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**Question Paper Code : 50207**

**B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017**

**Sixth Semester**

**Civil Engineering**

**CE 6002 – CONCRETE TECHNOLOGY**

**(Regulations 2013)**

**Time : Three Hours**

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**Maximum : 100 Marks**

**Use of IS 456 and IS 10262 codes Permitted.**

**Answer ALL questions.**

**PART – A**

**(10×2=20 Marks)**

1. What is meant by 53 grade cement ?
2. What do you understand by grading of aggregate ?
3. Name any two chemical admixtures and their significance.
4. What are admixtures ?
5. Differentiate between nominal mix and design mix.
6. What is the minimum grade of concrete to be used as per IS 456-2000 ? How surface moisture of aggregates is accounted for in the mix design ?
7. List the factors that influence the workability of concrete.
8. Mention the factors which affect the strength of concrete.
9. What is light weight concrete ?
10. What is ferrocement ?

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**PART – B**

**(5×16=80 Marks)**

11. a) i) What are the initial and final setting times of cement ? What is their importance ?  
ii) How will you determine the compressive strength of cement ? Explain briefly the procedure.

**(OR)**



- b) i) Discuss the characteristics of good aggregates.  
ii) Briefly describe the following tests on aggregate : specific gravity test, crushing test and impact test.

12. a) i) Describe the effect of following admixtures on cement concrete and give three examples of each. Retarders, accelerators and water proofers.  
ii) What are super plasticizers ? How are these helpful in modifying the properties of concrete ?

(OR)

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- b) i) Discuss briefly the effects of adding mineral admixtures to cement concrete.  
ii) Write short notes on fly ash and GGBS.

13. a) i) Define concrete mix design and state the principles of concrete mix design.  
ii) List the various methods of mix design. Briefly describe the IS method.

(OR)

- b) Design a concrete mix by IS method for the following requirements :

Characteristic compressive strength at 28 days      25 N/mm<sup>2</sup>

Maximum nominal size of aggregate      20 mm

Shape of aggregate      angular

Degree of workability, slump of concrete      50 mm

Type of exposure      mild

Test data for concrete making materials

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Specific gravity : cement = 3.15, coarse aggregate = 2.7 and fine aggregate = 2.6

Water absorption : coarse aggregate = 0.5% Fine aggregate = 1%

14. a) i) What is meant by workability ? How is it tested in field and in laboratory ?  
ii) Write short notes on segregation and bleeding.

(OR)



- b) i) Describe the methods used to test the hardened concrete.
- ii) Explain how will you determine the modulus of elasticity of concrete experimentally.

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15. a) i) Discuss the properties and applications of high performance concrete and polymer concrete.
- ii) Discuss the properties of structural light weight concrete and its applications.

(OR)

- b) i) What is shotcrete ? Explain the procedure of shotcreting a surface.
- ii) What is fibre reinforced concrete ? What are its advantages ? Explain in detail.

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