

GENERAL CERTIFICATE OF EDUCATION BOARD
Technical and Vocational Education Examination

SURVEY, SOIL MECHANICS AND MATERIALS 1
5230

JUNE 2021

INTERMEDIATE LEVEL

Specialty (Specialty Acronym)	CIVIL ENGINEERING BUILDING CONSTRUCTION CE-BC (F4 BA)
Centre No. & 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

1 hour 30 minutes

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.

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

Before the examination begins:

3. Check that this question booklet is headed "**Intermediate Level – 5230 SURVEY, SOIL MECHANICS AND MATERIALS 1.**"
4. Fill in the information required in the spaces above.
5. 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:

6. Answer **ALL** the 50 questions in this Examination. All questions carry equal marks.
7. 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]

8. 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.
9. 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.
10. Do all rough work in this booklet, using, where necessary, the blank spaces in the question booklet.
11. Texts, notes and pre-prepared materials of any kind are also **NOT** allowed in the examination room.
12. 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

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1. A binding material in mortar is
 - A water
 - B Sand.
 - C Cement.
 - D Admixture.

2. If the plasticity index of a soil sample is zero then the soil is said to be
 - A Sandy.
 - B Silty.
 - C Clay.
 - D Mud.

3. Select the most commonly used solvent in oil paints.
 - A Gas.
 - B Petrol.
 - C Spirit.
 - D Kerosene.

4. The process where freshly mixed and placed concrete sends out water at the surface is known as
 - A Segregation
 - B Bleeding.
 - C Creeping
 - D Shrinkage.

5. State the range of moisture content of a well seasoned timber.
 - A 4 to 6 %
 - B 6 to 8%
 - C 8 to 10%
 - D 10 to 12%

6. Select the strongest/hardest rock from the list.
 - A Marble
 - B Diamond.
 - C Talc.
 - D Quartz.

7. Mastic asphalt is a material used for
 - A Sound insulation.
 - B Water barrier
 - C Fire barrier.
 - D Heat insulation.

8. Segregation is the act of
 - A Concrete sending out water.
 - B Concrete having hair cracks
 - C Concrete constituent being separated.
 - D Concrete having small holes.

9. The age of a tree can be known by examining
 - A Cambium layer.
 - B Annular rings.
 - C Medullary rays
 - D Heart wood.

10. Heavy stones are suitable for the construction of
 - A Arches.
 - B Fence walls
 - C Sleeper walls
 - D Retaining walls

11. Dry rot in timber is caused by
 - A Lack of ventilation.
 - B Alternate wet and dry conditions.
 - C Complete submergence in water.
 - D Too much seasoning.

12. Why are admixtures added to a concrete mix ?
 - A Modify some of its properties
 - B Modify the aggregate texture
 - C Improve on the quality of aggregate
 - D Improve on the quantity of aggregate

13. Convert angle 200 grade to degree.
 - A 90°
 - B 180°
 - C 100°
 - D 200°

14. In a cartesian coordinate system , a point is described in terms of
 - A Greenwich and Azimut.
 - B Northing and Southing.
 - C Northing and Easting.
 - D Latitude and longitude.

15. What is the length of a link in T chain ?
 - A 20mm
 - B .02m
 - C 0.2m
 - D 0.2cm

16. On a contour map in fig1 below, give the significant of 100.



Fig 1

 - A Number of contour line
 - B Height of the contour line
 - C Position of the contour line
 - D Nature of the contour line

17. Identify the sketch in figure 2 below.



Fig 2

- A Wall
- B Tunnel
- C Highway
- D Railway.

18. Contour can be defined as

- A Line of equal heights.
- B Line of equal length.
- C Circular line
- D Level line

19. From fig 3, give the upper staff reading.



Fig

- A 2.00m
- B 2.75m
- C 2.065m
- D 2.67m

20. From the water/cement ratio graph in fig 4, what is the W/C ratio that will give a required strength of 30N/mm² after 28days?

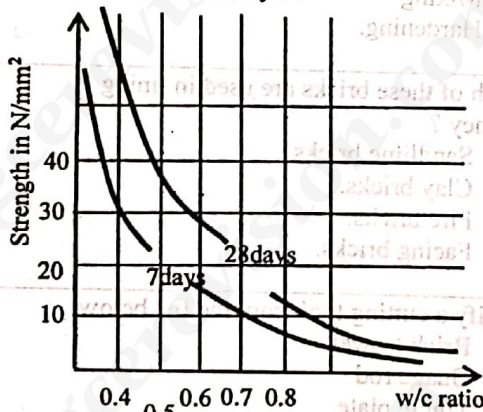


Fig 4

- A 0.4
- B 0.5
- C 0.6
- D 0.7

21. The difference between liquid limit and plastic limit of soils is called

- A Soil ratio
- B Liquidity index.
- C Placticity index
- D Soil parameter.

22. One solution used in carrying out sand equivalent test is

- A Glycerine.
- B Alcohol.
- C Sodium chloride
- D Sodium hydroxide

23. The difference between the measured distance and the real distance in survey operations is called

- A Blunder.
- B True value.
- C Exact value
- D Error.

24. A marked point to which all other points are referred to is called

- A Refrence point
- B Bench mark
- C Point of origin
- D Sea level.

25. The angle(A) in figure 5 is called

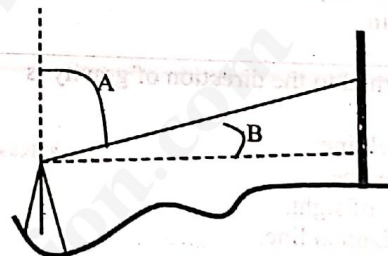


Fig 6

- A gradient
- B slope
- C Vertical angle
- D Zenith angle

26. From fig 6 above, what does angle B stand for?

- A Zenith angle
- B Slope
- C Vertical angle
- D gradient

27. Give the name of the type of traversing in figure 7 below.



- A Aligned traversing.
- B Straight traversing..
- C Open traversing.
- D Closed traversing.

28. State the use of a two - peg test in surveying.

- A Test and adjust a level
- B Test and adjust a point.
- C Set out a building line.
- D Set out building instrument.

29. Gross error in surveying is a mistake due to

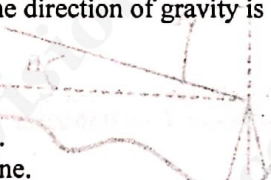
- A Atmospheric condition.
- B Defect of the instrument.
- C Inexperience of the operators.
- D Too many experience operators.

30. Choose the instrument that is used for Indirect levelling in survey.

- A Automatic level
- B Theodolite.
- C Optical square
- D Chain.

31. A line normal to the direction of gravity is known as

- A Level line.
- B Base line.
- C Line of sight.
- D Horizontal line.



32. The type of Survey that covers a large land area in which correction are made for the curvature of the earth surface that shows the shape and location of man made features on parcel of land is

- A Engineering survey.
- B Land survey
- C Geodetic survey.
- D Topographic survey.

33. A set of studies and scientific operations that leads to the establishment of maps, and plans is called

- A Cartography.
- B Photogrammetry.
- C Altimetry
- D Planimetry.

34. State the operation that consist of taking short measurements from the chain line to witness points.

- A Reference measurements
- B Off sets measurements
- C Short measurements.
- D Right angle measurements.

35. The shortest horizontal distance between successive contour line is known as

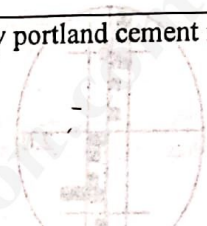
- A Vertical distance.
- B Vertical interval.
- C Horizontal line
- D Horizontal equivalent.

36. What is the name of the part of a branch which become enclosed in a growing tree ?

- A Bark.
- B Knot.
- C Pith.
- D Ring.

37. Grey colour of ordinary portland cement is obtained by using

- A Limestone.
- B Iron oxide.
- C Carbon-oxide.
- D Gypsum.



38. Slaking of lime is the process of

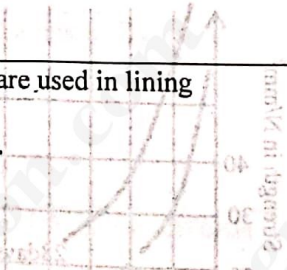
- A Grinding lime stone into chalk..
- B Adding water into quick lime.
- C Adding water into cement powder.
- D Mixing limestone with cement.

39. What takes place immediately water is added to cement ?

- A Hydration.
- B Slaking.
- C Mixing
- D Hardening.

40. Which of these bricks are used in lining chimney ?

- A Sandlime bricks.
- B Clay bricks.
- C Fire bricks.
- D Facing bricks.



41. Identify a cutting tool from the list below.

- A Brick trowel.
- B Gauge rod
- C Tingle plate.
- D Skutch.

42. A hard material that becomes very soft when heated and very hard when cooled is called

- A Bitumen.
- B Asbestos.
- C Thermoplastic.
- D Forms.

43. Which type of mortar is having lime and cement as binders ?

- A universal mortar.
- B Gauged mortar.
- C Slaked mortar.
- D Aerated mortar.

44. Identify the type of steel that is most suitable in construction works.

- A Wrought steel.
- B Stainless steel.
- C Mild steel.
- D Cast iron.

45. Rust of iron is caused by

- A Water and air
- B Dirt and water
- C Salt and dirt.
- D Air and dust.

46. The minimum water content at which soil just begins to crumble when rolled into threads of 3mm in diameter is known as

- A Liquid limit
- B Plastic limit.
- C Shrinkage limit.
- D Permeability limit.

47. The ratio of volume of voids to the total volume of the mass of soil is called .

- A Moisture content.
- B Porosity.
- C Humid density.
- D Percentage of air.

48. Which of the following measures particle size range ?

- A Percentage retained.
- B Percentage passing.
- C Coefficient of curvature.
- D Uniformity coefficient

49. According to 'Atterbergs', the soil is said to be of medium plasticity if the plasticity index PI is

- A $PI \in] 7, 17[$
- B $PI \in] 0, 7[$
- C $PI \in] 17, 27[$
- D $PI > 27$

50. Jumper tool is use in

- A Testing of stones.
- B Cutting of stones
- C Dressing of stones.
- D Quarrying of stones

STOP
GO BACK AND CHECK YOUR WORK