SRM VALLIAMMAI ENGINEERING COLLEGE

B.E DEGREE EXAMINATION

Model Question Paper

Fourth Semester

Civil Engineering

CE8404 – CONCRETE TECHNOLOGY

(Regulation 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A (10x2=20 Marks)

1. Name the major compounds of ordinary OPC and mention the approximate percentage of each.

2. Write any two advantages of Sulphate resistance cement.

3. What is the importance of Superplasticizers added in cement concrete?

4. Define Metakaloine.

5. Differentiate between Normal mix and Design mix?

6. On what circumstances high grade concretes are utilized effectively?

7. Name any four properties of hardened concrete.

8. What are the effect of water cement ratio on concrete strength and durability?


10. What is Light weight concrete?

PART – B (5x13=65 Marks)

11. a) Discuss the characteristics of good aggregate? (7)
    (ii) Explain in detail about any four IS testing procedure for coarse aggregate. (6)

    Or

    b) Explain in detail the Hydration mechanism of cement. Also explain how you determine the reactivity of any cementitious material.
a) Describe the effect of following admixtures on cement concrete and give three examples of each. Retarders, Accelerators and Water proofers.

Or

b) (i) Discuss briefly the effects of adding mineral admixtures to cement concrete. (7)
(ii) Name the various types of plasticizers used in concrete and describe their effects on the properties of concrete. (6)

13 a) Explain the mix design procedure for concrete as per IS method.

Or

b) Design of M20 concrete mix as per IS:10262-2009, Concrete mix proportioning-guidelines
i. Grade designation : M20
ii. Type of cement : OPC 43 grade confirming to IS 8112
iii. Maximum nominal size of aggregates : 20 mm
iv. Minimum cement content : 320 kg/m3
v. Maximum water cement ratio : 0.55
vi. Workability : 75 mm (slump)
vii. Exposure condition : Mild
viii. Degree of supervision : Good
ix. Type of aggregate : Crushed angular aggregate
x. Maximum cement content : 450 kg/m3
xi. Chemical admixture : Not recommended
xii. Specific gravity of cement : 3.15
   Coarse aggregate : 2.68
   Fine aggregate : 2.65
xiii. Water absorption
   Coarse aggregate : 0.6 percent
   Fine aggregate : 1.0 percent
xiv. Free (surface) moisture
   Coarse aggregate : Nil (absorbed moisture full)
   Fine aggregate : Nil
xv. Sieve analysis- Coarse aggregate : Conforming to Table 2 of IS: 383
   Fine aggregate : Conforming to Zone I of IS: 383
14 a) (i) Explain how will you determine the modulus of elasticity of concrete experimentally? (7)
(ii) How do you determine the fresh concrete properties? Explain any two in detail. (6)

Or

b) Explain the factors influencing the strength results?

15 a) Brief the production of Geopolymer concrete and enlist the salient parameters affecting the compressive strength of Geopolymer concrete.

Or

b) Write a short notes on
   (i) Shotcrete (3)
   (ii) Ready Mixed concrete (3)
   (iii) Ferrocement (3)
   (iv) SIFCON (4)

PART – C (1x15=15 Marks)

16 a) Explain the effects of GGBS and Fly ash in concrete.

Or

b) Explain in detail about the production, application and advantages of polymer concrete