

KATHMANDU UNIVERSITY
End Semester Examination [C]
April/May, 2023

Marks Scored:

Level : B.E.

Year : II

Exam Roll No. :

Time: 30 mins.

Registration No.:

Course : CIEG 201

Semester : I

F. M. : 10

Date :

30 APR 2023

SECTION "A"

[20Q. × 0.5 = 10 marks]

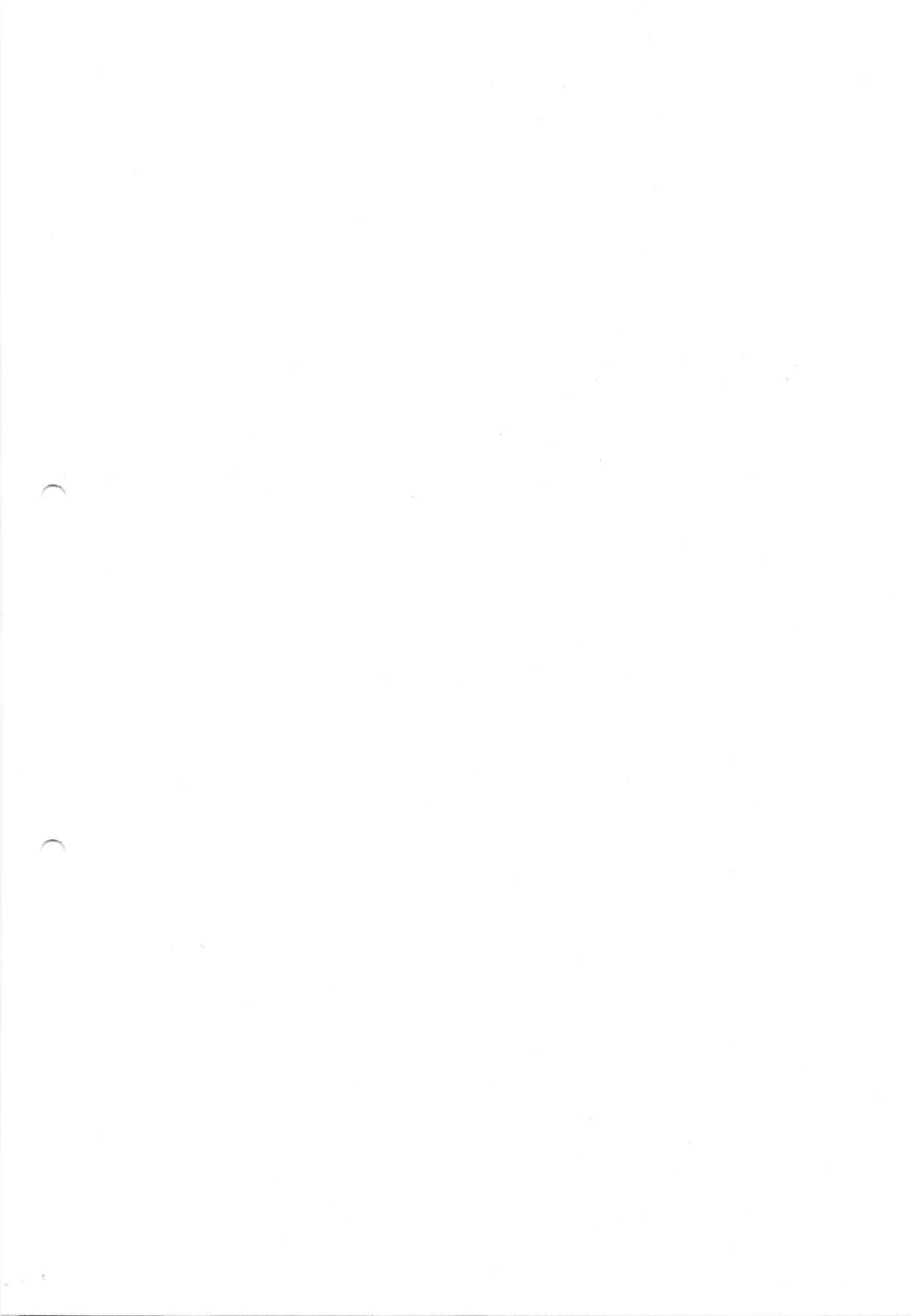
Encircle the most appropriate option.

1. Arrange different structure of trees from center portion of tree to the outer bark moving from center.
i. Cambium layer ii. Heart wood iii. Pith
iv. Sap wood v. Inner bark
a. i, ii, iii, iv and v b. iii, ii, iv, i and v
c. ii, iii, iv, v and I d. iii, ii, iv, v and i
2. Ring shakes in timber are:
a. Longitudinal crack which is usually normal to the annual ring
b. Swelling caused by the growth of layers of sapwood over wounds
c. Bases of twigs or branches buried by activity of the mother branch
d. Longitudinal separations in the wood between the annual rings
3. If 1500 g of water is required to have 1875 g cement paste of normal consistency, the percentage of water is
a. 20% b. 30% c. 25% d. 35%
4. The datum temperature for maturity by Plowman, is
a. 23° C b. 0° C c. - 5.6° C d. -11.7° C
5. What is the theoretical strength of a sample of concrete made with 500 gm of cement with 0.55 water / cement ratio and 240 N/mm² intrinsic strength of gel? The theoretical strength of concrete on full hydration will be nearly
a. 148 N/mm² b. 126 N/mm² c. 104 N/mm² d. 82 N/mm²
6. Why is the process of weathering performed?
a. To remove organic matter b. To prepare for next process
c. To dry clay d. To improve plasticity
7. _____ should be placed to avoid vertical joint, at the beginning of every header course in English bond.
a. Half bat b. Queen closer c. Three fourth bat d. King closer
8. The bitumen that is obtained as a residue during the distillation of a high-resin petroleum is called:
a. Plastic bitumen b. Straight run bitumen
c. Residual bitumen d. Cut back bitumen

9. Which of the following statement is **INCORRECT**?
- The prepared moulds are kept in an atmosphere of 50% relative humidity
 - Cement and standard sand mortar are used in the ratio of 1:3
 - Water is added to the rate of $p/4 + 3$ percentage of water where p is the percentage of water for standard consistency
 - A cube mould of 10 cm × 10 cm × 10 cm is used
10. The part of ship that always remains under water
- Does not rust because it is salt water
 - Does not rust because it is cold water
 - Rusts faster because it is salt water
 - Rusts faster because it is cold water
11. In which of the following rocks, clay predominates?
- Argillaceous rocks
 - Calcareous rocks
 - Silicious rocks
 - Volcanic rocks
12. Grade 43 OPC shall be rejected if it remains in bulk storage in the factory for
- More than 3 months
 - More than 1 month
 - More than 6 months
 - More than 4 months
13. Which of the following statements about brickwork and stonework is **FALSE**?
- Brickwork is more watertight in comparison to stonework
 - Bricks can resist fire better than stones
 - The stonework is much stronger than brickwork
 - Stonework results in the development of better architectural effects
14. The increased cohesiveness of concrete, makes it _____.
- More Liable To Segregation
 - More Liable To Bleeding
 - Less Liable To Segregation
 - More Liable For Surface Scaling In Frosty Weather
15. In case of hand mixing of concrete, the extra cement to be added is _____.
- 5%
 - 10%
 - 15%
 - 20%
16. If 50 kg of fine aggregates and 100 kg of coarse aggregates are mixed in a concrete whose water cement ratio is 0.6, the weight of water required for harsh mix is _____.
- 8 kg
 - 10 kg
 - 12 kg
 - 14 kg
17. The rapid hardening Portland cement is obtained by _____.
- Grinding the clinker to a high degree of fineness
 - Adding calcium sulphate to the mixture
 - Adding gypsum after grinding
 - Burning the mixture at a lower temperature

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18. Which of the following statement is **INCORRECT**?
- The degree of grinding of cement, is called fineness
 - The process of changing cement paste into hard mass, is known as setting of cement
 - The heat generated during chemical reaction of cement with water is known as heat of hydration
 - The phenomenon by virtue of which cement does not allow transmission of sound, is known as soundness of cement
19. Which of the following statement is **INCORRECT** ?
- A rich mix of concrete possesses higher strength than that a lean mix of desired workability with excessive quantity of water
 - The strength of concrete decreases as the water cement ratio increases
 - If the water cement ratio is less than 0.45, the concrete is not workable and causes honey-combed structure
 - Good compaction by mechanical vibrations, increases the strength of concrete
20. Bulking of sand is caused due to _____.
- | | |
|---------------------|------------------|
| a. Air Voids | b. Viscosity |
| c. Surface Moisture | d. Clay Contents |



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Semester : I
F.M. : 40

SECTION "B"

Attempt **ALL** Questions. Schematic diagrams must be shown wherever necessary. Assume necessary data if required and stated clearly.

1. How do you identify whether the fracture is brittle or ductile? Explain taking Charpy test as a reference. Explain the Abnormality in timber with neat sketch. [2+3=5]
2. For the purpose of obtaining the good quality of bricks, which test you are going to perform in the field and why explain in detail. Explain the microstructure of carbon steel with their functions. [2.5+2.5=5]
3. Explain the modern method of manufacturing of cement for ordinary Portland cement. Explain the stress- strain relationship of non-linear elastic material concrete. [3+2=5]
4. Explain the various form of Bitumen and Asphalt with their application. Enlist the tests which are commonly employed to measure the workability of concrete. Describe any one of these. [2+3=5]
5. Define modulus of elasticity of concrete. Explain the factor affecting the modulus of elasticity of concrete. Explain the influence of the transition zone on properties of concrete with neat sketch. [3+2=5]
6. Describe C-S-H gel with neat sketch? Discuss about the impact of curing, temperature, grading of aggregate, and water cement ratio on the strength of concrete. [2+3=5]
7. Explain the factor affecting the mix design of concrete in brief. Describe the term "target mean strength" and characteristics strength of concrete. Give the equation for finding quantity of cement, coarse and fine aggregate in mix -design by I.S. method. Explain each and every term involved in the equation. [2+4=6]
8. Write short notes on (**ANY TWO**) [2Q × 2 = 4]
 - a. Bleeding and segregation in concrete
 - b. Shrinkage and creep in concrete
 - c. Bonds in brick masonry

