

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Chaitra

Exam.	Regular		
Level	BE	Full Marks	40
Programme	BCE	Pass Marks	16
Year / Part	II / I	Time	1 ½ hrs.

Subject: - Civil Engineering Materials (CE 506)

- ✓ 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. Explain the factors affecting the selection of civil engineering materials. [3]
2. Write down the requirements of stone to be used for the structural purpose. What are the causes of deterioration of stones? [2+2]
3. What are the essential constituents of good brick earth? Write with their percentage composition. Define glazing of ceramic materials with its objectives. [1+1+2]
4. Explain different types of lime with its properties and suitable uses. [3]
5. Draw a flow chart for wet process of cement manufacture. Explain different constituents of cement clinker with their function. [2+3]
6. State stepwise procedure of preparing cement mortar for construction works. Also, mention the functions of mortar used in building construction. [2+1]
7. Why seasoning of timber is important prior to use? Explain different methods of preserving the timber. [2+2]
8. Explain various ferrous and non-ferrous products used in construction and explain their merits and demerits. What are the purposes of heat treatment process of steel? [3+2]
9. Compare paints and varnishes. Write the steps of preparing the older surface for painting. [2+2]
10. Define asphalt. Write down the properties and uses of asphalt. Why tar is preferred in parking lot construction. [2+2+1]

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 Chaitra

Exam.	Regular / Back		
Level	BE	Full Marks	40
Programme	BCE	Pass Marks	16
Year / Part	II / I	Time	1½ hrs.

Subject: - Civil Engineering Material (CE 506)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
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1. What are the scope of Civil Engineering Material for controlling a project quality? Explain any two mechanical properties. [2+1]
2. Why is dressing carried out on stones? Segregate stones into different categories based on Geological classification: [4]
a) Prophyry b) Surpentine c) Pegmatite d) Laterite
3. How do you determine the quality of good brick Earth? Explain different classes of brick with their properties. [1+3]
4. Define the terms Slaking and Calcination of lime. Explain the properties and uses of different types of hydraulic lime. [1+2]
5. Define the terms cement clinker and cement water proofer. Explain constituents of OPC with their correct proportions and benefits in a sound cement. [1+4]
6. What are the types of mortar? How the mortar is selected for particular work? Describe its properties and uses. [1+2]
7. State merits and demerits of timber used as civil engineering material. Also, mention the objectives of seasoning of timber. What is the reason behind creosoting a timber? [2+1+1]
8. Why heat treatment of steel is done? Explain different alloys of steel. [1+4]
9. Discuss about varnish with its types. Explain any six defects of paints in brief. [2+2]
10. Answer **any two** of following: [5]
 - a) What are specific field of using Asfalt, Bitumin and Tar.
 - b) Why the ACP is so popular in morderm building material?
 - c) Give the various types and reasons of using glass in building.
 - d) What are the uses of plastic material?

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Ashwin

Exam.	Back		
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Programme	BCE	Pass Marks	16
Year / Part	II / I	Time	1½ hrs.

Subject: - Civil Engineering Material (CE 506)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
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1. Describe importance of study of Civil Engineering Materials for engineers. Define the terms: creep, hygroscopicity, specific heat capacity and tenacity. [1+2]
2. Describe briefly the characteristics of good building stones. How the stones are deteriorate and pressured? [2+2]
3. What is efflorescence in brick? Explain briefly the manufacturing process of bricks. [1+3]
4. Define pozzolanic materials. Differentiate between fat lime and hydraulic lime. [1+2]
5. Explain functions of compounds present in cement clinker. Explain any three types of cement. [3+2]
6. Define mortar and explain its engineering characteristics. Differentiate between cement and lime mortar. [2+1]
7. What are the uses of Timber? Why it is essential seasoning before using and also highlights the new modified timber. Which are extensively used in our building? [1+3]
8. What are the types of metal that are used in modern Civil Engineering works? Why they are popular in using in the form of Alloys? [5]
9. What are the ingredients of paints, explain? Describe types of paints with their uses. [2+2]
10. Why are plastic materials used extensively as building material nowadays? Differentiate between asphalt and tar with respect of their properties and uses. [3+2]

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Subject: - Civil Engineering Materials (CE506)

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- ✓ Attempt **All** questions.
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1. How is civil engineering materials classified? Define the terms: fatigue and resilience. [2+4]
2. What are the selection criteria of good building stone? Explain about importance of natural bed of stone. [2+2]
3. Why the drying of brick is extremely important steps in manufacturing brick? Describe about standard test of brick. [1+3]
4. Define pozzolanic agents used as admixtures and explain manufacturing process of lime. [1+2]
5. Explain about manufacture flow diagram of cement. Briefly illustrate the procedure to determine the compressive strength of cement in laboratory. [1+3]
6. Write down the properties of mortar? Write down the steps of applying cement mortar? [1+2]
7. What are the commercial forms of timber which are being widely used in the market? Draw a clear sketch of cross section of timber log and show the each components of growth. [1+3]
8. What are the commercial Product of Metal? What are the purposes of heat treatment process of metal? [2+2]
9. What do you understand about distemper? State the basic ingredients of paints. [2+2]
10. Distinguish the tar with bitumen? Define borosilicate glass and thermoplastic. [2+2]

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1. As a civil engineer, what are the major factors which you consider most for the selection of material in civil engineering project in Nepal? Write short notes on significant mechanical properties of civil engineering materials. [2+2]
2. Write down the purposes of dressing of stones. What are the methods to preserve the stone from deterioration? [2+2]
3. Why bricks are commonly used material in construction work? Elaborate briefly the properties of harmful ingredient in bricks. [2+2]
4. Classify the lime on the basis of purity and functions with their suitability in engineering field. [4]
5. Sketch out the graph related to the contribution of clinker compound to strength with respect to time of cement compound. Define Admixtures and cement water proofers. [3+2]
6. State stepwise procedure of preparing cement mortar for construction works. Also, mention the functions of mortar used in building construction. [2+2]
7. Define timber and its seasoning. Elaborate macrostructure and microstructure study of exogenous timber. [1+3]
8. What is the prime importance of carbon present in steel? Distinguish between Plain carbon steel and Alloy steel. [1+3]
9. What are the functions of paint? Explain in detail anti-termite treatment procedure to be applied in foundation? [1+2]
10. Why are plastic materials used extensively as building material nowadays? Write down gypsum products available in market and their applications. [2+2]

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- ✓ Attempt **All** questions.
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1. What are the criteria for the selection of the materials in the Civil Construction projects? Define the terms resilience and creep. [2+1]
2. What are the objectives of surface dressing of stone? How does the deterioration of stone take place? [2+2]
3. What are the different types of field test of brick? Explain the role of clay and alumina in brick production. [2+2]
4. List the properties and uses of Pozzolanic material. [2]
5. Define the terms cement clinker and admixtures. What are the major ingredients of cement, explain with functions. [1+4]
6. How mortar can be formed? How do you select mortar according to civil engineering construction? [1+2]
7. Why seasoning of timber is important prior to use? Explain different methods of preserving the timber. What are the characteristics of good timber? [1+3+2]
8. What are upper critical and lower critical points of metal in heat treatment process? On the basis of these points, explain normalizing process of heat treatment with neat sketches. [2+2]
9. Why paints are used in the civil structures? Explain types of paints with their uses. [2+2]
10. Define the terms asphaltic materials and gypsum products. Explain types of plastics and their uses. [2+3]

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- ✓ Attempt All questions.
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1. Explain briefly the following properties of civil engineering materials: Creep, Malleability and Hardness. [3]
2. Explain the characteristics of good building stone. Explain the factors which deteriorate the stone. [2+2]
3. What is efflorescence in brick? Explain the manufacturing process of bricks. What is glazing? [1+2+1]
4. Explain the properties and uses of lime. [2]
5. Describe the manufacturing process of cement with the help of suitable flow diagrams. What is cement water proofer? Explain. [1+4]
6. List the function of mortar. Also describe the characteristics of good cement mortar to be used in different civil engineering works. [1+2]
7. Describe with the help of sketches, growth and structure of tree. Also describe the suitability of timber in the design of civil engineering structures. List the engineering properties of timber. [3+2+1]
8. Describe the importance of steel as a civil engineering material according to their composition and properties. Write down the properties and uses of non-ferrous metals. [3+2]
9. Write down, in brief, the procedure of using emulsion on the wall surface. [3]
10. What are the specific uses of asphalt, bitumen and tar? Explain briefly about insulating materials used in construction. [3+2]

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- ✓ Attempt **All** questions.
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1. Why a subject Civil Engineering Materials is supposed to be essential part of the science and technology? Define materials properties; hydroscopicity, soundness, hardness and creep. [1+2]
2. What is the deterioration of stone and how it is preserved? [4]
3. What are the different types of field test of brick? Explain the role of clay and alumina in brick production. [2+2]
4. Why the uses of lime could not be neglected in this modern age? Highlight the properties and uses of lime. [1+2]
5. Define clinker. What are the chemical compounds present in the clinker? Explain the functions of any two compounds present in clinker. [1+2+2]
6. How mortar can be formed? How do you select mortar according to civil engineering construction? [1+2]
7. Why and how the timber is being widely used in all engineering works? Describe briefly the method of seasoning the timber. [4]
8. What do you mean by quenching of steel? Distinguish between Cast iron and Mild steel. [2+2]
9. What do you mean by paint and Varnishes? What is the purpose of using it? [4]

OR

Give the reasons of using anti-termite treatment.

10. Define asphalt, bitumen and tar with their best applications in civil engineering field. [2+2+2]

07 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2073 Shrawan

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	40
Programme	BCE	Pass Marks	16
Year / Part	II / I	Time	1 ½ hrs.

Subject: - Civil Engineering Materials (CE506)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
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1. Describe briefly the factors which influence the selection of civil engineering material? What are the significant properties to be considered while using engineering materials? [2+1]
2. Define cataclastic metamorphism and plutonic metamorphism of rock formation. Explain about importance of natural bed stone. [2+1]
3. What are the qualities of good bricks? Why we should be careful about the harmful ingredients in brick earth? [2+2]
4. Differentiate quick lime with hydraulic lime. What do you mean by calcination and slaking of lime? [2+2]
5. Describe the manufacturing process of 53 Grade OPC with the help of flow diagram. [5]
6. Write down the functions of mortar in civil engineering units? What are the precautions to be observed while applying cement mortar? [1+2]
7. Why seasoning of timber is important prior to use? Explain the macrostructure elements of exogenous tree with neat sketch. [1+4]
8. What is the difference between Ferrous and Non Ferrous materials? Why the modern engineering world is very much willing to use the composite materials? [2+3]
9. Write down, in brief, the procedure of using emulsion on the wall surface. [4]
10. Distinguish Asphalt with Tar. Nowadays use of composite materials are predominant compare to conventional natural building material in engineering. Why? Give reasons. [2+2]

01 / 03

04 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2071 Chaitra

Exam.	Regular		
Level	BE	Full Marks	40
Programme	BCE	Pass Marks	16
Year / Part	II / I	Time	1 ½ hrs.

Subject: - Civil Engineering Materials (CE506)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
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1. What are the properties of civil engineering materials? Highlight the importance of the subject. [1+2]
2. What is natural bed of stone? What are the different technical parameters for selecting good building stones? [1+3]
3. Explain briefly the harmful ingredients in good brick earth, stating their effects on the properties of the brick. Write down characteristics of good brick. [2+2]
4. What do you mean by calcination and hydration of lime? Explain Hydraulic lime and fat lime with its properties. [1+2]
5. Define initial and final setting time of cement. What are the ingredients of cement, explain its functions in cement. [1+4]
6. What is mortar? How is an appropriate type of mortar selected? [1+2]
7. What are the characteristics of good timber? Write down the defects of timbers. [2+2]
8. Define heat treatment. Explain its objective. How will you define annealing, Explain it. [1+2+2]
9. Distinguish between the paint and varnishes. Write down the uses of antitermite treatment. [2+2]
10. Define bitumen and tar. Explain different types of glasses and its uses. [2+3]

Exam.	New Back (2066 & Later Batch)		
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Year / Part	II / I	Time	1 ½ hrs.

Subject: - Civil Engineering Materials (CE506)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
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1. Define civil engineering materials. How do you select the appropriate material? [1+2]
2. Define dressing of stone. Mention the different methods of stones preservation. Explain one of them. [1+1+2]
3. What are earthen ware and glazing? Write down the types of tiles to be used in Civil Engineering. [2+2]
4. What is lime as a construction material? Write down their properties. [1+2]
5. What are cement water proofers? Draw the flowchart showing the manufacturing process of cement? [2+3]
6. What are the different types of mortar? Write down their functions. [1+2]
7. Why is seasoning of timber done? Explain the seasoning process of timber. [1+3]
8. Why are Aluminum Alloys so important in modern engineering practice? Write down the difference between iron and steel. [3+2]
9. Define distempers. How will you apply paint on wood? Describe briefly. [1+3]
10. What is glass as a construction material? Write down their uses in Civil Engineering. [1+4]

071/01/15

07 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2070 Chaitra

Exam.	Regular		
Level	BE	Full Marks	40
Programme	BCE	Pass Marks	16
Year / Part	II / I	Time	1½ hrs.

Subject: - Civil Engineering Materials (CE506)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
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1. What are the factors affecting the selection of construction material? [3]
2. What are the qualities of a good building stone? [4]
3. Write down the field tests to find the suitability of bricks for construction? [4]
4. What are the properties and uses of lime? [3]
5. Show the manufacturing process of cement with the help of flow diagram. [5]
6. What is mortar? How can the appropriate type of mortar be selected? [3]
7. What are the advantages of seasoning of timber? State the various defects in timber. [2+2]
8. Write down the differences between Ferrous and Non Ferrous metal. [5]
9. Describe different types of paints and varnishes. [4]
10. What are the specific uses of Asphalt, Bitumin and Tar? [5]

4/17 Morning

071 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2071 Shawan

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	40
Programme	BCE	Pass Marks	16
Year / Part	II / I	Time	1½ hrs.

Subject: - Civil Engineering Materials (CE506)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
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1. How do you classify the civil engineering materials? Give the list only. [3]
2. What is building stone? Describe the characteristics of good building stones. [1+3]
3. Explain the procedure to determine the compressive strength of brick. [4]
4. Distinguish between Fat lime and Hydraulic lime. [3]
5. What are the different compounds present in cement clinker and explain its role in cement with the relative graph. What is meant by grade C - 43 cement? [4+1]
6. Describe the properties of good mortar. [3]
7. Draw net cross sections of an exogenous tree and show its various components. [4]
8. What do you mean by heat treatment process? List out the objectives of heat treatment.. [5]
9. What are the main function of a point and varnish? [4]
10. What do you understand by bituminous material? Write down the properties and uses of asphalt? [1+4]

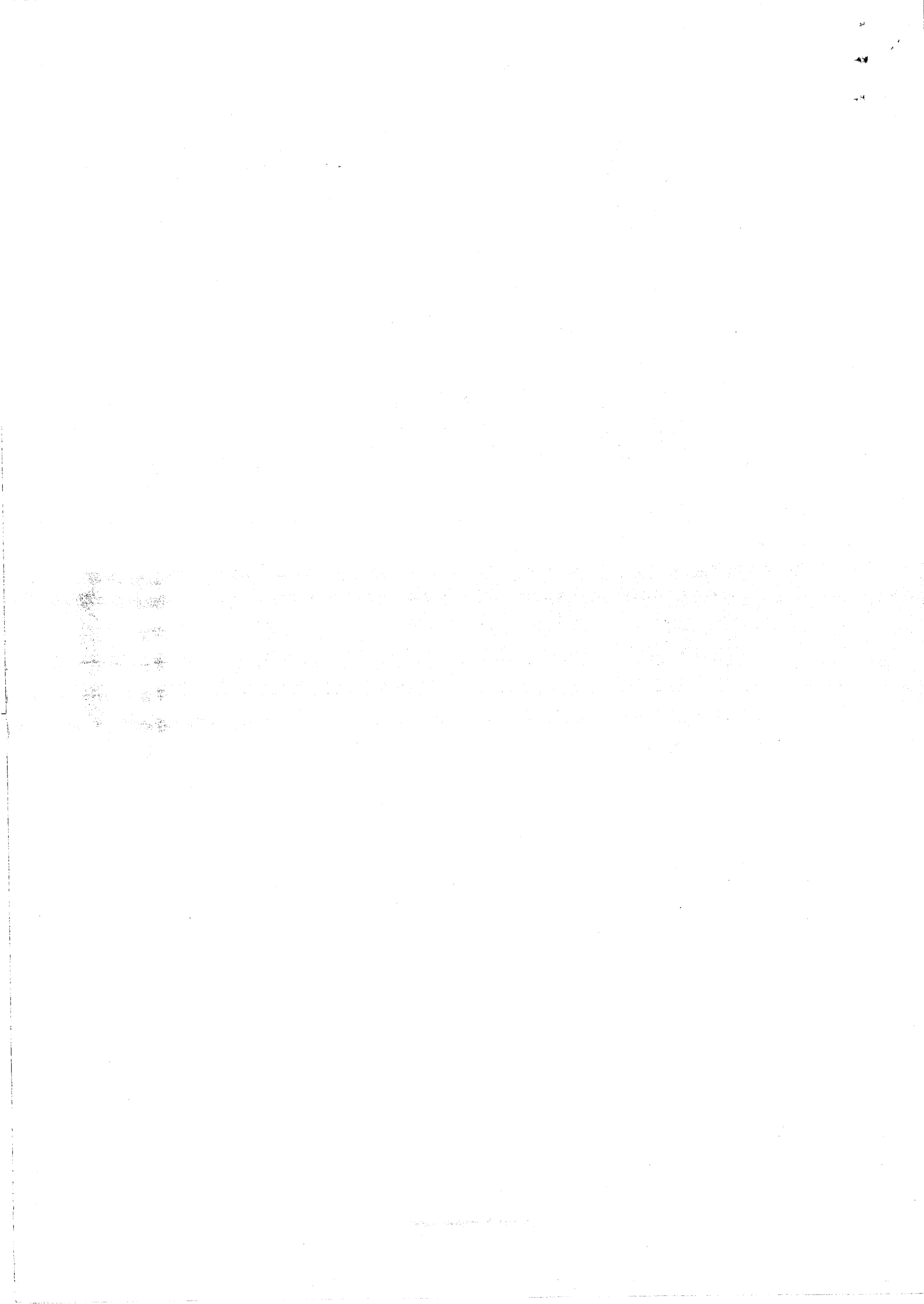
01 TRIBHUVAN UNIVERSITY
 INSTITUTE OF ENGINEERING
Examination Control Division
 2070 Ashad

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	40
Programme	BCE	Pass Marks	16
Year / Part	II / I	Time	1½ hrs.

Subject: - Civil Engineering Material (CE506)

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1. What are the ductile materials different from brittle ones? [3]
2. What stones are said to be good in civil engineering construction? Write down the process of stone deterioration? [2+2]
3. What are the field tests on brick quality? Mention the steps for efflorescence test of brick. [2+2]
4. Write down properties and uses of lime. [1+2]
5. What is meant by 43-grade cement? Write down the engineering application of admixtures? [2+3]
6. What are the properties and uses of good mortars? [3]
7. Draw cross sections of hard and soft wood with detail elements. [4]
8. What are Aluminum and its Alloys? Write down the differences between ferrous and non ferrous materials. [6]
9. Write short notes on: [2×4]
 - a) Distemper
 - b) Tar
 - c) Types of paint
 - d) Gypsum product



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1. Explain briefly the following properties of the civil engineering materials: Porosity, Creep and Brittleness. [3]
2. What is the natural bed of stone? Enumerate the characteristics of a good building stones? [4]
3. What are the essential constituents of good brick earth? Write the characteristics of good brick earth. [1+3]
4. Define terms Quick lime and Hydraulic lime. How will you determine the slaking nature of lime? [1+2]
5. What are the different constituents of cement clinker? Explain the significance of testing the initial and final setting time of cement. How is it done? [1+2+2]
6. What is mortar? Explain the functions of mortar. [1+2]
7. What are the characteristics of good timber? State the various defects in timber. [3+1]
8. Explain principle of heat treatment. Describe surface hardening. [2+3]
9. Explain briefly about post construction antitermite treatment. [4]
10. Define 'asphalt'. Give the properties and uses of different types of asphalt. [5]

OR

Give the comparison between asphalt, bitumen and tar.

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Subject: - Civil Engineering Materials

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1. What are the field tests to find the suitability of bricks for construction? What is the compressive strength of the common and machine made bricks that are available in Nepal? Describe briefly the test for efflorescence for bricks. [2+1+2]
2. What is meant by grade C - 43 cement? Describe, with necessary sketches, the properties of compounds present in the clinker of cement. [1+4]
3. Define admixture and explain in brief about its engineering application. [3]
4. Define seasoning of timber. Why is it required for the good timber? Describe the methods of seasoning. [5]
5. What do you mean by heat treatment process? List out the objectives of heat treatment. Explain isothermal annealing with sketch. [5]
6. What are distempers? In what form they are commercially available? How do you prepare the commercial product in the field for painting? [1+1+2]
7. What is stone? Define its natural bed? What may be the technical parameters for selecting good building stones? [4]
8. a) Describe different types of bitumen? What is the specification of grade of bitumen? [5]
b) Explain briefly Toughness, fatigue and malleability. [4]

OR

9. a) Distinguish between two major classifications of plastics. Name two popular plastics of each type and indicate their uses. [3+1+1]
b) Explain the importance of study of material of construction. How civil engineering materials are classified? [3+1]

