
DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

Serial No. 0355

TEST BOOKLET

CIVIL ENGINEERING

AE

Paper-I

Time Allowed : Two Hours

Maximum Marks : 200

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. PLEASE NOTE THAT IT IS THE CANDIDATE'S RESPONSIBILITY TO ENCODE AND FILL IN THE ROLL NUMBER SUBJECT, SUBJECT CODE AND CENTRE CODE CAREFULLY AND WITHOUT ANY OMISSION OR DISCREPANCY AT THE APPROPRIATE PLACES IN THE **OMR ANSWER SHEET**. ANY OMISSION/DISCREPANCY WILL RENDER THE ANSWER SHEET LIABLE FOR REJECTION.
3. You have to enter your roll Number on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. This Test Booklet contains **100** items (questions). Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case, you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark your responses **ONLY** on the separate Answer Sheet provided. See directions in the Answer Sheet.
6. All items carry equal marks.
7. Before you proceed to mark in the Answer Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the Invigilator **only the Answer Sheet**. You are permitted to take away with you the Test Booklet.
9. Sheets for rough work are appended in the Test Booklet at the end.
10. There is no penalty for wrong answers.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

1. Which of the following is not a natural defect in timber?
 - (a) Knot
 - (b) Twisted fibres
 - (c) Burls
 - (d) Honey combing
2. Seasoning of timber results in
 1. Increase in strength
 2. Increase in durability
 3. Reduced resilience
 of these statements
 - (a) 1, 2 and 3 are correct
 - (b) 1 and 3 are correct
 - (c) 1 and 2 are correct
 - (d) 2 and 3 are correct
3. Timber can be made fire resistant by
 - (a) Dipping and steeping process
 - (b) Sir Abel's process
 - (c) Charring
 - (d) Hot and cold open tank treatment
4. The wood preservative "Creosote" is derived from
 - (a) Wood or coal
 - (b) Acidic cupric chromate
 - (c) Chromated zinc chloride
 - (d) Pentachlorophenol
5. Radial split in timber originating from Bark and narrowing towards Pith are known as
 - (a) Heart shakes
 - (b) Star shakes
 - (c) Cup shakes
 - (d) Knots
6. A good soil for making bricks should contain:
 1. About 30% alumina
 2. About 10% lime
 3. About 15% magnesia
 4. 5% of iron oxide
 of these statements
 - (a) 1 and 2 are correct
 - (b) 1 and 4 are correct
 - (c) 1, 3 and 4 are correct
 - (d) 2, 3 and 4 are correct
7. The function of silica in good brick earth is to:
 1. Imparts plasticity
 2. Prevent cracking
 3. Provide uniform shape
 4. Helps in fusion
 of these statements
 - (a) 1 and 2 are correct
 - (b) 2 and 3 are correct
 - (c) 1, 3 and 4 are correct
 - (d) 2, 3 and 4 are correct

8. As per Indian Standard classification if brick is designated as 10, 10 stands for

- (a) Its compressive strength
- (b) Its tensile strength
- (c) Its length
- (d) Its cross sectional area

9. Standard modular size of common building bricks in millimeter (mm) shall be

- (a) $190 \times 90 \times 90$
- (b) $115 \times 90 \times 90$
- (c) $230 \times 110 \times 70$
- (d) $230 \times 110 \times 30$

10. The contribution of constituent of cement to the strength of cement is in the decreasing order

- (a) C_2S , C_3S , C_3A and C_4AF
- (b) C_3S , C_2S , C_3A and C_4AF
- (c) C_3S , C_2S , C_4AF and C_3A
- (d) None of the above

11. Low heat cement is used for

- (a) Repair of roads
- (b) Thin structure
- (c) None of the above
- (d) All of above

12. Aerated cement is produced by the addition of:

- 1. Zinc sulphate
- 2. Magnesium sulphate

3. Powdered aluminium

4. Sodium nitrate

of these statements

- (a) 3 is correct
- (b) 1 and 3 are correct
- (c) 2 and 3 are correct
- (d) 1, 2 and 3 are correct

13. The specific surface of cement is determined by

- (a) Air permeability method
- (b) Autoclave method
- (c) Vicat apparatus
- (d) None of the above

14. Use of accelerators in concrete

- (a) Shorten the setting time
- (b) Increases period of curing
- (c) Decreases period of curing
- (d) Increase the setting time

15. Super plasticizer or high water reducing admixture

- (a) Increases workability
- (b) Decreases water requirement
- (c) Facilitate production of pumpable concrete
- (d) All the above

16. The ultrasonic test for hardened concrete of good quality is indicated if the pulse velocity is

- (a) Below 3.0 km/s
 (b) Between 3.0 to 3.5 km/s
 (c) Above 3.5 km/s
 (d) Above 4.5 km/s
17. The ratio of tensile strength of concrete to the compressive strength is
 (a) 1:33
 (b) 1:25
 (c) 1:10
 (d) 1:05
18. If the Young's modulus of elasticity of a material is twice its modulus of rigidity, then Poisson's ratio of the material is
 (a) -1
 (b) -0.5
 (c) 0.5
 (d) 0
19. What is the ratio of maximum shear stress to average shear stress in a rectangular section due to shear force V?
 (a) 1.125
 (b) 1.333
 (c) 1.500
 (d) 2.666
20. Match the following
- | Tests | Properties |
|----------------|-------------|
| A Impact test | 1 Ductility |
| B Fatigue test | 2 Toughness |
- C Tension test 3 Endurance limit
 D Hardness test 4 Resistance to penetration
- (a) A-2, B-3, C-1, D-4
 (b) A-1, B-2, C-3 D-4.
 (c) A-2, B-3, C-4, D-1.
 (d) A-4, B-3, C-2, D-1.
21. What is the ratio of Euler buckling load of a column with both ends fixed to the same column with one end fixed and other end free?
 (a) 16
 (b) 8
 (c) 4
 (d) 2
22. What is the eccentricity of a compressive load on a solid circular section of diameter d for which stresses on whole section should be compressive?
 (a) $e \leq d/32$
 (b) $e \leq d/16$
 (c) $e \leq d/8$
 (d) $e \leq d/4$
23. Variation of shear stress along the depth of a rectangular section due to constant shear force is
 (a) uniform
 (b) linear
 (c) parabolic
 (d) cubic

