



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad-500043

CIVIL ENGINEERING

TUTORIAL QUESTION BANK

Course Title	BUILDING TECHNOLOGY				
Course Code	ACE807				
Programme	B.Tech				
Semester	VII	CE			
Course Type	Skill				
Regulation	IARE - R16				
Course Structure	Theory			Practical	
	Lectures	Tutorials	Credits	Laboratory	Credits
	-	-	-	-	-
Chief Coordinator	Mr. K. Tarun Kumar, Assistant Professor.				
Course Faculty	Mr. K. Anand Goud, Assistant Professor.				

COURSE OBJECTIVES:

The course should enable the students to:	
I	Understand the basic building materials, properties and their applications.
II	Analyze the knowledge of planning of buildings.
III	Understand the concepts of fire safety, ventilation and plumbing services provided for a building.
IV	Explain principles of acoustics in building and plumbing.

COURSE OUTCOMES (COs):

CO 1	Understand the types, properties of stones, bricks, cement and concrete.
CO 2	Identify the components of building and explain principles of building planning, building by laws.
CO 3	Learn to inspect and assess the structures using techniques of visual inspection, various types of fire protection measures in planning.
CO 4	Understand Prefabrication systems in residential buildings, requirements of ventilation.
CO 5	Explain principles of acoustics of building, water supply system, principles governing design of building drainage.

COURSE LEARNING OUTCOMES (CLOs):

ACE807.01	Predict the properties of building stones and its classifications.
ACE807.02	Understand the concept of various methods of manufacture of bricks.
ACE807.03	Explain various types of cements and their applications in construction
ACE807.04	Understand the properties of concrete and its significance in building construction
ACE807.05	Explain different types of lintel, arches and the materials which are commonly used for construction.
ACE807.06	Understand the principles of building planning and building by laws.
ACE807.07	Identify the various types of fire protection measures while planning building.
ACE807.08	Understand the importance of circulation, lighting, ventilation.
ACE807.09	Importance of design and economy in planning of buildings.
ACE807.10	Identify control measures and precautions for various construction defects.
ACE807.11	Understand the general principles of design of openings in buildings.
ACE807.12	Various types of fire protection measures to be considered while planning a building.
ACE807.13	Understand the types of investigations to identify the defects in buildings.
ACE807.14	Prefabrication systems in residential buildings, walls, openings.
ACE807.15	Planning and modules and sizes of components in prefabrication. Process.
ACE807.16	classification of air conditioning, Dehumidification systems of air conditioning.
ACE807.17	Understand the functional requirements of ventilation.
ACE807.18	Explain properties of noise and its measurements, principles of acoustics of building.
ACE807.19	Importance and measures of sound insulation.
ACE807.20	Understand about water supply system, maintenance of building pipe line, Sanitary fittings,
ACE807.21	principles governing design of building drainage.

TUTORIAL QUESTION BANK

MODULE- I				
STONES, BRICKS, CEMENT AND CONCRETE				
Part - A (Short Answer Questions)				
S No	QUESTIONS	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes (CLOs)
1	Why you choose stone as a building material?	Understand	CO 1	ACE807.01
2	Write down the characteristics of good stone?	Remember	CO 1	ACE807.01
3	Mention the basic classifications of stones.	Remember	CO 1	ACE807.02
4	State any four advantages of bricks as compared with stones.	Understand	CO 1	ACE807.02
5	List out the ingredients of cement.	Remember	CO 1	ACE807.03
6	What are the properties and uses of first class bricks?	Remember	CO 1	ACE807.02
7	Name the types of rocks according to geological classification.	Remember	CO 1	ACE807.03
8	State the classification of rocks with examples.	Remember	CO 1	ACE807.03
9	What are the constituents of good brick earth?	Remember	CO 1	ACE807.02
10	Name the operations involved in the manufacture of brick.	Remember	CO 1	ACE807.02
11	Enumerate various types of cement?	Remember	CO 1	ACE807.04
12	What is dressing of stones?	Understand	CO 1	ACE807.01
13	Define tempering?	Remember	CO 1	ACE807.02
14	What is unsoiling?	Remember	CO 1	ACE807.02
15	What are the properties of OPC?	Remember	CO 1	ACE807.04
16	List out the names of bricks for special use.	Understand	CO 1	ACE807.02
17	What are the advantages & disadvantages of clamp burning?	Remember	CO 1	ACE807.02
18	What are the advantages & disadvantages of kiln burning?	Remember	CO 1	ACE807.02
19	State the points to be considered in selecting a site for quarry of stones.	Remember	CO 1	ACE807.01
20	State the purpose of dressing of stones.	Understand	CO 1	ACE807.01
Part - B (Long Answer Questions)				
1	Write a short note on English bond with neat sketch.	Understand	CO 1	ACE807.02

2	Illustrate the geological, physical and chemical classification of rocks?	Remember	CO 1	ACE807.03
3	Describe the characteristics of good building stones.	Remember	CO 1	ACE807.01
4	Illustrate the classification of bricks with neat sketch.	Understand	CO 1	ACE807.02
5	What do you understand about the dressing of stones and explain briefly?	Remember	CO 1	ACE807.01
6	What test are to be made on bricks explain any three of them?	Remember	CO 1	ACE807.02
7	Explain the qualities of good building stones.	Remember	CO 1	ACE807.01
8	Write the various methods of quarrying of stones. Explain briefly.	Understand	CO 1	ACE807.01
9	Explain in detail the process of manufacturing of bricks.	Understand	CO 1	ACE807.02
10	State the uses of stones in various construction works.	Remember	CO 1	ACE807.01
11	Explain briefly about the tests conducted on cement to find its properties?	Remember	CO 1	ACE807.04
12	Mention various tests conducted on concrete.	Understand	CO 1	ACE807.01
13	Discuss the classification of bricks and explain about their qualities, special types of bricks?	Understand	CO 1	ACE807.02
14	Explain the field tests on cement? Write the chemical composition of ordinary Portland cement.	Understand	CO 1	ACE807.02
15	Differentiate between the following: i. Initial setting time and final setting time. ii. Hydration and hardening of cement	Understand	CO 1	ACE807.04
16	Explain about hydration of cement?	Understand	CO 1	ACE807.04
17	What is meant by workability of concrete? Mention different tests conducted on workability of concrete.	Remember	CO 1	ACE807.04
18	What are the methods of testing the properties of green concrete? Describe them briefly.	Understand	CO 1	ACE807.04
19	Explain about the compressive strength test of concrete.	Remember	CO 1	ACE807.04
20	Explain the uses of the following building materials. a) Marble b) Granite c) Basalt d) Sandstone	Remember	CO 1	ACE807.01

MODULE-II

BUILDING AND VENTILATION

Part – A (Short Answer Questions)

1	What is the use of lintel?	Remember	CO 2	ACE807.04
2	What are the different types of floors?	Remember	CO 2	ACE807.04
3	What are the components of an arch?	Remember	CO 2	ACE807.05
4	What are the types of trussed roofs?	Understand	CO 2	ACE807.05
5	Name important metals used in roof construction.	Understand	CO 2	ACE807.06
6	What is Shallow foundation?	Remember	CO 2	ACE807.05
7	What are the advantages of damp proof coursing?	Understand	CO 2	ACE807.05
8	What are the main types of foundations?	Remember	CO 2	ACE807.06
9	Define Baluster.	Understand	CO 2	ACE807.06
10	Write briefly the factors affecting building planning.	Understand	CO 2	ACE807.06
11	Write any four basic principles of building planning in respect of residential building?	Remember	CO 2	ACE807.05
12	What is orientation?	Remember	CO 2	ACE807.06
13	State the factors affecting orientation?	Understand	CO 2	ACE807.06
14	What are building bye laws?	Understand	CO 2	ACE807.06
15	Define floor space index?	Understand	CO 2	ACE807.06
16	define residential building	Understand	CO 2	ACE807.05
17	Classify the building based on occupancy.	Remember	CO 2	ACE807.05
18	Classify the building based on type on construction.	Understand	CO 2	ACE807.04
19	Mention any five principles of planning the building.	Remember	CO 2	ACE807.06
20	What is ventilation?	Understand	CO 2	ACE807.05

Part - B (Long Answer Questions)

1	Describe briefly about different types of ground floors.	Understand	CO 2	ACE807.06
2	Describe classification of lintel based on materials and work man ship.	Understand	CO 2	ACE807.06
3	Write short notes on the following, a) Flat arch b) Relieving arch c) Bull's arch d) Elliptical arch	Understand	CO 2	ACE807.06
4	What are the requirements of good roof?	Remember	CO 2	ACE807.05

5	List the different types of foundations, Explain shallow foundations.	Remember	CO 2	ACE807.05
6	Discuss about the combined footing with neat sketch.	Understand	CO 2	ACE807.05
7	Sketch and explain about strap and mat footing.	Remember	CO 2	ACE807.05
8	Write a short note with neat sketch for the Spread footings.	Understand	CO 2	ACE807.06
9	Write a short note on following with neat sketches i. Strap footing. ii. Mat or raft foundation.	Understand	CO 2	ACE807.06
10	What are the different types of circulations? Explain in detail?	Remember	CO 2	ACE807.05
11	Explain about following principles of building planning. i. Grouping ii. Circulation iii. Ventilation	Remember	CO 2	ACE807.05
12	Define building planning. What is the significance of building planning?	Remember	CO 2	ACE807.05
13	What is the scope of building planning?	Understand	CO 2	ACE807.05
14	Explain briefly the factors affecting building planning?	Understand	CO 2	ACE807.06
15	Explain briefly about the principles of planning?	Understand	CO 2	ACE807.06
16	Explain various principles underlying building bye-laws.	Understand	CO 2	ACE807.05
17	Classify the different types of buildings according to NBC?	Understand	CO 2	ACE807.06
18	State and explain the various basic principles of building planning?	Remember	CO 2	ACE807.05
19	What is meant by orientation and state the factors affecting the orientation of building?	Understand	CO 2	ACE807.05
20	Define circulation. Explain the importance of circulation?	Understand	CO 2	ACE807.06

MODULE -III

REPAIRS IN BUILDINGS

Part - A (Short Answer Questions)

1	Define Repair.	Understand	CO 3	ACE807.07
2	Define Maintenance	Remember	CO 3	ACE807.08
3	What are the two facets of maintenance?	Remember	CO 3	ACE807.09
4	What are the causes of deterioration?	Understand	CO 3	ACE807.09
5	Define Rehabilitation.	Remember	CO 3	ACE807.08
6	Define physical inspection of damaged structure.	Understand	CO 3	ACE807.07
7	How deterioration occurs due to corrosion?	Remember	CO 3	ACE807.09
8	What are the factors to be considered by the designer at the construction site.	Understand	CO 3	ACE807.09
9	Write a short note on cracking.	Understand	CO 3	ACE807.08
10	Write a short note on spalling.	Remember	CO 3	ACE807.08

13	What are the steps in selecting a repair procedure?	Remember	CO 3	ACE807.11
14	Define horizontal circulation.	Understand	CO 3	ACE807.11
15	What is the use of openings in building?	Remember	CO 3	ACE807.10
16	What are the different types of openings in building?	Remember	CO 3	ACE807.10
17	Define vertical circulation.	Understand	CO 3	ACE807.11
18	What are the different firefighting equipment?	Remember	CO 3	ACE807.10
19	Write names of different NDT tests for strength estimation of concrete.	Remember	CO 3	ACE807.10
20	Explain the need for evaluation of structures.	Understand	CO 3	ACE807.10

Part – B (Long Answer Questions)

1	Explain preliminary investigation & Detailed investigation.	Understand	CO 3	ACE807.09
2	Mention the	Understand	CO 3	ACE807.08
3	What do you mean by deterioration? Explain the mechanism of deterioration in concrete structures?	Understand	CO 3	ACE807.08
4	Explain about types of building repairs and Maintenance Services.	Remember	CO 3	ACE807.09
5	Define the fixed percentage method of evaluating the strength of existing structure.	Remember	CO 3	ACE807.08
6	Discuss about the design and construction errors leading to deterioration of a structure.	Understand	CO 3	ACE807.08
7	What are the factors to be considered by the designer at the construction site. Explain in detail?	Remember	CO 3	ACE807.09
8	What are the steps in repair aspect?	Understand	CO 3	ACE807.09
9	Discuss about the environment effects which leads to deterioration of concrete structure.	Understand	CO 3	ACE807.08

10	What is the effect of selecting poor quality material for construction?	Remember	CO 3	ACE807.08
11	Explain about different firefighting equipment.	Remember	CO 3	ACE807.11
12	What are the various measures for protecting a building from fire. Explain briefly.	Understand	CO 3	ACE807.10
13	Explain the concrete column in detail with figure	Understand	CO 3	ACE807.10
14	Explain the Compression test & Tension Test?	Understand	CO 3	ACE807.10
15	What are the various aspects that will be covered during inspection of damaged buildings?	Understand	CO 3	ACE807.11
16	What are the design principles of openings?	Understand	CO 3	ACE807.09
17	Explain about any two design principles of openings.	Understand	CO 3	ACE807.11
18	Explain about vertical circulation of a building with example.	Remember	CO 3	ACE807.10
19	Explain about horizontal circulation of a building with example.	Understand	CO 3	ACE807.11
20	Write about rebound hammer test.	Understand	CO 3	ACE807.11

MODULE -IV

PREFABRICATION SYSTEMS AND AIR CONDITIONING

Part - A (Short Answer Questions)

1.	What is prefabrication system?	Understand	CO 4	ACE807.14
2.	What are prefabricated materials?	Remember	CO 4	ACE807.14
3.	Why is prefabrication a good method of installation?	Remember	CO 4	ACE807.15
4.	What are the advantages and disadvantages of prefabrication?	Understand	CO 4	ACE807.15
5.	What is the difference between precast and prefabricated concrete?	Remember	CO 4	ACE807.16
6.	What is prefabricated formwork?	Understand	CO 4	ACE807.15
7.	What is meant by prefabricated structures?	Remember	CO 4	ACE807.16
8.	What are the different types of air conditioning systems?	Understand	CO 4	ACE807.15
9.	What is air conditioning process?	Understand	CO 4	ACE807.16
10.	What is the principle of air conditioning?	Remember	CO 4	ACE807.15
11.	What are the components of an air conditioning system?	Understand	CO 4	ACE807.16
12.	What is dehumidification in air conditioning?	Remember	CO 4	ACE807.15
13.	What is humidification and dehumidification?	Remember	CO 4	ACE807.16
14.	What is a dehumidification system?	Understand	CO 4	ACE807.16
15.	How do you dehumidify air?	Remember	CO 4	ACE807.16
16.	What are the types of ventilation?	Understand	CO 4	ACE807.17
17.	What are the requirements of ventilation?	Remember	CO 4	ACE807.17
18.	What are the functions of ventilation?	Understand	CO 4	ACE807.16
19.	Why is ventilation important in buildings?	Understand	CO 4	ACE807.17
20.	What is the principle of ventilation?	Remember	CO 4	ACE807.16

Part – B (Long Answer Questions)

1.	What are the characteristics of Materials used for construction of PFS?	Understand	CO 4	ACE807.14
2.	What are the Factors influencing the standardization?	Remember	CO 4	ACE807.14
3.	Distinguish between site prefabrication and plant prefabrication.	Remember	CO 4	ACE807.15
4.	What are the principles of prefabrication techniques and explain in detail and also mention its advantages and disadvantages.	Understand	CO 4	ACE807.15
5.	Explain the erection principles of precast members with suitable sketches.	Remember	CO 4	ACE807.16
6.	Explain the need for prefabrication systems.	Understand	CO 4	ACE807.15
7.	Explain the production process of prefabricated structural elements	Remember	CO 4	ACE807.16
8.	Discuss the concepts for precast concrete buildings.	Understand	CO 4	ACE807.15
9.	What is the process involved in manufacture of PFS?	Understand	CO 4	ACE807.16
10.	What are the methods for Manufacture of precast concrete elements and explain the factors influencing method of manufacturing.	Remember	CO 4	ACE807.15
11.	Explain the precasting methods and stages of work in precasting?	Understand	CO 4	ACE807.16
12.	What are the importance aspects considered during hoisting, erection and transportation of precast element?	Remember	CO 4	ACE807.15
13.	Explain erection and equipments required for erection.	Remember	CO 4	ACE807.16
14.	Discuss in detail the concept of modular coordination .State its significance in prefabricated structures.	Understand	CO 4	ACE807.16
15.	Explain the behavior of large panel construction with suitable sketches.	Remember	CO 4	ACE807.16
16.	Explain the methods of construction of roof and floor slab. Also explain the precautions taken during the manufacturing process.	Understand	CO 4	ACE807.17

17.	What is the necessity of providing shear walls in the precast structures? Also discuss the different types of shear walls.	Remember	CO 4	ACE807.17
18.	Write briefly about types of wall panels.	Understand	CO 4	ACE807.16
19.	Write about the structural behavior of precast structure.	Understand	CO 4	ACE807.17
20.	Differentiate the behavior of frame in precast structures.	Remember	CO 4	ACE807.16

MODULE - V

ACOUSTICS AND PLUMBING SERVICES

Part - A (Short Answer Questions)

1.	What makes good acoustics?	Remember	CO 5	ACE807.14
2.	What are the factors affecting acoustics of a building?	Understand	CO 5	ACE807.14
3.	What does acoustic performance mean?	Remember	CO 5	ACE807.15
4.	What is acoustics of sound?	Understand	CO 5	ACE807.15
5.	How do acoustics affect sound?	Remember	CO 5	ACE807.16
6.	What do you mean by acoustics of buildings?	Understand	CO 5	ACE807.15
7.	What is Echelon effect in acoustics?	Understand	CO 5	ACE807.16
8.	What is the difference between sound and acoustics?	Remember	CO 5	ACE807.15
9.	What are acoustic materials?	Understand	CO 5	ACE807.16
10.	What is an acoustics consultant?	Remember	CO 5	ACE807.15
11.	What is acoustics of building?	Remember	CO 5	ACE807.16
12.	What are the factors affecting acoustics of a building?	Understand	CO 5	ACE807.15
13.	What does acoustic performance mean?	Remember	CO 5	ACE807.16
14.	What is impact sound insulation?	Understand	CO 5	ACE807.16
15.	What is the purpose of sound insulation?	Remember	CO 5	ACE807.16
16.	What type of insulation is best for soundproofing?	Understand	CO 5	ACE807.17
17.	How do you soundproof a room from inside noise?	Understand	CO 5	ACE807.17
18.	How does a water supply system work?	Understand	CO 5	ACE807.16
19.	What are the four different types of water supply distribution system?	Remember	CO 5	ACE807.17
20.	What are the methods of water supply?	Understand	CO 5	ACE807.16

Part - B (Long Answer Questions)

1.	Write short notes on any four of the following : (a) Importance of acoustical partitions in an open office system. (b) Types of Noises. (c) Properties of good acoustic material.	Remember	CO 5	ACE807.18
2.	Write short notes on any four of the following : (a) Role of noise survey in placement of library in an institutional campus. (b) Consequences of reflection of sound in an envelope. (c) Variety of Speakers.	Understand	CO 5	ACE807.18
3.	What is the acceptable indoor noise level for an Intensive Care Unit of a hospital or Court Room? Identify the sources of outdoor as well as indoor noise. Suggest various precautions, which you shall take while designing it.	Remember	CO 5	ACE807.18
4.	Mention various acoustical defects in an enclosure. Discuss the causes of various defects and their remedial measures. Support your answer with neat illustrations	Understand	CO 5	ACE807.18
5.	Explain Reverberation of sound in an enclosure. Discuss the importance of controlling the reverberation time in a multipurpose hall to be used for various purposes like music concerts, theatre, lectures and projection of films.	Remember	CO 5	ACE807.18
6.	Differentiate between any three of the following. Support your answer with neat illustrations : (a) Echo and Reverberation. (b) Use of absorption and reflection of sound. (c) Sound shadow and sound focii	Understand	CO 5	ACE807.18
7.	Differentiate between any three of the following. Support your answer with neat illustrations : (a) Intensity and loudness of sound. (b) Microphone and amplifier. (c) Reflection of sound from convex and concave surfaces	Understand	CO 5	ACE807.18
8.	What Is The Most Common Reason For Sump Pump Failure?	Remember	CO 5	ACE807.18
9.	Explain How You Can Fix A Leaky Pvc Water Pipe?	Understand	CO 5	ACE807.19
10.	What Pre-caution A Plumber Could Take For Health And Safety Purpose?	Remember	CO 5	ACE807.19

11.	Mention What Are Some Health And Safety Issues That Plumber Face?	Remember	CO 5	ACE807.20
12.	Mention What Are The Different Types Of Chemical Drain Cleaners Are Used?	Understand	CO 5	ACE807.20
13.	Should we use plastic or copper pipe to install a new water softener in our system?	Remember	CO 5	ACE807.21
14.	Describe the procedure of design of pumps and rising main.	Understand	CO 5	ACE807.21
15.	Describe the methods of removal of hardness of water.	Remember	CO 5	ACE807.20
16.	Write short note on “Septic Tank” and explain its design procedure.	Understand	CO 5	ACE807.21
17.	Enlist the different types of pipes used for water supply.	Understand	CO 5	ACE807.21
18.	What are the differences in applications between pipe culverts and box culverts?	Remember	CO 5	ACE807.20
19.	Why is it preferable to design stormwater drains to match soffit?	Understand	CO 5	ACE807.20
20.	What is the mechanism of cavitation in pipes and drains?	Understand	CO 5	ACE807.21

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