

GENERAL CERTIFICATE OF EDUCATION BOARD

Technical and Vocational Education Examination

JUNE 2025

INTERMEDIATE LEVEL

Specialty Name and Acronym	CIVIL ENGINEERING BUILDING CONSTRUCTION – CE-BC
Centre No.	
Centre Name	
Candidate Identification No.	
Candidate Name	

Mobile phones are NOT allowed in the examination room.

5230 SURVEY, SOIL MECHANICS AND MATERIALS 1: MULTIPLE CHOICE QUESTION PAPER

Duration: One and a Half Hours

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.

- USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.
- DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Before the examination begins:

- Check that this question booklet is headed "Intermediate Level – 5230 SURVEY, SOIL MECHANICS AND MATERIALS 1."
- Fill in the information required in the spaces above.
- Fill in the information required in the spaces provided on the answer sheet using your HB pencil:

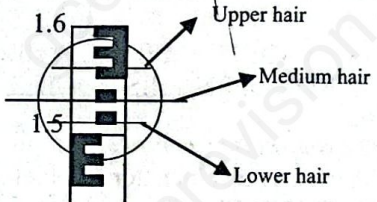
Candidate Name, Exam Session, Subject Code, and Candidate Identification Number.

Take care that you do not erase or fold the answer sheet or make any marks on it other than those asked for in these instructions.

How to answer the questions in this examination:

- Answer ALL the 50 questions in this Examination. All questions carry equal marks.
- Each question has FOUR suggested answers: A, B, C and D. Decide which answer is correct. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen.
For example, if C is your correct answer, mark C as shown below:
[A] [B] [C] [D]
- Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
- Avoid spending too much time on any one question. If you find a question difficult, move on to the next question. You can come back to this question later.
- Do all rough work in this booklet, using, where necessary, the blank spaces in the question booklet.
- Texts, notes and pre-prepared materials of any kind are also NOT allowed in the examination room.
- At the end of the examination, the invigilator shall collect the answer sheet first and then the question booklet. DO NOT ATTEMPT TO LEAVE THE EXAMINATION HALL WITH IT

Turn Over

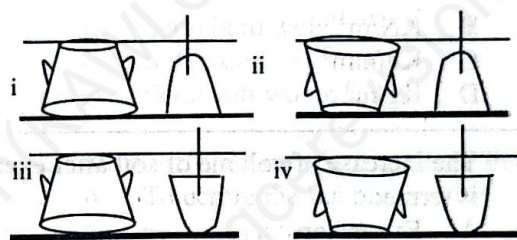
- 1 Materials added to either mortar or concrete to modify their properties are generally called
 A Accelerators.
 B Admixtures.
 C Plasticizers.
 D Retarders.
-
- 2 What is the name of the product that is obtained after mixing quicklime with water?
 A Hydrated Lime.
 B Fat Lime.
 C Slaked Lime.
 D Hydraulic Lime.
-
- 3 Mortar that is produced after mixing Lime, Cement, sand and water is known as
 A Cement Mortar.
 B Bastard Mortar.
 C Lime Mortar.
 D Composite Mortar.
-
- 4 Define the term "Kneading" in Brick manufacturing.
 A It is the process of mixing limestone, water and other ingredients.
 B It is the process of mixing chalk, water and other ingredients.
 C It is the process of mixing cement, water and other ingredients.
 D It is the process of mixing clay, water and other ingredients.
-
- 5 The most suitable use of mastic asphalt is for
 A Fire resistance.
 B Thermal resistance.
 C Water-proofing.
 D Heat transmission.
-
- 6 Basalt is gotten from which type of rock?
 A Volcanic.
 B Plutonic.
 C Metamorphic.
 D Sedimentary.
-
- 7 One of the characteristics of ferrous products is that they contain a certain percentage of
 A Iron.
 B Aluminium.
 C Carbon.
 D Acid.
-
- 8 The final setting time of Normal Portland Cement is obtained after
 A 28 days.
 B 14 days.
 C 21 days.
 D 7 days.
-
- 9 Which of these materials is classified under light-weight aggregates?
 A Gravel.
 B Sand.
 C Magma.
 D Clinker.
-
- 10 Aggregates coming from River beds generally have one of these shapes.
 A Rectangular.
 B Round.
 C Oblique.
 D Spherical.
-
- 11 The staff reading in figure 1 is

 A 1.57 m
 B 1.60 m
 C 1.58 m
 D 1.56 m
-
- 12 Identify the name of lines with the same heights as defined in surveying.
 A Horizontal lines.
 B Straight lines.
 C Contour lines.
 D Collimation lines.
-
- 13 A graduated piece that is used in measuring horizontal distances between different points is called
 A Ranging Pole.
 B Measuring Tape.
 C Levelling Staff.
 D Measuring Chain
-
- 14 What type of readings are recorded at change points during levelling operations?
 A Back sights and Fore sights
 B Intermediate sights and Fore sights
 C Intermediate sights only
 D Fore sights only

- 15 Calculate the height of collimation using figure 2



- A 202 m
B 203.34 m
C 1.340 m
D 202.670 m
- 16 A staff position where both the foresight and backsight are taken is known as
A Instrument point.
B Change point.
C Intermediate point.
D Staff point.
- 17 When is a soil sample said to be saturated?
A Volume of voids is equal to volume of solid grains.
B Volume of voids is equal to volume of air.
C Volume of voids is equal to volume of water.
D Volume of voids is equal to volume of sand.
- 18 Calculate the moisture content of a soil sample having a humid mass of 150g and a dry mass of 120g.
A 1.25g.
B 1.25%.
C 25g.
D 25%.
- 19 Which of the following is a measure of particle size range?
A Coefficient of curvature.
B Gap graded.
C Well graded.
D Uniformly graded
- 20 The instrument that is used to determine both water content and specific gravity is
A Manometer.
B Abram's Cone.
C Pycnometer.
D Vicat Apparatus.

- 21 Identify the best position to measure the Slump of a concrete mix.



- A i
B ii
C iii
D iv
- 22 The term used to describe the combination of layers of wooden boards to form an element is
A Mortising.
B Nailing.
C Gluing.
D Lamination.
- 23 Rocks that are formed as a result of volcanic eruptions are called
A Igneous.
B Metamorphic.
C Basalt.
D Sedimentary.
- 24 Why are retarders used in a concrete mix?
A To slow setting time.
B To increase strength.
C To increase consistency.
D To increase workability.
- 25 A non-ferrous metal has
A Less sulphate content.
B More sulphate content.
C Less iron content.
D Large iron content.
- 26 Type of aggregates used in manufacturing light-weight concrete block are
A Pulverised fuel ash.
B Crushed sandstone.
C Granite.
D Basalt.
- 27 Dry rot in timber is caused by
A Insect attack.
B Too much moisture content.
C Fungal attack.
D Less moisture content.

Turn Over

- 28 What is the S.I units for the densities of most building materials?
 A N/mm^3
 B KN/m^3
 C Kg/mm^3
 D Kg/m^3
- 29 The increase of volume of soil after excavation is termed
 A Expansion.
 B Bulking.
 C Swelling.
 D Moulding.
- 30 Choose one material that is used in DPM.
 A Concrete.
 B Clinker.
 C Aluminium.
 D Bitumen.
- 31 Select one material that is a poor heat insulator from the given list.
 A Aluminium.
 B Glass.
 C Copper.
 D Wood.
- 32 Annular rings helps us to know the
 A Size of a tree.
 B Hardness of a tree.
 C Density of a tree.
 D Age of a tree.
- 33 Aggregates are gotten from
 A 3 main sources.
 B 4 main sources.
 C 2 main sources.
 D 5 main sources.
- 34 Convert the angle 200grad to degree
 A 90°
 B 100°
 C 180°
 D 200°
- 35 Which of these formulae is used for the calculation of the degree of saturation of soils?
 A $S_r = \frac{V_v}{V - V_v}$
 B $S_r = \frac{V_v}{V - V_v}$
 C $S_r = \frac{V_v}{V_v}$
 D $S_r = \frac{V_v}{V_w}$
- 36 What name is given to the first reading that is recorded after stationing a levelling instrument?
 A Intermediate sight.
 B Backsight.
 C Foresight.
 D Instrument height.
- 37 Choose amongst these tests, the one that is carried out for Cement.
 A Grain size
 B Slump.
 C Compacting factor.
 D Fineness.
- 38 The length of a link of survey chain is
 A 200 cm.
 B 20 m
 C 200 mm
 D 20 dm
- 39 Identify the radius of a trigonometric circle.
 A 1 m
 B 0.5 m
 C 2 m
 D 0.25 m
- 40 Define hydration of cement.
 A The drying of water from cement.
 B The batching of cement.
 C The hardening of cement.
 D The mixing of cement with water.
- 41 Bitumen as a binder is very much recommended for use during
 A Road works construction.
 B Dam construction.
 C Retaining wall construction.
 D Dwarf wall construction.
- 42 Select one type of bituminous materials from the list.
 A Gypsum.
 B Asbestos.
 C Asphalt.
 D Sulphate.
- 43 The moisture content at which soil crumbles when rolled into treads of 4.2 mm is called
 A Plastic limit.
 B Elastic limit.
 C Liquid limit.
 D Rupture limit.

- 44 Excessive heat causes which of these cracks in timber?
A Pith.
B Knots.
C Shales.
D Shakes.
-
- 45 Cement that is produced by increasing its lime content and burning at a high temperature is called
A Portland cement.
B Rapid hardening cement.
C Artificial Portland cement.
D Low hardening cement.
-
- 46 A sand equivalent test conducted on a sample of sand gave the following; $H_1 = 10.82$ and $H_2 = 7.34$. Determine the sand equivalent (S.E) of the sample as a percentage.
A 67.83%
B 50.74%
C 66.29%
D 68.57%
-
- 47 Trees with evergreen leaves are classified under
A Hard wood.
B Semi hard wood.
C Soft wood.
D Semi soft wood.
-
- 48 State the function of a foot screw in a level.
A To centre the bubble.
B To maintain the Tripod.
C To sight object.
D To maintain instrument.
-
- 49 Define the term "Starshakes" as a defect in timber.
A They are radial splits outside the log.
B They are radial splits inside the log.
C They are the radial splits which are wider outside of the log and narrower towards the pith.
D They are the radial splits which are narrower outside the log and wider towards the pith.
-
- 50 Silica and Alumina are the main ingredients of
A Portland cement.
B Fat lime.
C Composite cement.
D Hydrated lime.
-

STOP

GO BACK AND CHECK YOUR WORK