Remembering	4
10	Writeshortnoteson:	Remembering	4

UNIT3:BUILDINGCOMPONENTS SHORT QUESTIONS:

S.No	Question	BloomsTaxonomyLevel	Course Outcome
1	Definearch.	Remembering	5,6
2	Whatarethe componentsofan arch?	Analyzing	5,6
3	DefineSpanofanarch	Remembering	5,6
4	DefineRise ofanarch.	Understanding	5,6
5	Define lintel.	Remembering	5,6
6	Writetheclassificationoflintels.	Remembering	5,6
7	Explainaboutthetypesofroofs.	Remembering	5,6
8	Whatisdampproofcoursing?	Understanding	5,6
9	Whataretheadvantagesofdampproof	Understanding	5,6
10	Definewaterdistributionsystem	Analyzing	5,6
11	Defineacousticdesign.	Analyzing	5,6
12	Explainaboutthecharacteristicsofacoustic	Remembering	5,6
13	Classifyamong fireresistantmaterials	Remembering	5,6

LONG QUESTIONS:

S.No	Question	Blooms Taxonomy Level	Course Outcome
1	Whataredifferenttypesofarchesthatareusedfor engineeringconstruction?Describeanythreetypesin	Understanding	5,6
2	a) Howarenewfoundationsconstructednearoldexcising structures?b) Discuss about the combined footings?	Remembering	5,6
3	a) Statebrieflytherequirement ofgoodstair. b) Statethe varioustypesofstairsthroughflowdiagrams.	Remembering	5,6
4	Defineroofcovering?What arevarioustypesinroof coveringcommonly,usedinIndia?Explainin detail.	Remembering	5,6
5	Definethetermfoundation?Explain indetailvarious types ofbuildingfoundations.	Remembering	5,6
6	a) Statebrieflytherequirement ofgoodstair. b) Statethe varioustypesofstairsthroughflowdiagrams.	Remembering	5,6

7	Writeashort note on: a) Storagetanksb)Waterrequirementsofbuilding c)Materialsforservicepipe	Apply,Create	5,6
8	Whatisacoustics?Statevarioustypesofsoundabsorbing materialsaccordingtomodeoftheir performance.	Apply,Create	5,6
9	Explainthevarioustypesoffireprotectionsystemsin	Understanding	5,6
10	Describebrieflythefunctionalrequirementsofa ventilation system.	Understanding	5,6

UNIT4:MASONRYANDFINISHING'S
SHORT QUESTIONS:

S.No	Question	Blooms TaxonomyLevel	Course Outcome
1	Writedownthegeneralrequirements of mortars?	Remembering	7,8
2	Whatisbrick masonry?	Remembering	7,8
3	Whatisstonemasonry?	Remembering	7,8
4	WhatisconcreteBlock masonry	Remembering	7,8
5	Explainabout thetypesofbondsinbrick work	Remembering	7,8
6	Explainabouttoolsusedinbrickmasonry	Remembering	7,8
7	Defineformwork	Remembering	7,8
8	List anythreereasonswhyconcreteisusedasa building material.	Remembering	7,8
9	Statetheprinciplesof formworkdesign	Understanding	7,8
10	Explainplastering	Remembering	7,8
11	Whatisthepurposeofplastering	Remembering	7,8
12	Definepointing.	Remembering	7,8

LONG QUESTIONS:

S.No	Question	Blooms TaxonomyLevel	Course Outcome
1	Whatisbrick masonry?Stateandexplainbrieflythe	Understanding	7,8
2	Describetheashlar stonemasonryandstateitsusesin constructionofstructures.	Remembering	7,8
3	Definetheterms in masonry: 1)Header,2)Stretcher, 3)Course,4)Quion,5) Facing, 6)queencloser,7)Kingcloser,8) Jams	Understanding	7,8
4	WhatisReinforcedconcretecement(R.C.C)and	Remembering	7,8
5	Stateandexplainbrieflythevarioustypesofplastering along with their suitability in the building works.	Understanding	7,8
6	What isscaffolding.Statedifferenttypesofscaffolding. Explain briefly with neat sketches.	Remembering	7,8

7	What isformwork?What arethestagesinvolvedin construction of form work? Explain briefly.	Understanding	7,8
8	What isunderpinningofstructure.explainthemethods of underpinning?	Remembering	7,8
9	Stateandexplainthemethodsofdeterminingthe bearing capacity of soils?	Understanding	7,8
10	Mentiontheobjectivesofprovidingpaintingand plastering to the proposed surface.	Remembering	7,8

UNIT5:BUILDINGPLANNING
SHORT QUESTIONS

S.No	Question	Blooms TaxonomyLevel	Course Outcome
1	Define buildingplanning.Stateitssignificance.	Remembering	9,10
2	Writebrieflythefactorsaffectingbuildingplanning.	Analyzing	9,10
3	Writeanyfourbasicprinciplesofbuilding planning?	Understanding	9,10
4	Whatisorientation?	Remembering	9,10
5	statethefactorsaffecting orientation	Remembering	9,10
6	Whatisalocalauthority?	Remembering	9,10
7	Statethefunctionsoflocalauthority.	Remembering	9,10
8	Definefloorarearatio	Remembering	9,10
9	Classifythebuildingbasedontheir occupancy	Remembering	9,10
10	Classifythebuildingbased ontypeonconstruction.	Remembering	9,10
11	Defineopen space	Analyzing	9,10
12	What arethepointsto beconsideredwhileselectinga site for any particular building?	Understanding	9,10

LONG QUESTIONS:

S.No	Question	Blooms TaxonomyLevel	Course Outcome
1	Stateand explainthevariousbasicprinciplesofbuilding planning?	Understanding	9,10
2	Whatismeantbyorientationandstatethe factors affectingtheorientationofbuilding?	Understanding	9,10
3	Explainbrieflythepracticalconsiderationsinbuilding planning?	Understanding	9,10
4	Whatarethefactorstobeconsideredwhileselectingsite	Applying	9,10
5	Explainthesignificanceofbuildingplanningandscopeof building	Applying	9,10
6	Explainthevarioustypesofclassificationofbuilding.	Understanding	9,10
7	Explainvariousprinciplesunderlyingbuildingbye-laws.	Understanding	9,10

8	Explainbrieflythe followingprinciplesinplanningthe building:	Applying	9,10
9	Explainbrieflythe factorsaffecting buildingplanning	Applying	9,10
10	Explainthefollowingterms:	Applying	9,10
11	What aretheprinciplesofplasteringofbuildingexplain any four of them.	Understanding	9,10

12	Whataretheclassificationofbuildingsbasedupon	Remembering	9,10

XI. OBJECTIVEQUESTIONS:JNTUH

UNIT-I

1. Timbercanbemadereasonablyfireresistantby
   a) Bysoakingitinammoniumsulphateb)Byapplyingtarpaint
   c)Bypumping creosoteoilin totimberunderhigh pressure d)None
2. Mosteconomicalofthemethodsofsawingwoodis
   a) Radialsawingb)tangentialsawingc)quarter sawingd)flatsawing
3. Plywood canbeidentified by
   a) Volumeb)weightc)thicknessd)area
4. Outermostportionofthe woodisknown as
   a) Coreb)barkc)arkd)dark
5. Theproportionsofthe limeand inthe mortarnormallyused inbricksconstruction should be
   a) 1:2b)1:4c)1:6d)1:8
6. Expansionjointinthemasonrywallareprovidedinwalllengthgreaterthan
   a) 10mb)20mc)30md)40m
   Whichofthefollowingisnotatypeofbrickbond?
   a) Englishbondb)Flemishbondc)Frenchbondd)both1and2
7. Swelling ofbrickisknownas
   a) Bulkingb)bladdeningc)blotingd)none
8. Highqualitybricksare producedin
   a) Clampsb)fumesc)bullstrenchkilnsd)Hoffmankilns
9. Thelengthofthebar beyondthereticalcut offpointshallbe
   a) Anchoredlengthb)developmentlengthc)bondlengthd)dowellength
10. Forbarintension,standardbookhasananchoragevalueequivalenttoastraight length8 dia.
    The expansion of the cement paste usually caused by
    a) Freelimeb)freesilicac)ironoxided)voids

UNITII

1. Inamortar,thebindingmaterial is
   A.cementB)B.sandC)C. surkhiD)D.cinder.
2. Bitumenfelt
   A. isusedaswaterproofingmaterialB)B.isusedasdampproofingmaterial
   C.is madefrombitumenandhessianfibresD)D.allthe above.
3. Inthecementthecompoundquickesttoreactwithwater,is
   A. Tricalciumaluminate B)B.Tetra-calciumalumino-ferrite
   C.TricalciumsilicateBD)D.Dicalciumsilicate.
4. Forpreparingporcelains,theclayshouldbe
   A. sufficientlypureB)B.ofhighdegreeoftanacity
   C.ofgood plasticityD)D.Allthe above.
5. ForthemanufactureofPortlandcement,theproportionsofrawmaterialsused,are
   A. lime63% ;silica22% ;otheringredients15%B)
   B. lime22%;silica63%;otheringredients15%
   C. silica40%;lime40% ;otheringredients20%
   D. silica70%;lime20%;otheringredients 10%.

6. Asbestoscement
   A. isbrittleB)B.warpsduetochangesin humidity
   C.strengthisloweredwhensaturatedbywater D)D. alltheabove.

7. Themoisturecontentinstructuraltimbershouldbe
   a)Lessthan5%
8. 5to10%B)10to50%C)15to25%D)8.Seasoningoftimberisrequiredto
   A)SoftenthetimberB)hardenthetimber
   C)straightenthetimberD)removesapfromthe timber
9. Foronecubicmeterofbrickmasonry, thenumberofmodularbricksneededis
   a)400orlessB)b)400to450c)c)500to550d) d)600to650
10. Duetoattackofdryrots,thetimber
    a)Driesoutb)Cracksc)Shrinksd)Becomes powder

UNITIII

1. Incase ofRaymondpile
   A. lengthsvaryfrom6mto12mB)
   B. diameteroftopofpiles variesfrom40cmto60cm
   C. diameterofpile atbottomvariesfrom20cmto28cm
   D. thicknessofoutershelldependsuponpilediameter
   E. allthe above.
2. Thefoundationinwhichacantileverbeamisprovidedtojointwofootings,isknownas
   A. stripfooting B) B.strapfootingC)combinedfooting
   D.raftfooting E) E.noneofthese.
3. Injackarchfloor,theriseis kept
   A.1/6thofthespanB)1/8thofthespan
   C.1/10thofthespanD)1/12thofthespanE)1/15thofthespan.
4. Whiledesigningastair,theproductofriseandgoingisapproximatelykeptequalto
   A.350 B)420C)450D)500E)600.
5. 5.Thevarietyofpig ironused forthe manufactureofsteelbyBessemerprocess, is
   A.Bessemer pig B. Grey pig C.White forge pig D.Mottled pig.
6. 6.For meltingonetonneofcastiron
   A. 700m3airisrequired B)20kglimestoneis required
   C)onequintalcoke isrequiredD)allthe above.
7. Varnishisatransparentorsemi-transparentsolutionofresinuoussubstancesin
   A. AlcoholB)linseedC)turpentineD)allthe above.
8. Initialsettingtimeofcementforasbestoscementproductsshouldbenotlessthan
   A. 30minutesB)50minutesC)75 minutesD)90 minutes.
9. Pick up the correct statement from the following:
   Roasting isnotnecessaryifironoreisanoxide
   A. Impurities floatonthemoltenironasslag
   B. Theslagcontainslimeabout45%
   C. Themolteniron ismadetorun,inalongchannelformedinsandcalled'sow'
   D. Alltheabove.
10. Thetendencyofastoneis,tosplitalong:
    A. TextureB)fractureC)cleavageD)structureE)alltheabove.

UNITIV

1. Dadoisusuallyprovidedin

A.dininghalls B. bathroomsC. livingrooms D.verandah E. roofs.

2. Queenclosermaybe placed
A. inheadercourse B.instretcher courseC. inheadercoursenexttofirstbrick
D.instretchercoursenexttofirstbrick E.inanyposition.

3. Lacquerpaints
A. aregenerallyappliedonstructuralsteel
B. arelessdurableascomparedtoenamelpaints
C. consistofresinand nitro-cellulose
D. containalcoholasthinnerE.allthe above.

4. Pickupthecorrectstatementfromthefollowing:
A. Forthinstructuressubjectedto wettinganddrying,thewatercement ratioshouldbe 0.45
B. Formassconcretestructuressubjectedtowettinganddrying,thewaterratioshould be0.55
C. Forthinstructureswhichremaincontinuouslyunderwater,thewater-cement ratio by weight should be 0.55
A. Formassiveconcretestructureswhichremaincontinuouslyunderwater,thewater cement ratio by weight should be 0.65
B. Alltheabove.

5. Goodqualitycementcontainshigherpercentageof
A. TricalciumsilicateB)Di-calciumsilicateC)Tri-calciumaluminate
D) TetracalciumaluminoferriteE)allthe above.

6. Soundnessofcementistestedby
A. Vicat'sapparatusB)Le-chatelierapparatus
B. compressivestrengthtestingapparatusD)none ofthethese.

7. ThePVCdoorsand windowsarepreferred astheyare
A. rustproofB)rotproofC)termile proofD)waterproofE)allofthese.

8. Basedon itsdryweight,a freshlyfelled tree maycontainwater
A. 25%B)50%C)75%D)100%.

9. Forgepigmaybeconvertedtowroughtironby
A. RollingB)puddingC)shinglingD)refining.

10. 10.Pig ironmade fromheamatiteoresfree fromsulphur,phosphorusandcopper,isknown as
A. Bessemerpig B)Greyorfoundrypig C)Whiteorforge pig
D) Mottledpig E)Alltheabove.

UNIT-V

1. Thesizeofmould forbricks,isgenerallykept
A. a little largetospecifiedsizeB)alittlesmallto specifiedsize
C)equaltospecifiedsizeD)10%largerthanspecifiedsizeE)20%largerthanspecifiedsize.

2. Mostcommonlyusedsolventinoilpaints,is
A. PetroleumB)spirit C)coaltar D)turpentine.

3. Acrylicsheets
A. possess10to17timesgreater breakageresistancethanthatofglassofequivalent thickness
B. aregenerallyunaffectedbymosthouseholddetergentsC)

C. possessthelight transmissionrateof93%
D. areavailableinvariousshapesE)allthe above.

4. Withstorage,strengthofcement
   A. IncreasesB)decreasesC)remainsthesameD)nonetothese.
5. Thecommonlyusedrawmaterialin themanufactureofcement,is
   A. SlateB)sandstoneC)limestone D)basalt.
6. Plywoodisnormallyavailable
   A. 1mmthickB)2mmthickC)2to 3mmthickD)3 mmto4mmthick.
7. Frenchpolishis
   A. oilpaintB)distemperC)spiritvarnishD)nonetothese.
8. Instone masonry, ifstonesaresoplacedthattheirlayersareparalleltothedirectionof load, they split easily
   A. areaffected bymoistureB)both(a)and(b)C)noneofthese.
9. Abullnosebrickisnotusedfor
   A. roundingoffsharp cornersB)pillarsC)decorationpurposeD)arches.
10. Redshortironcrackswhenbentduetothepresenceof
    A. SulphurB)carbonC)phosphorusD)silicon.

XII. GATE QUESTIONS:

1. Thetypeoftoolinbrickmasonryusedfor gettinghorizontalsurfaceandleveling
   a) brickhammer b)trowel c)spritlevel d)plumbrule
2. Duetothefollowingdefects, inbrickincreaseinvolumeofmortaroccurs
   a) crystallization b)sulphateattack c)corrosion d)shrinkage
3. 3Thecementmortarforplasteringworksvaryfrom
   a) 1:4–1:6 b)1:5–1:7 c) 1:2–1:10 d)none
4. 4.Thetypeofpointing inwhichthe faceofit iskeptinclinedwithitsupperedgepressed inside
   a) Flushpointingb) v-pointingc)tuckpointingd)recessedpointing
5. Theliquidsubstanceswhichholdsdifferentingredientsofapaintinsuspension
   a) baseb)drierc) pigment d) vehicle
6. Thetypeofshoreusedtogivehorizontalsupportto adjacentparallelpartywallsis
   a) rakingshoreb) flyingshorec)deadshore d)none
7. Theprocessofplacingnewfoundationunderexistingoneis
   a) underpinningb) shoringc) formwork d)all
8. Thetypeofairconditioningwhichisestablishedinhotels,hallsandfactories is
   a) chilledwatersystem b)centraldirectexpansionsystemc)both d)none
9. Aspervastushastra,therecommendedlocationforpoojaroomshouldbe
   a) S-E b)N-Ec)both d)none
10. Asperbuildingprinciples,thestarsshouldhavepitch of
    a)10-20b)20-40c)30-40d)40-50

11. Couplecloseroofissuitableformaximumspanof
    a) 2.5m b)3.5m c)4.5m d)5.5m
12. Inacolarbeamroof
    a) there is nohorizontaltiebeam b)there isa horizontaltieatthefeetofraftersonly
    c) thereisahorizontaltieatalmostthemiddleofraftersonly
    d) therearetwohorizontalties,oneatthefeetand other atthemiddleoftherafters

13. Thefunctionofking postinakingpostrooftrussis
    a) tosupportthe frame workofthe roof b)to receivetheendsofprincipalrafter
    c) topreventthewalls fromspreadingoutward
    d) topreventthetiebeamfromsaggingatitscentre
14. Thefunctionofcleatsina rooftrussis
    a) tosupportthecommonrafter b)tosupport purlins
    c)topreventthepurlinsfromtiltingd)alloftheabove
15. Thetermstringisusedfor
    a) theunderside ofa stair
    b) outerprojectingedgeofa tread
    c) aslopingmemberwhichsupportsthestepsinastair
    d) averticalmember betweentwotreads
16. Theverticalpostsplacedatthetopandbottomendsofaflight supportingthe handrailare known as
    a) balusters b) newalposts c)balustradesd)railings
17. Themaximumnumber ofstepsinaflightshouldgenerallyberestrictedto
    a) 10 b)12 c)15 d) nolimit
18. Thenumberofstepsinaflightgenerallyshouldnotbelessthan
    a) 2 b)3 c)5 d) nolimit
19. Sumoftreadandrisemustlie between
    a) 300to350mm b)400to450mm c)500to550mm d)600to650mm
20. Minimumwidthoflandingshould be
    a) equaltowidthofstairs b)halfthewidthofstairs
    c)twicethewidthofstairs d)onefourththewidthofstairs

IES

1. Gypsumisa
    a) mechanicallyformedsedimentaryrock b)igneousrock
    c) chemicallyprecipitatedsedimentaryrockd) metamorphicrock
2. Whichofthefollowingsedimentaryrockschangesintoquartzitebymetamorphicaction ?
    a) sandstoneb)limestonec)shale d)gypsum
3. Whichofthefollowingrepresentsametamorphic rock?
    i) slate ii) shale iii)quartzite
    The correct answer is
    a)only(iii) b)both(i)and(iii) c)both(ii)and (iii) d)all(i), (ii)and (iii)
4. Quartitzeisa
    a) siliciousrock b)argillaceous rock c)calcareousrock d)aqueous rock
5. Whichofthefollowingisamineral?
    a) basalt b) granite c)quartz d)syenite
6. Slateisformedbymetamorphicactionon
    a) shale b)limestonec)sand stoned)granite
7. Sandstoneisa
    i) sedimentary rock ii) aqueous rock iii)siliciousrock
    The correct answer is
    a)only(i) b)both(i)and(ii) c)both(i) and(iii) d)all(i), (ii)and (iii)
8. Whichofthefollowingisarock?
    a) quartz b)mica c)gypsum d) none oftheabove

9. Basedonthefollowingrocksandminerals,selectthecorrect statement,quartz,shale, basalt, granite, marble, gypsum, mica
   a) basalt and marblearetheonlymetamorphic rocks
   b) thereisnosedimentaryrock c)graniteistheonlyigneousrock
   d)quartzandmicaareminerals
10. Aheavystoneissuitablefor
   a) arches b)rubblemasonry c)roads d)retainingwalls
11. Thestonesuitableforrubble masonryshouldbe.
   a) hard b)tough c)heavy d)light
12. Whichofthe followingmetamorphicrockshasthe mostweatherresisting characteristics?
   a) marble b) quartzite c)slate d)limestone
13. Agoodbuilding stoneshould notabsorbwatermorethan
   a) 5% b)10% c) 15% d)20%
14. Whichofthefollowinghas morefireresistingcharacteristics?
   a) marble b) limestonec) compactsandstoned) granite
15. Jumperisatoolusedfor
   a) testingofstones b)quarrying ofstones
   c)dressingofstonesd)none ofthe above
16. Theimportanttesttobeconductedonastoneused indocksandharboursis-
   a) hardnesstest b)workabilitytest c) weighttestd)toughnesstest
17. Thepredominantconstituentwhichisresponsibleforstrengthingraniteis
   a) quartz b)feldspar c)mica d) none oftheabove
18. Granite isnotsuitableforordinarybuildingpurposebecause
   a) itcannotbepolished b)itisnotafireproofmaterial
   c) itiscostly d)ithaslesscrushingstrength
19. Whichofthe followingstoneisbest suitedforconstructionofpiersandabutmentsofa railway bridge ?
   a) granite b) sandstonec) limestone d)quartzite
20. Thepreparationofsurfaceofstoneto obtainplain edgesorto obtainstonesofrequired size and shape is known as
   a) quarrying ofstones b)blasting ofstones c)seasoning ofstones
   d) dressingofstones
21. Crushingstrengthofagoodbuildingstoneshouldbemorethan
   a) 50MPa b)100 MPa c) 150MPa d)200MPa
22. Specificgravityformostofthebuildingstonesliesbetween
   a) 1.5to2.0 b)2.0to2.5 c)2.5to3.0 d)3.0to3.5

XIII. WEBSITES:

a. http://books.google.co.in/books/about/Building_Construction.html?id=_kAvTMzKGhAC&redir_esc=y
b. http://bieap.gov.in/BuildingMaterialsConstruction.pdf
c. http://www.bookdepository.com/category/1823/Building-Construction-Materials/
d. http://www.gobookee.org/building-materials-and-construction-by-rangwala/

XIV. EXPERTDETAILS:

a. http://www.woodardcurran.com/CmsTemplates/PersonDetail.aspx?id=384
b. http://eco.umass.edu/people/faculty/fisette-paul/

XV. JOURNALS:

a. http://www.journals.elsevier.com/construction-and-building-materials/
b. http://www.sciencedirect.com/science/journal/09500618
c. http://www.scimagojr.com/journalsearch.php?q=24443&tip=sid
d. http://www.researchgate.net/journal/0950-0618_Construction_and_Building_Materials

XVI. LISTOFTOPICSFORSTUDENTSEMINARS:

a. Cementandbuildingmaterials.
b. NaturalandArtificialbuildingmaterials.
c. BuildingComponents.
d. Formwork.
e. MasonryandFinishing
f. BuildingPlanning.
g. BuildingServicing.

XVII. CASESTUDIES / SMALL PROJECTS:

CasestudyonthebuildingmaterialsusedinBIETconstructionbuilding.
Projects

a. Bindersusedinconstruction
b. Admixturesusedintheconstructionandpurpose.
c. Typesofbuildingmaterials.
d. Planningmethodsinconstruction
e. Testsonbuildingmaterials.