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Department of Civil Engineering
III Year V Semester
5CE3-01: Construction Technology and Equipment
Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

Q1. Explain Principal of engineering economy.	BLT-2	CO-1
Q2. Explain Minimum Cost Point Analysis.	BLT-2	CO-1
Q3. Explain Depreciation and Depletion.	BLT-2	CO-1
Q4. Define Scaffolding. Explain any two types of scaffolding with a neat diagram.	BLT-4	CO-1
Q5. What is a building?	BLT-1	CO-1

ASSIGNMENT-II

Q1. Explain safety in Construction.	BLT-2	CO-2
Q2. Explain Protective equipment.	BLT-2	CO-2
Q3. Describe at least four types of pitched roofs with a diagram.	BLT-4	CO-2
Q4. Explain Safety Lacuna in Indian Scenario.	BLT-2	CO-2

ASSIGNMENT-III

Q1. Explain Stages of Construction Planning.	BLT-2	CO-3
Q2. What are constructional Resources and Smoothness?	BLT-1	CO-3
Q3. What is Job layout? Draw a neat sketch.	BLT-3	CO-3
Q4. Explain the precautions to be taken during the erection of steel structures at the slopes.	BLT-2	CO-3
Q5. What is the significance of providing a foundation for the building?	BLT-1	CO-3

ASSIGNMENT-IV

Q1. Explain Earth Moving Earth equipment.	BLT-2	CO-4
Q2. Explain Pile Driving Equipment.	BLT-2	CO-4
Q3. Explain Trenching Machines.	BLT-2	CO-4
Q4. Explain the brick-nogged partition and stud partition with a diagram.	BLT-4	CO-4
Q5. Define the general principles to be considered in the case of damp proofing.	BLT-1	CO-4

*BLT: BLT shows the **Bloom's taxonomy** levels.

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Department of Civil Engineering

III Year V Semester

5CE3-01: Construction Technology and Equipment

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-V

Q1. Enumerate the structural components of an arch with a neat diagram.	BLT-2	CO-5
Q2. Explain the various technical terms used in the case of stairs with a neat diagram.	BLT-4	CO-5
Q3. What is the purpose of providing a partition wall?	BLT-1	CO-5
Q4. What is a composite floor?	BLT-1	CO-5
Q5. Explain the construction mechanism of the jack arch floor.	BLT-2	CO-5

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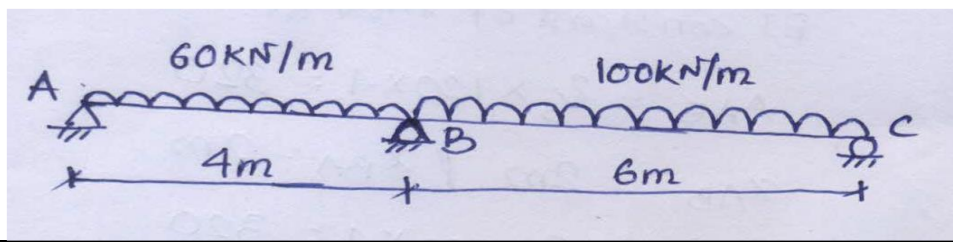- www.aryainstitutejpr.com
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Department of Civil Engineering
III Year V Semester
5CE4-02: Structure Analysis-I
Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

Q1. Describe the Determinate and indeterminate structure.	BLT-2	CO-1
Q2. Describe the Static and Kinematic indeterminacy for beams, frames & portals.	BLT-2	CO-1
Q3. Derive the expression for Maxwell's reciprocal theorem and Betti's theorem.	BLT-6	CO-1
Q4. Calculate the moment at B for the two-span continuous beam ABC. EI is constant.	BLT-4	CO-1
Q5. Draw B.M.D and S.F.D for a fixed beam carrying u.d.l throughout the span.	BLT-4	CO-1

ASSIGNMENT-II

Q1. Explain all steps of the slope deflection method.	BLT-2	CO-2
Q2. What do you mean by statically indeterminate structure? Explain with a suitable example.	BLT-1	CO-2
Q3. Write short on a) Continuous beams b) Portal frames c) statically determinate structure	BLT-6	CO-2
Q4. State Maxwell's reciprocal theorem.	BLT-1	CO-2

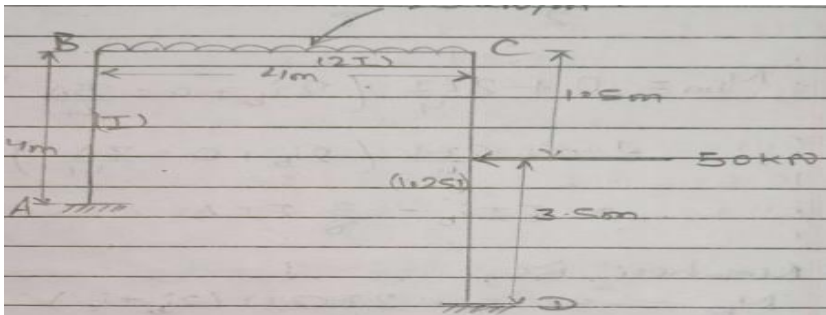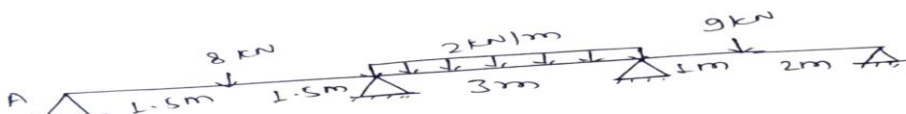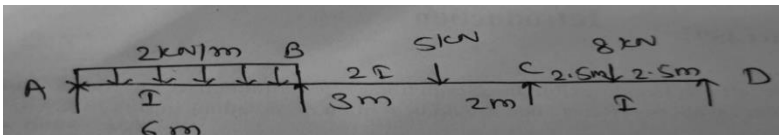### ASSIGNMENT-III

Q1. Write D'Alembert's Principle and mention its utility.	BLT-6	CO-3
Q2. Differentiate between periodic, oscillation and simple harmonic motion.	BLT-3	CO-3
Q3. What are the elementary concepts of structural vibration?	BLT-1	CO-3
Q4. Derive the relationship between natural frequency and static deflection of the system.	BLT-6	CO-3
Q5. Derive the equation for equivalent spring stiffness in parallel and series.	BLT-6	CO-3

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Department of Civil Engineering
III Year V Semester
5CE4-02: Structure Analysis-I
Note: Each Assignment of Maximum marks10.All question carries equal marks.

Q1. Analyse the frame given in fig. by slope deflection method and draw BMD.	BLT-4	CO-4
Q2. Analyze the beam given below with the help of the moment distribution method. Settlement in support A is 10 mm, 30 mm in support B and 20 mm in support C. MOI = 2.4×10^6 mm4 and E= 2×105 N/mm^2.	BLT-4	CO-4
Q3. Solve the beam given below with the help of the moment distribution method and slope deflection method.	BLT-4	CO-4
Q4. Find the support reaction for a beam fixed at one end and roller at the other end and having W load at the centre by moment area method and conjugate beam method.	BLT-4	CO-4

ASSIGNMENT-V

Q1. Explain the logarithmic curve and amplitude of motion	BLT-1	CO-5
Q2. What are the elementary concepts of structural vibration?	BLT-1	CO-5
Q3. Define under, over and critical damping.	BLT-1	CO-5
Q4. Derive the relationship between natural frequency and static deflection of the system.	BLT-6	CO-5
Q5. Define and derive the solution of the differential equation of motion.	BLT-6	CO-5

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Department of Civil Engineering

III Year V Semester

5CE4-03: Design of Concrete Structures

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

Q1. Write the steps to determine the compressive strength of concrete.	BLT-6	CO-1
Q2. Write the factors affecting the compressive strength of concrete.	BLT-6	CO-1
Q3. Describe the characteristic strength, target mean strength & standard deviation with the help of a graph with good details.	BLT-2	CO-1
Q4. Design a simply supported beam of an effective span of 7m for a Live load of 45 KN/m. Consider the width of the beam as 500 mm. Use F_{ck}= 30Mpa & F_y= 500Mpa.	BLT-6	CO-1
Q5. A beam is simply supported over an effective span of 7.5m Load over the beam 30 KN/m (excluding the self-wt.). Design the beam for flexure. Use Fe415 & M20. Keep width (b)= 350 mm. Check the beam for % of steel & minimum Reinforcement.	BLT-6	CO-1

ASSIGNMENT-II

Q1. What are the properties of concrete?	BLT-1	CO-2
Q2. Differentiate between balanced, under and over reinforced section	BLT-3	CO-2
Q3. What do you mean by a moment of resistance?	BLT-1	CO-2
Q4. A single RC beam of size 300 mm X 500 mm (effective depth). The effective span is 5m. It is reinforced with 804 mm2 of steel. If the beam carries a total load of 16 KN/m on the whole span. Determine the stress produced in concrete and steel. Take m=13.33	BLT-4	CO-2
Q5. Design a beam of an effective span of 6m to support a total load of 12 KN/m including the self-weight of the beam. The width of the beam is limited to 250 mm. Use M20 and Fe415 grades Use Limit State Method.	BLT-6	CO-2

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III Year V Semester

5CE4-03: Design of Concrete Structures

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-III

Q1. A simply supported beam is to be designed for a clear span of 5.1m and the length of bearing at each end is 150mm. DL= 18KN/m and Live load= 12KN/m (a) Calculate the sectional dimensions and reinforced area, keep b/d= 0.5 (b) Check the beam in shear and provide shear reinforcement.	BLT-4	CO-3
Q2. Explain types of shear failure with a neat diagram	BLT-4	CO-3
Q3. Design an RC slab size of 3.75 m x 9 m live load is 4 KN/m^2 and the bearing of the slab along all the edges is 150 mm. Take M15 and Fe415 grades.	BLT-6	CO-3
Q4. Design a continuous one-way slab having three equal spans of 3m each. Imposed load is 2.5 KN/m^2 and grades are M15 and Fe415.	BLT-6	CO-3
Q5. Design a simply supported roof slab for a room of size 8m X 3.5m. The superimposed load is 5 KN/m^2. Use M15 and Fe415 grades.	BLT-6	CO-3

ASSIGNMENT-IV

Q1. Determine the safe axial load for a short circular column of size 400mm in diameter reinforced with 6 bars of 25mm diameter. It is provided with 8mm diameter helical reinforcement at a pitch of 45mm Use M20 and Fe415.	BLT-4	CO-4
Q2. Design a circular column to carry an axial load of 1500 KN. The column has an effective length of 2.5 m. Use M20 and Fe415 grades.	BLT-6	CO-4
Q3. Explain the Pu-Mu interaction curve.	BLT-2	CO-4
Q4. Design an isolated footing, for the following data: Size of column= 400 mm X 400 mm DL=450KN and LL=300KN Allowable bearing pressure= 180KN/m^2 Depth of foundation= 1m Unit weight of soil= 20KN/m^2, Main reinforcement in column= 8-16mm φ Use M20 & Fe415 for the column and M15 & Fe 415 footing.	BLT-6	CO-4

ASSIGNMENT-V

Q1. What do you mean by torsion?	BLT-1	CO-5
Q2. Explain types of torsion.	BLT-2	CO-5
Q3. Design a section of reinforced beam 500mm wide and 700mm deep. Subjected to a bending moment of 130kn-m, a twisting moment of 10Kn-m and a shear force of 130KN at ultimate load. Use Fe 415 as the grade of steel and M20 grade of concrete. Assume effective cover=50mm.	BLT-6	CO-5

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Department of Civil Engineering
III Year V Semester
5CE4-04: Geotechnical Engineering
Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

Q1. Explain different types of clay minerals.	BLT-2	CO-1
Q2. A falling head permeability test was performed on a sample of clean; uniform sand one minute was required for the initial head of 100cm to fall to 50cm in the standpipe of a cross-sectional area of 1.50cm^2. If the sample was 4cm in diameter and 30cm long. Calculate the coefficient of permeability of the sand.	BLT-4	CO-1
Q3. Explain different classification systems of soil for general engineering purposes.	BLT-2	CO-1
Q4. Explain the index properties of soil, water content & specific gravity.	BLT-2	CO-1
Q5. Derive relationship b/w bulk unit weight, specific gravity, void ratio and degree of saturation. Also, write the expression for dry unit weight and saturated unit weight.	BLT-6	CO-1

ASSIGNMENT-II

Q1. What different drainage conditions are considered in the shear strength test of soil? Explain their relevance for actual site conditions.	BLT-2	CO-2
Q2. In a triaxial test on dry sand, the sample failed when major and minor principal stresses were 980KN/m^2 and 280KN/m^2 respectively. What would be the shear strength of the same sample when tested in the direct shear test under a normal stress of 300KN/m^2?	BLT-4	CO-2
Q3. Explain Mohr-Coulomb shear strength theory.	BLT-2	CO-2
Q4. Derive the expression for vertical stress under a circular area.	BLT-6	CO-2

ASSIGNMENT-III

Q1. A clay stratum 5m thick has an initial void ratio of 1.50 and an effective overburden pressure of 120KN/m^2. When the sample is subjected to an increase of pressure of 120KN/m^2, the void ratio reduces to 1.44. Determine the coefficient of the volume compressibility and final settlement of the stratum.	BLT-4	CO-3
Q2. Define the following terms: i) Coefficient of compressibility ii) compression index iii) coefficient of volume change iv) recompression index	BLT-1	CO-3
Q3. Discuss Terzaghi's theory of consolidation, stating the various assumptions and their validity.	BLT-2	CO-3
Q4. Differentiate between normally consolidated and over consolidated soils.	BLT-3	CO-3

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Department of Civil Engineering

III Year V Semester

5CE4-04: Geotechnical Engineering

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-IV

Q1. Derive an expression for the factor of safety of an infinite slope in cohesionless soil.	BLT-6	CO-4
Q2. Explain Coulomb's earth pressure theory with ideal assumptions.	BLT-2	CO-4
Q3. Explain the friction circle method for stability analysis of slopes.	BLT-2	CO-4
Q4. Explain Rankine's earth pressure theory with assumptions.	BLT-2	CO-4
Q5. In a retaining wall, the backfill is 6m high and is of cohesionless soils for which the angle of internal friction is 30 degrees. the surface is level with the wall and carries a UDL surcharge of 2 kg/cm^2. The density of the top 3m of the fill is 2.1gm/cc and the rest are 2.3gm/cc. Find the magnitude of the resultant active earth pressure.	BLT-4	CO-4

ASSIGNMENT-V

Q1. Explain Skempton's theory of the bearing capacity of soil.	BLT-2	CO-5
Q2. Explain Terzaghi's theory of bearing capacity and assumptions in Terzaghi's analysis.	BLT-2	CO-5
Q3. Explain different types of foundations.	BLT-2	CO-5
Q4. How will you calculate bearing capacity by IS code method?	BLT-4	CO-5
Q5. A rectangular footing of size 3x6m is found at a depth of 2m below ground level in cohesive soil ($\varphi = 0^0$) and fails by general shear failure, Given Y=18kN/m3, C= 45kN/m2. The water table is close to the ground surface. Determine q_d, q_{nd}, q_{na} by Terzaghi use. The factor of safety =3.	BLT-4	CO-5

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Department of Civil Engineering
III Year V Semester
5CE4-05: Water Resource Engineering
Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

Q1. Write short notes on the following:-
   (a) Compression between sprinkler irrigation and Drip Irrigation
   (b) Quality Standard of irrigation water
	BLT-6	CO-1

Q2. If rice requires about 10cm depth of water at an average interval of about 10 days, and the crop period for rice is 120 days, find out the delta for rice.	BLT-4	CO-1
Q3. Describe the irrigation water quality. How you decide the consumptive use of water for various crops.	BLT-2	CO-1
Q4. Explain the types of crops.	BLT-2	CO-1
Q5. What is the function of irrigation?	BLT-1	CO-1

ASSIGNMENT-II

Q1. What is canal lining? Explain the advantages of canal lining.	BLT-1	CO-2
Q2. Describe the factors governing the selection of alignment of the main canal and its distributaries.	BLT-2	CO-2
Q3. Compare Lacey's and Kennedy's theories for the design of alluvial channels.	BLT-3	CO-2
Q4. What are the basic principles of regulation of the canal system?	BLT-1	CO-2
Q5. What do you understand by canal training works?	BLT-1	CO-2

ASSIGNMENT-III

Q1. Explain Bligh's creep theory for designing of weir and write the limitations of Bligh's theory.	BLT-2	CO-3

Q2. Write short notes
   (a) Silt extractor
   (b) Silt excluder
	BLT-6	CO-3

Q3. Explain the different parts of diversion head work with a suitable sketch.	BLT-2	CO-3
Q4. Explain Khosla's theory for designing of weir.	BLT-2	CO-3

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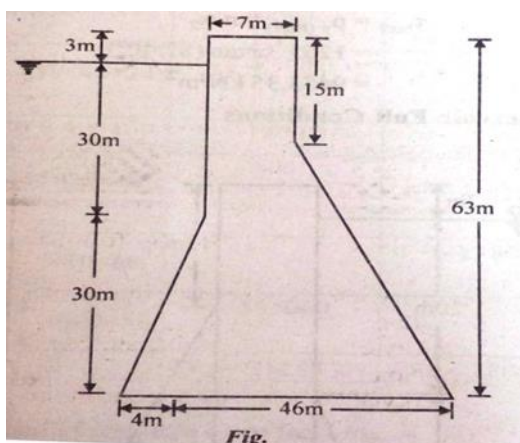
Department of Civil Engineering

III Year V Semester

5CE4-05: Water Resource Engineering

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-IV

Q1. Describe the various forces acting on the gravity dam with a suitable sketch.	BLT-2	CO-4
Q2. Describe the different causes of the failure of an earth dam.	BLT-2	CO-4
Q3. Explain the design concept of the earthen dam.	BLT-2	CO-4
Q4. Explain the concept of flow net and explain the calculation of seepage from flow net.	BLT-4	CO-4
Q5. Check the stability of the gravity dam shown below for the reservoir empty and reservoir full condition. Calculate the principal stresses and shear stress at the toe and heel of the dam. Consider only the self-weight of water, water pressure and uplift pressures. Average shear strength (q)=1.4mpa and Wc=24 KN/m Fig.	BLT-4	CO-4

ASSIGNMENT-V

Q.1. What are the different types of cross drainage works and explain any one part with sketch?	BLT-4	CO-5
Q.2. What factors will you consider while selecting suitable types of cross-drainage works?	BLT-1	CO-5
Q.3. Explain the function of the distributor head regulator and cross head regulator with a suitable sketch.	BLT-4	CO-5
Q.4. Explain the different components of a hydropower plant with a suitable sketch.	BLT-4	CO-5
Q.5. Describe the factors for the selection of a turbine.	BLT-2	CO-5

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Department of Civil Engineering

III Year V Semester

5CE5-11: Air & Noise Pollution and Control

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

Q1. What is air pollution? Describe the different sources of air pollution.	BLT-1	CO-1
Q2. Explain different reactions of pollutants in the atmosphere.	BLT-2	CO-1
Q3. Describe the greenhouse effect.	BLT-2	CO-1
Q4. Elaborate the effects of air pollutants in the atmosphere.	BLT-2	CO-1
Q5. Explain the process of combustion and pollutant emission.	BLT-2	CO-1

ASSIGNMENT-II

Q1. Explain the air sampling process.	BLT-2	CO-2
Q2. What are the different methods of air pollution measurements?	BLT-1	CO-2
Q3. Explain the emission standards according to BIS.	BLT-2	CO-2
Q4. Describe different air pollution acts.	BLT-2	CO-2
Q5. Illustrate the air pollution control principles.	BLT-2	CO-2

ASSIGNMENT-III

Q1. Explain the methods of removal of gaseous air pollutants	BLT-2	CO-3
Q2. What are the different emission control methods?	BLT-1	CO-3
Q3. Describe biological air pollution control technologies.	BLT-2	CO-3
Q4. Explain the indoor air quality concept.	BLT-2	CO-3

ASSIGNMENT-IV

Q1. Explain acoustics and specification of sound.	BLT-2	CO-4
Q2. Explain:- a. Sound Power b. Sound Intensity	BLT-2	CO-4
Q3. How to reduce noise pollution?	BLT-1	CO-4
Q4. Illustrate the indoor and outdoor noise propagation.	BLT-2	CO-4
Q5. What are noise criteria?	BLT-1	CO-4

ASSIGNMENT-V

Q1. Describe the different effects of noise on health.	BLT-2	CO-5
Q2. Explain the infrasound & ultrasound.	BLT-2	CO-5
Q3. What are the different noise standards and their limit values?	BLT-1	CO-5
Q4. Explain the noise control methods.	BLT-2	CO-5

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III Year V Semester

5CE5-14: Repair and Rehabilitation of Structures

Note: Each Assignment of Maximum marks10.All question carries equal marks.

ASSIGNMENT-I

Q1. Write the steps to determine the compressive strength of concrete.	BLT-6	CO-1
Q2. Write the factors affecting the compressive strength of concrete.	BLT-6	CO-1
Q3. Describe the characteristic strength, target mean strength & standard deviation with the help of a graph with good details.	BLT-2	CO-1
Q4. Describe various types of cracks.	BLT-2	CO-1
Q5. Explain with neat sketch rebound hammer test for determination of the hardness of the concrete surface.	BLT-4	CO-1

ASSIGNMENT-II

Q1. What are the properties of concrete?	BLT-1	CO-2
Q2. Differentiate between balanced, under and over reinforced section.	BLT-3	CO-2
Q3. Define abrasion and erosion.	BLT-1	CO-2
Q4. Define Grouting.	BLT-1	CO-2

ASSIGNMENT-III

Q1. Explain FRP in Detail.	BLT-2	CO-3
Q2. Explain Different types of polymers for repairs.	BLT-2	CO-3
Q3. Explain ultrasonic pulse velocity.	BLT-2	CO-3
Q4. Explain with a neat sketch the Half-cell potential method of corrosion assessment and its limiting values.	BLT-4	CO-3
Q5. Define rebar locator.	BLT-1	CO-3

ASSIGNMENT-IV

Q1. What do you mean by jacketing?	BLT-1	CO-4
Q2. Write short notes on Grouting and underwater repairing.	BLT-6	CO-4
Q3. What is the application of shotcrete?	BLT-1	CO-4
Q4. Explain "Ferro-Cement" and its properties.	BLT-2	CO-4
Q5. Discuss the advantages and disadvantages of polymers and resins.	BLT-2	CO-4

ASSIGNMENT-V

Q1. Write case study on rehabilitation of dam.	BLT-6	CO-5
Q2. What are the causes on distress an Detoriation.	BLT-1	CO-5
Q3. Describe sulphate attack of concrete and various reactions involved in it.	BLT-2	CO-5
Q4. Name the various NDT methods.	BLT-1	CO-5
Q5. Describe various types of cracks.	BLT-2	CO-5

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