

(13)

BI-①

15/12/14

SE-CE Sem IV (CBSGS)

C.T.

QP Code : 12537

(3 Hours)

[Total marks : 80]

INSTRUCTIONS: 1. Question Number 1 is **COMPULSORY**.2. Answer any **THREE** from the remaining. 3. Each full question carries **EQUAL** marks.4. **ASSUME** any suitable data, if needed.

1. a) What is soundness of cement? How is it tested?

(04 M)

b) Define fineness modulus. Give the practical range of fineness modulus values for coarse & fine aggregates.

(04 M)

c) Choose & write the correct option:

(04 M)

i. The heat of hydration of cement can be reduced by:

a) Reducing the proportions of C_3A & C_3S b) Increasing the proportions of C_3A & C_3S

c) Increasing the fineness of cement

d) Both (a) & (c)

ii. Increase in fineness modulus of aggregate indicates:

a) Finer Grading

b) Coarser grading

c) Gap grading

d) None of these

iii. For a constant water-cement ratio, decrease in aggregate-cement ratio causes:

a) Increased workability

b) Decreased workability

c) No workability change

d) None of these

iv. In concrete mix design, allowance for bulking of sand is necessary in case of:

a) Volume batching only

b) Weigh batching only

c) Both (a) & (b)

d) None of these

d) What do you understand by Rapid hardening Cement? Why there is rapid rate of strength gain? Under what situations, would you recommend Rapid Hardening cement on site?

(04 M)

e) Enlist the types of admixtures. Write a short note on Plasticizers.

(04 M)

2. a) The following table depicts compressive strengths (MPa) of 20 number of concrete cubes tested in a laboratory. Calculate: Average strength, standard deviation & coefficient of variation. (07 M)

| Sample No. | Compressive Strength | Sample No. | Compressive Strength | Sample No. | Compressive Strength | Sample No. | Compressive Strength |
|------------|----------------------|------------|----------------------|------------|----------------------|------------|----------------------|
| 1 | 44 | 6 | 40 | 11 | 48 | 16 | 43 |
| 2 | 46 | 7 | 38 | 12 | 42 | 17 | 45 |
| 3 | 38 | 8 | 35 | 13 | 44 | 18 | 38 |
| 4 | 41 | 9 | 37 | 14 | 36 | 19 | 39 |
| 5 | 36 | 10 | 41 | 15 | 34 | 20 | 42 |

b) Explain the concrete workability with reference to shape, size & grading of aggregates. (06 M)

c) Explain creep & shrinkage of concrete.

(07 M)

GN-Con: 11489-14.

Page: 1

[TURN OVER