

KATHMANDU UNIVERSITY  
End Semester Examination [C]  
July, 2017

Marks scored:

Level : B.E.  
Year : II

Course : CIEG 201  
Semester : I

Exam Roll No.:

Time: 30 mins.

F. M. : 10

Registration No.:

Date **JUL 11 2017**

SECTION "A"  
[20 Q. ×0.5=10]

Tick (✓) the most appropriate answer:

1. Adding of thin layer of Cement Mortar to the surface of concrete is called  
a. Rodding                      b. Punning                      c. Tamping                      d. Mixing
2. The maximum water required for w/c ratio is  
a. M<sub>10</sub>                              b. M<sub>15</sub>                              c. M<sub>20</sub>                              d. M<sub>25</sub>
3. The strength of Rapid Hardening Cement at .....days is same as the 7 days strength of OPC cement  
a. 1                                      b. 3                                      c. 5                                      d. 6
4. For normal consistency the penetration of Vicat Apparatus should be in between  
a. 20 to 30 mm                      b. 30 to 35 mm                      c. 35 to 38 mm                      d. >40 mm
5. For a concrete, the Modulus of Elasticity (E) is given as  
a.  $1000\sqrt{f_{ck}}$                       b.  $3000\sqrt{f_{ck}}$                       c.  $5000\sqrt{f_{ck}}$                       d.  $7000\sqrt{f_{ck}}$
6. To prevent the attack of insects, the lower ends of the wooden posts that are embedded in ground are usually.....  
a. creosoted                      b. painted                      c. tarred                      d. charred
7. Percentage composition of C<sub>3</sub>A in Bogue compound is  
a. 25- 50 %                      b. 25-40 %                      c. 8-14 %                      d. 5-11 %
8. Function of Alumina in Brick earth is to  
a. Impart Plasticity                      b. Increase Durability  
c. Prevent Shrinkage                      d. Increase Impermeability
9. At freezing point of water, concrete  
a. sets freely                      b. sets slowly                      c. sets rapidly                      d. dose not set
10. F.M of a sample of sand is 2.5. It is graded as  
a. Very Fine Sand                      b. Fine Sand  
c. Coarse Sand                      d. Very Coarse Sand
11. Red Color in brick is due to  
a. Iron Oxide                      b. Silica                      c. Alumina                      d. Magnesia



KATHMANDU UNIVERSITY  
End semester Examination [C]  
July, 2017

JUL 11 2017

Level : B.E.  
Year : II  
Time : 2 hrs. 30 mins.

Course : CIEG 201  
Semester: I  
F.M. : 40

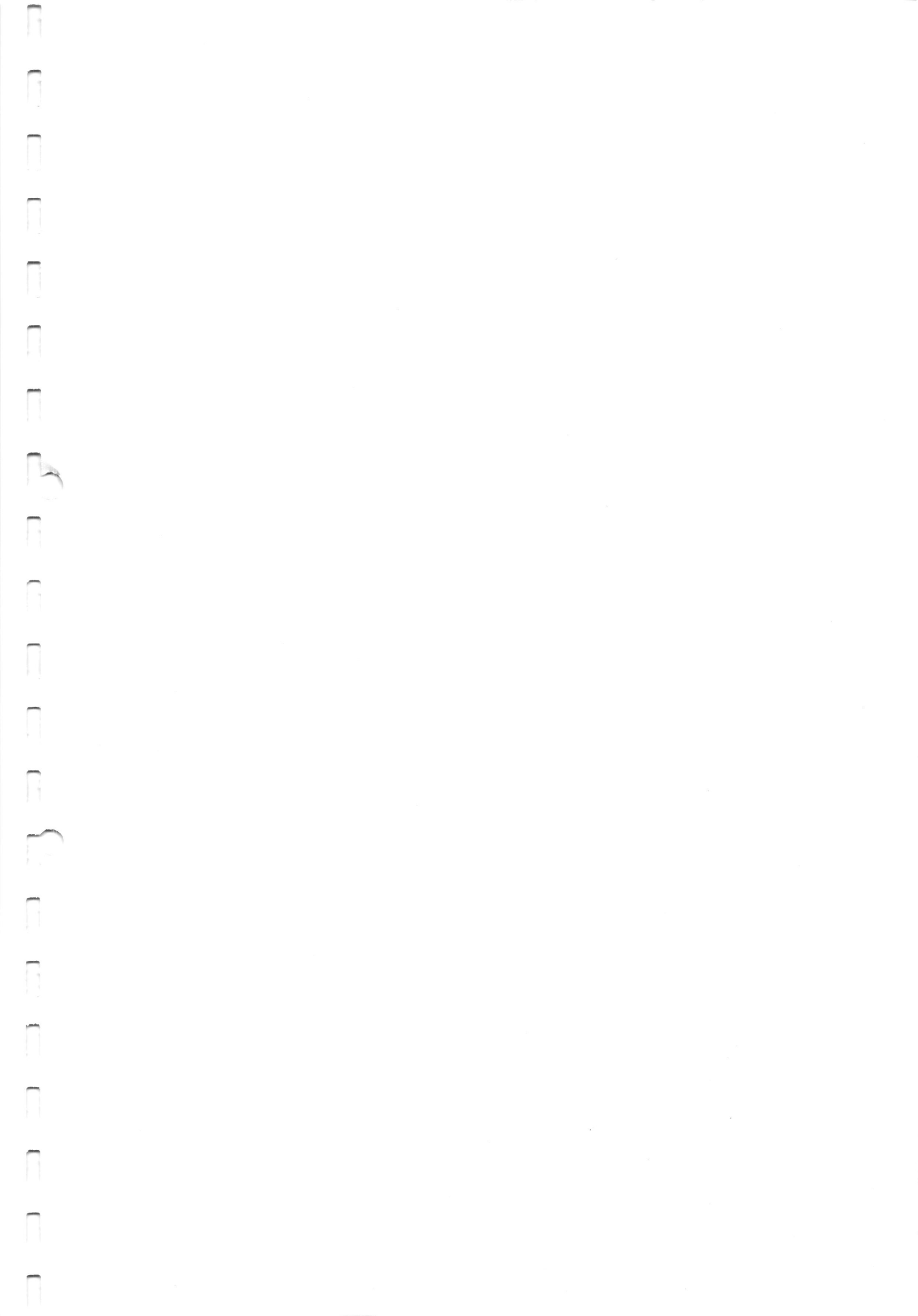
SECTION "B"

Assume the suitable data as necessary. Use Tables as Necessary. Attempt *ALL* questions.

1. What are important ingredients of OPC? Explain function of each ingredients? Explain harmful ingredients of OPC? [2+2+2=6]
2. Explain different types of Admixtures? What are various Commercial forms of the Timber? [3+3=6]
3. Enumerate various steps in manufacture of Concrete. Yield stress of Medium Carbon steel is found to be 415 MPa. Its ultimate stress is 20 % more than yield stress. If steel fractures at 2% strain, calculate its Modulus of Toughness. [1+5=6]
4. Explain the significant difference between Nominal Mix Design and Design Mix. Design a Concrete Mix with following requirements: [1+4=5]

Strength Reqd.	Quality control	Cement Grade	C.F	C.A	F.A	Entrapped Air	Water Content	Sand as % of total Aggregates
200 kg/cm <sup>2</sup>	Good	33	0.7	Nominal Size 20 mm, Rounded	Zone-II	3 %	186 kg/m <sup>3</sup>	28 %

5. Explain the micro structure of cement. What are the factors affecting creep of Concrete? What is a Flash Set? [3+2+1=6]
6. a. What do you mean by Workability of Fresh Concrete? Explain Vee-Bee Consist meter Test to determine workability of concrete? [1+2=3]  
b. Define Corrosion. Explain various types of corrosion in Metal and methods of their prevention. [1+3=4]
7. Write short note on following: [2+2=4]
  - a. Setting Time Test of Cement
  - b. Treatment of Steel



JUL 11 2017

Table 4 Adjustment of values in water content

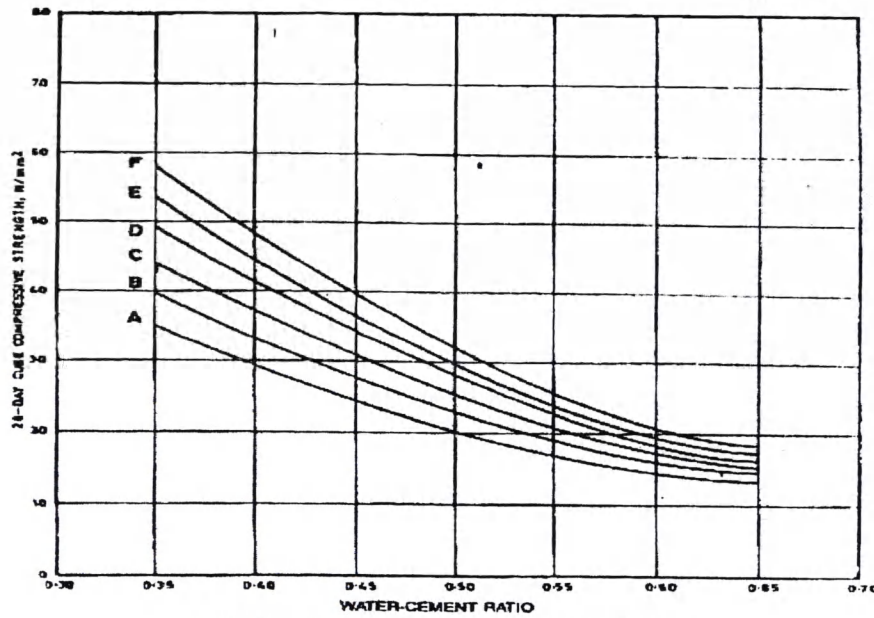
Change in condition stipulates in Table 2 and 3	Adjustment required in water content
For sand confirming To grading zone I, zone III or zone IV of IS: 383 - 1970	0
Increase or decrease in the Value of compacting factor by 0.1	± 3 percent
Each 0.05 increase or decrease in free water cement ratio	0
For rounded aggregate	-15 kg / m <sup>3</sup>

Source: Table 6 page no 11 IS 10262-1982

Table 5: Adjustment of Values in Sand Percentage

Change in condition stipulates in Table 12	Adjustment required in sand in total aggregate
For sand confirming To grading zone I, zone III or zone IV of IS: 383 - 1970	+1.5 percent for zone I -1.5 percent for zone III -3.0 percent for zone IV
Increase or decrease in the Value of compacting factor by 0.1	0
Each 0.05 increase or decrease in free water cement ratio	± 1 percent
For rounded aggregate	-7 percent

Source: Table 6 page no 11 IS 10262-1982



7 - Day Strength of Cement, Tested According to IS : 4031-1968

- A = 21.6 - 25.0 N/mm<sup>2</sup>
- B = 25.0 - 29.8 N/mm<sup>2</sup>
- C = 29.8 - 35.0 N/mm<sup>2</sup>
- D = 35.0 - 41.5 N/mm<sup>2</sup>
- E = 41.5 - 48.0 N/mm<sup>2</sup>
- F = 48.0 - 53.4 N/mm<sup>2</sup>

