03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Building Technology *(CE652)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. What do you mean by orientation of building? What should be considered for orientation and planning of building? What are the requirements of ventillation? [8]
2. What do you understand by thermal comfort? Explain various methods of thermal insulation for exposed walls, doors and for windows with neat sketches. [8]
3. Briefly explain different methods of determining bearing capacity of soil for design purpose. List out the common foundation failures. [5+3]
4. What are the properties of motar? Estimates the quantities of materials for 10 m^3 brick work where, size of brick is 57mm*115mm*240mm, thickness of mortar is 10 mm and mortar of cement sand ratio is 1:6. [3+5]
5. Define pitched roof, its type sand what factors should be considered while selecting a roof covering material? [4+4]
6. What are the essential requirement of good stair? State different type of stair as per shape. [4]
7. Explain elements of battered door shutter with sketch. [4]
8. Explain construction method of marble flooring. [6]
9. Differentiate between shoring and underpinning. Explain cantilever scaffolding with neat sketches. [1+3]
10. What do you mean by floor finished and wall cladding? Mention some common floor finishing materials. [6]
11. How earthquake protection can be achieved in building. Explain. [4]
12. Define retrofitting. Explain techniques used for seismic retrofitting of building. [6]
13. Explain rainwater harvesting, write down its reasons behind it and list out its basic components. Illustrate components of the rooftop rain water harvesting system. [1+1+2+2]

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05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 Baisakh

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Building Technology *(CE652)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Define principles of orientation and planning of a building briefly. What are the main factors to be considered for best orientation of building? [7+3]
2. What is damp proofing? Describe general methods of damp proofing. [2+6]
3. Define foundation. What are the basic requirement of foundation? Explain different types of shallow foundation with necessary sketches. [1+3+6]
4. Define mortars. Find out the quantities of cement and sand for 100 m2 plastering area in 1:6 ratio if the thickness of plaster is 12mm. [2+6]
5. What do you mean by rainwater harvesting? Describe the fundamental requirements of Electrical wiring. [3+3]
6. Define single/double/multiple timber roofs. Draw neat sketch of king post truss labeling with corresponding elements. [3+5]
7. Define stair. Design a quarter turn staircase for a residential building in a lobby of size 5.5m * 4.0 m. The height of floor to floor is 3.0 m. Assume necessary data if required. Draw neat plan to justify your design. [1+6+1]
8. Explain shoring, list out its types. Describe flying shoring with necessary sketches. [1+3+4]
9. How do you define retrofitting? Explain RCC and steel jacketing with neat sketches. [2+6]
10. Write short notes on: (any two) [2×3]
    a) Construction method of terrazzo flooring
    b) Differentiate between plastering and pointing
    c) Retaining wall

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05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2074 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Building Technology *(CE652)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Explain moisture movement through Building Component. Describe the methods to stop moisture entering to a building? [8]

   b) What do you mean by thermal comfort for the building purpose? Explain its classification with appropriate examples. [8]

   OR

   Illustrate the requirements of lighting in the building. What are the principle for the site selection and planning?

2. a) Describe the factor affecting the design of foundation. How can we improve the bearing capacity of soil? [8]

   b) What kind of member is queen post truss? Draw a queen post truss explaining their element's function. [8]

   OR

   Define the terms scaffolding, underpinning and shoring. Explain the methods to carry out underpinning work.

3. a) Explain the general parts and terms used in door and window with necessary diagram. Define casement, awning and hopper window. [8]

   b) Design a suitable staircase for public building in a hall of size 5.50 m * 7.50 m. The vertical clear distance between floor is 3.5 m and the RCC slab thickness in 150 mm. (assume any necessary criteria, if required). [8]

4. a) How earthquake protection can be achieved for a load bearing masonry building? What are the factors to be considered for improving Building for seismic safety? [8]

   b) What are the various techniques of retrofitting? Why retrofitting in existing building is important? [8]

5. Write short notes on: (Any four) [4×4]
   a) Form works
   b) Causes of cracks in Building
   c) Cladding materials for wall
   d) Ran water harvesting
   e) Floor and wall tiles
   f) Mortars used in plastering wones

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05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2073 Magh

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Building Technology *(CE652)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ ***All** questions carry equal marks.*
- ✓ *Assume suitable data if necessary.*

1. a) Define essential factors of principles of orientation and planning of building.
   b) Explain factors determining thermal comfort.
2. a) Describe in detail the causes of foundation failure.
   b) Draw and explain corner wall of English and Flemish bond (two courses of each in plan and elevation).

OR

Explain with the help of neat sketches construction of cavity wall.

3. a) Describe collar timber roofs with necessary sketches.
   b) The inside dimension of a stair case in a residential building are 1.8 m×3.9 m. The height of floor to floor is 2.4 m. The thickness of waist slab is 0.15 m. Design a proper layout with neat sketches.

OR

Explain elements of panelled and battened doors with neat sketches.

4. a) With the help of neat sketches explain solid and suspended ground floor.
   b) List out different types of shoring. Explain raking shore with necessary sketch.
5. a) Differentiate between structural and non-structural cracks and with the help of neat sketches. Write down its causes of occurrence.

OR

Explain conventional strengthening methods used for seismic retrofitting and retrofit of structures using innovative materials.

   b) Define rain water harvesting. Explain different methods of treatment of rain water.

OR

Explain ingredients of an oil borne point.

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05 TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

Examination Control Division

2073 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Building Technology *(CE652)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ ***All** questions carry equal marks.*
- ✓ *Assume suitable data if necessary.*

1. a) Explain various types of moisture movements in different components of building structures.

   b) What do you understand by orientation of building? Discuss the factors to be considered for the best orientation of a building.

2. a) Explain different types of shallow foundation with neat sketches.

   b) Explain various types of stone masonry. Draw typical sketches to illustrate them.

3. a) With the help of neat sketches, list and explain the terms used in pitched roof.

   b) Design a dog legged RCC stair for a residential building with a staircase of internal dimension of 4.6 m×2.6 m and 3.0 m floor to floor height. Draw both plan and section to justify your design.

4. a) Give a list of materials which are commonly used as floorings and give a brief description of each.

   OR

   Discuss purpose and sizing of doors and windows. List different terms used in panelled doors.

   b) Define shoring with the help of neat sketches. Explain single flying shore.

   OR

   Explain methods of pointing and types of pointing.

5. a) How do you define retrofitting of building structure? Explain conventional jacketing with necessary sketches.

   b) Explain rainwater harvesting, write down process of treatment.

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05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2071 Bhadra

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Building Technology *(CE652)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What is building? Explain various types of building with sketches. [8]
   b) Explain the consideration of heat, ventilation light, sound, orientation and moisture movement in a building with sketch where necessary. [8]
2. a) What are the functions of foundation? Explain the types of deep foundation with necessary sketches. [8]
   b) What is mortar? Describe the estimation of mortar requirement. [8]
3. a) What is roof used for? Sketch out different types of roof and show their parts. [8]
   b) Describe essential elements of a stair. Define ladders, lifts and elevators and ramps. [8]
4. a) Draw a section of solid ground floor with necessary details. [8]
   b) Define shoring. What are the objectives of shoring? Describe the types of shoring with necessary sketches. [8]
5. a) Explain the process of painting works on masonry surfaces. What may be the causes of cracks occurred in a building and what are remedial measure to cracks? [8]
   b) Describe septic tank and soak pit with necessary sketches. [8]

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05 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2070 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Building Technology *(CE652)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What do you understand by orientation of a building? How do the requirements for a building be met from the orientation? [4+4]
   b) Describe positive and negative side water proofing system. Illustrate with necessary sketch for provision of DPC for basement in ordinary soil. [2+6]
2. a) Discuss common problems with existing foundation. [8]
   b) What is first class brick work in 1:6 cement sand mortar? Calculate materials for 10 cum brick work except bricks. [3+5]
3. a) Show a flooring details of a floor (ground) that has a connection with external wall and floor finish with mosaic tiling. [8]
   b) Define shoring. Describe various types of shoring with necessary neat sketches. [8]
4. a) What do you understand by pointing works? Explain procedure of pointing work. [3+5]
   b) Why is rain water harvesting necessary in a building? Explain any method for harvesting rain waters. [4+4]
5. a) What are the factors to be considered for limiting fire spread? Clarify each point briefly. [2+6]
   b) Explain various remedial methods of causes of cracks in a building. [8]

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02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2070 Chaitra

Exam.	Old Back (2065 & Earlier Batch)		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: -Building Technology *(EG633CE)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What are the sources of moisture in a building? Explain different methods for moisture control in the building with necessary figures. [2+6]
   b) What is human thermal comfort? How human body maintains the thermal balance? Describe the thermal preferences affecting comfort. [2+2+4]
2. a) What are the general classification of foundation? What are the common problems of existing foundation? [4+4]
   b) What are the objectives of shoring? Discuss in brief about the dead shore with necessary figures? [2+6]
3. a) Define roof and its types. Describe briefly about the double timber roof with necessary figures. [4+4]
   b) Design and draw plan of a 1.2 m wide doglegged stair for a residential building with 3 m floor height. [4+4]
4. a) What are the functions of door and window? Draw elevation of battened door and glazed window having wooden members. [2+3+3]
   b) Why joints are necessary for civil construction work? Describe expansion joint in a building with neat sketches. [4+4]
5. a) What are the requirements of good partition? Desctibe the types of partition with the basis of loading system. [4+4]
   b) What is domestic water supply system? Discuss the types of drainage system with necessary figures. [4+4]
6. Write short note on any four of the following topics: [4x4]
   a. General principle of electrical services
   b. Air-Conditioning
   c. Timbering of trenches
   d. Brick cladding
   e. Sound insulation

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04 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division.
2069 Bhadra

Exam.	Regular (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Building Technology *(CE652)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What are the requirements of ventilation? Explain moisture movement through building components. [4+4]
   b) What do you understand by thermal performance of building components? Explain the various methods of thermal insulation for exposed walls and roofs. [8]
2. a) Define foundation. Describe types of foundation with necessary sketches. [8]
   b) What are the types of flooring? Explain the process of Terrazzo finish floor. [3+5]
3. a) Draw and explain different components of timber collar beam roof with their sizes. Explain different types of roof covering for pitched roof. [8]
   b) Explain the preparation of cement sand mortar (1:6). Differentiate between random rubble, coursed rubble and Ashlar stone masony with sketches. [4+4]
4. a) Define stair. Illustrate the elements of staircase with figure. [8]
   b) With the help of neat sketches, differentiate between solid and suspended ground floor. [8]
5. a) How do you make a brick masonry buildings earthquake resistant? Explain with sketches various measures adopted. [8]
   b) Illustrate components of the rooftop rain water harvesting system. [8]

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02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2068 Baishakh

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Building Technology

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) What is moisture? What are the sources of moisture in a building? Describe the method of moisture co0ntrol in the substructure of a RCC building? [2+2+4]

   b) What are the characteristics of audible sound? What are defects occurred due to reflected sound. Explain briefly the different methods of sound insulation. [8]

   OR

   Explain the different types of thermal insulating material. Explain the different process of insulating various building elements such as roofs, exposed walls and doors and windows.

2. a) What are the general classifications of foundation? Describe the common problems of existing foundation. [4+4]

   b) What are different elements for vertical circulation in a building? Design a RCC doglegged staircase for a residential building in a room of 4.5m × 2.3m and floor height of 3m. Assume necessary data. Give neat sketches of the plan and section. [2+6]

3. a) What are the different components of doors and windows, explain with necessary sketches. Explain the different types of doors with the help of sketches. [8]

   b) Define roof. What are the types of roof? What are the functional requirements of roof? Describe briefly the single roof and its types with necessary sketches. [8]

4. a) What are the types of joints? Why joints are important in building construction? Briefly explain the expansion joint in a building with necessary sketches? [2+2+4]

   b) What do you understand by temporary construction in the building? Describe the types of temporary construction with necessary sketches. [8]

5. a) Why cladding is important to a building? Illustrate the types of cladding with respect to construction technique. [2+6]

   b) What are internal partitions? What are the requirements for a good partition? Explain the classification of partition with respect to materials and loading systems. [2+2+4]

6. Write short notes on: [4×4]

   a) Day light factor
   b) Septic tank and soak pit
   c) Types of electrical wiring
   d) Air conditioning

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02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2067 Ashadh

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Building Technology

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Five** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) How does moisture movement occur in buildings? Explain the different types of condensations and their effects on building materials. [4+2+2]

   b) How do absorptive materials absorb sound? Write down the general considerations for noise control in buildings. [4+4]

2. a) What are the various causes of foundation settlement? Define underpinning and explain different methods of underpinning with neat sketches. [8]

   b) What is roof covering? Differentiate double and triple roofs with constructional details. [8]

3. a) What are the functions of openings? Explain any two types of door and window based on working operation with neat line sketches. [2+3+3]

   b) Define staircase. For a given space of 4.8m × 2.25m with floor height of 3.6m, design a RCC dog-legged staircase. [8]

4. a) Why is it necessary to provide a joint in building structure (especially cement concrete structure)? Draw a neat freehand sketch of vertical wall section showing expansion joint at foundation, plinth, lintel, floor and roof/terrace level for a typical residential building having 350mm thick brick wall. [2+6]

   b) What is temporary construction work? Differentiate between brick layer's scaffold and dead shoring with necessary sketches showing all elements. [2+3+3]

5. a) What do you mean by building finishes? Differentiate between tile hanging and stone cladding in external wall surface showing section (vertical) with neat sketches. [2+3+3]

   b) What are the types of suspended ceilings? Describe their functions and methods of construction. [8]

6. a) What are the general principles of electrical services systems? Explain wiring systems and also discuss about the safety precautions to be adopted while using electricity and its appliances. [2+3+3]

   b) What is domestic water supply system? Discuss with relevant sketches about septic tank soak pit system of sewage disposal at residential building site. [2+3+3]

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02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2066 Bhadra

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Building Technology

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt <u>All</u> questions.*
- ✓ *The figures in the margin indicate <u>Full Marks</u>.*
- ✓ *Support your answer with sketches wherever required.*
- ✓ *Assume suitable data if necessary.*

1. Discuss about thermal comfort in building. How can we achieve thermal comfort? Explain about active and passive methods for heating and cooling. Support your answer with neat and clean sketches. [16]

2. Define foundation with its types. What are the causes of foundation settlement and how can we provide treatment for foundation settlement? [16]

OR

What is basement floor? What type of wall is appropriate for basement wall? Explain about waterproofing techniques in basement. Support your answer with neat and clean sketches.

3. Why are joints necessary in the building structures? Describe in detail the types of joints in structures and their uses. [16]

OR

Define paints. What are the ingredients of oil paints? What are the characteristics of good paints? How do you undertake painting works in new and old woodwork?

4. a) What is roof? Show the comparative advantages and disadvantages of slope and flat roof. [8]

   b) Describe shoring and scaffolding. Why are shoring and scaffoldings used in building construction? [8]

5. Write short notes (any four) [4×4]

   a) Windows and its types
   b) Electrical safety in building
   c) Septic tank and soak pit
   d) Fire protection in building
   e) Plastering and pointing in building

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02 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2066 Jestha

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Building Technology

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Eight** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Describe briefly about renewable and non-renewable sources of energy highlighting the world scenario. Explain the different ideas to trap the solar energy in building with the concept of energy efficient design. [4+6]
2. What are the effect of moisture in building elements? Explain different methods by which we can stop moisture entering to building. [5+5]
3. What is basement floor? Explain about different water proofing method for basement with neat and clean sketches. [3+7]
4. Draw complete details of an R.C.C. dog-legged staircase for an office building leading from the ground floor to first floor. State reasons for size of the risers and treads adopted by you. The size of stair is 4.8m×3.0m×3.6m (height). [10]
5. How we can properly manage the water supply and sanitation system in building? Explain the function of septic tank and soak pit in sanitation system with the help of sketches. [4+6]
6. Why temporary construction is necessary in building construction? Differentiate between single and double scaffolding with constructional details. [4+6]
7. What is roof? Write down requirement of good roof. Explain about pitch or slope roof and mention its types with the help of sketches. [4+6]
8. Write short notes on (any four) [2.5×4]
   a) Lifts and escalators
   b) Electrical wiring system in building
   c) False ceiling
   d) Cladding
   e) Construction joints
   f) Underpinning
9. Define the safe bearing capacity and ultimate bearing capacity. Explain the methods to improve bearing capacity of soil. [3+7]

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03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2065 Shrawan

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Building Technology

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Support your answer with sketches wherever required.*
- ✓ *Assume suitable data if necessary.*

1. Explain briefly human thermal comfort. What are the thermal factors affecting thermal comfort. How human body maintains thermal balance. Explain your statement with neat and clean sketch. [16]

OR

What do you understand by Energy Conscious Design? Describe briefly the design consideration of Energy Conscious Design. Also describe the renewable and non-renewable energy, their sources and their respective examples.

2. Define stair. What are the functional requirements of good staircase? Design a dog-legged staircase for a public building in a room of 5.0m×4.0m and floor to floor height 3.0m. Assume necessary data. Give neat and clean sketch to support your design. [16]

3. What do you know about the methods of soil exploration? Define safe bearing capacity of soil and describe briefly the methods of improving bearing capacity of soil. [16]

OR

Define underpinning. Describe its necessary. What are the operations to be carried out before underpinning? What are the necessary precautions to be taken whilst underpinning? Describe briefly the methods of underpinning.

4. What is shoring? Illustrate the necessity of shoring. Describe the types of shoring. Support your answer with neat and clean sketch giving the names of different parts. [16]

OR

Define roof. What are the types of roof? What are the functional requirements of roof? Describe briefly the single timber roof and its types with necessary figures.

5. Write short notes (any four) [4×4]
   a) Windows and its types with clean sketches
   b) Ceiling: their types and fixing details
   c) Plastering and its types
   d) Water distribution system and its design
   e) Joints in structures and their necessity
   f) Painting on metal and masonry surface

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03 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2064 Jestha

Exam.	Regular/Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Building Technology

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Support your answer with sketches wherever required.*
- ✓ *Assume suitable data if necessary.*

Moisture is the main problem in the building: Please illustrate the effects of the moisture in the building. Describe the main sources of moisture and explain how it moves through the building component with sketches. [16]

OR

Define thermal comfort? Describe thermal factors affecting human comfort. Explain thermal balance of a building. Give neat and clean sketch whenever necessary.

2. Define staircase. Illustrate ideal requirements of the stair. Describe the different types of stair by shape in plan with neat sketches. Design an open-well staircase for a public building in a hall of 6.0m × 3.5m and ceiling height 3.0m. The thickness of the floor slab is 120mm. Assume necessary data. Give neat and clean sketch (plan and section) to support your design. [16]
3. What do you understand by temporary construction in the building? Describe the types and requirements of temporary constructions with necessary figures. [16]
4. Define paint and varnishes used in the building. Illustrate the constituents of an oil paint. Describe the painting procedures on; new and old woodworks, metal works and cement surfaces. [16]

OR

Define roof and its types. Illustrate the functional requirements of a roof. Describe briefly single and double timber roof with necessary figures.

5. Write short notes (any four): [4×4]
   a) Basement and retaining wall
   b) Cladding: its types and functions
   c) Septic tank and soak pit
   d) Doors and its types
   e) Partition wall and its types
   f) Wiring systems

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03/2-2 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2062 Baishakh

Exam.	Regular/Back		
Level	B.E.	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3.hrs.

Subject: - Building Technology

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Support your answer with sketches wherever required.*
- ✓ *Assume suitable data if necessary.*

1. Write briefly on the thermal performances of the building sections. Define transmittance and find the transmittance of a composite wall that consists of 110mm brickwork (1/2 brick) as outer leaf, cavity of 25mm, thermocole insulation of 25mm, 110mm brickwork as inner leaf. There is 12mm thick plaster on external side of outer leaf and internal surface of the inner leaf. The conductivities of the brickwork, cavity, thermo Cole insulation and plaster are 1.15, 0.026, 0.034 and 0.72 W/m°C respectively. The internal and external surface conductances are 8.12 and 10.0 W/m^2°C. Draw a neat sketch of thermal gradient of this composite wall. [16]

OR

Describe human thermal comfort and the thermal factors affecting human comfort. How does human body maintains the thermal balance. Explain sun and thermal balance of human body with necessary sketch. Illustrate briefly the thermal preferences.

2. Define staircase. Mention ideal requirements of the stair. Describe the different types of stair by shape with neat sketches. Design a dog-legged staircase for a residential building in a lobby of 4.5m×3.0m and floor height 3.0m assume necessary data. Give neat and clean sketch to support your design. [16]
3. Describe briefly the causes of foundation settlement and also the effects resulted in the structure from the unequal settlements. Explain the reasons for not preferring black cotton soil in the foundation? [16]

OR

What is underpinning work? Why does it necessary in the structure? Write down the sequences of operation and the methods of underpinning.

4. What is construction joint in the structure? Illustrate the positions of construction joints in beam, column and slab. Describe the methods of joining new concrete to old one in the structure. [16]
5. Write short notes (any four): [4×4]
   a) Retaining wall and forces acting on it
   b) Energy conscious building and its design considerations
   c) Partition walls: their types and functions
   d) Pointing: its types and procedure
   e) Water supply and its distribution system
   f) Noise and its effects

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06 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2062 Poush

Exam.	Back		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Building Technology

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ ***All** questions carry equal marks.*
- ✓ *Assume suitable data if necessary.*
- ✓ *Support your answer with sketches wherever necessary.*

1. Moisture is the great problem in the building, write down the effects of the moisture in the building. What do you understand by Moisture control in the building? Describe briefly the different methods of moisture control for different sources of moisture. Explain your statement with neat and clean sketch where ever necessary.

OR

What is natural and artificial lighting in the building? Define day light factor with necessary figure and formulae. Calculate the internal illumination of your class room having day light factor 2.0% and outdoor illumination 7000 lux.

2. What do you understand by the temporary construction? Illustrate the conditions of applying shoring in the structure. Describe in detail the types of shoring with neat and clean sketches.

OR

Describe briefly on formwork for excavation and different methods used in timbering of trenches for firm and loose soil. Define formwork for reinforced concrete construction and its principal requirements. Illustrate sketches where ever necessary.

3. Define roof and its types. Illustrate the functional requirements of a roof. Describe briefly single, double and triple timber pitched roof with necessary figures.

OR

Describe the joints in the structure. Illustrate the types of joints. Explain briefly the expansion and construction joints and their probable positions in the structure.

4. What are the functional requirements of good staircase? Mention the types of staircase (by shape) with neat sketches. Design a open-well staircase for a public building in a room of 5.5m×3.5m and floor height 3.6m. Give neat and clean sketch of plan, sectional elevation and necessary details.

5. Write short notes (any four)
   a) Cement Plastering: its types and procedure of application
   b) Ceiling: its uses, requirements and types
   c) Cladding: its types and functions
   d) Septic tank and soak pit
   e) Window and its types
   f) Painting on old wood works and cement surfaces
   g) Passenger lift and frieght lift

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