

### SECTION – C

6. What tests are necessary to check the adoptability of a particular mix proportion for field use ? Also explain how will you account for the moisture present in sand while mix proportioning. 20
7. Explain the principles of concrete mix design. What are the various factors governing the selection of mix proportion according to Indian standard. 20

### SECTION – D

8. How piles are driven into the ground ? What equipment and machines are used for this operation ? Also write down the advantages of using construction equipment over the conventional manual method of construction. 20
9. What do you understand by the term heavy construction ? Also explain the precautions take care during the construction of bridges in detail. 20

Roll No. ....

24199

### B. Tech. 4th Semester (Civil) Examination – May, 2017

#### CONSTRUCTION & CONCRETE TECHNOLOGY

Paper : CE-210-F

*Time : Three Hours ]*

*[ Maximum Marks : 100*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Question No. 1 is *compulsory*. Students have to attempt *five* questions in total. Select *one* question from each Section. Assume any data if missing.

1. (a) Explain how development of network helps in project management. 4
- (b) Write down the factors affecting the choice of mix design. 4
- (c) Define the term concrete. Also write down any *four* properties of fresh concrete. 4

- (d) Write down the name of equipments used for heavy construction of dams, explain any *two*. 4
- (e) What do you understand by prestressed concrete? Explain briefly. 4

**SECTION – A**

2. Draw the network and calculate : 20

- (a) Earliest event time.
- (b) Latest occurrence time.
- (c) Slack if project duration is 29 days and hence determine the critical path.

| Activity | pre | Successor | $t_o$ | $t_e$ | $t_p$ |
|----------|-----|-----------|-------|-------|-------|
| A        | --  | D         | 2     | 4     | 6     |
| B        | --  | E         | 3     | 5     | 7     |
| C        | --  | F         | 4     | 6     | 8     |
| D        | A   | G         | 1     | 3     | 5     |
| E        | B   | H         | 3     | 4     | 5     |
| F        | C   | I         | 4     | 5     | 6     |
| G        | D   | --        | 6     | 8     | 10    |
| H        | E   | --        | 8     | 9     | 10    |
| I        | F   | --        | 7     | 10    | 13    |

3. Draw the network and calculate the following : 20

- (a) Earliest start time.
- (b) Earliest finish time.
- (c) Latest start time.
- (d) Latest finish time.
- (e) Total float.
- (f) Free float.

| Activity | pre | Successor | Duration |
|----------|-----|-----------|----------|
| A        | --  | D         | 4        |
| B        | --  | E         | 5        |
| C        | --  | F         | 6        |
| D        | A   | G         | 3        |
| E        | B   | H         | 4        |
| F        | C   | I         | 5        |
| G        | D   | --        | 8        |
| H        | E   | --        | 9        |
| I        | F   | --        | 10       |

**SECTION – B**

4. What are the effects of the shape and texture of aggregates on the strength and workability of concrete? Explain in detail. 20
5. Explain in detail : 20
- (a) How does a surface-active agent increase workability?
- (b) Types of prestressed concrete.