B. Tech.

(SEM. IV) EXAMINATION. 2006-07

CONCRETE TECHNOLOGY

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions.

1 Attempt any four of the following : 5×4=20

a) Describe the manufacture of Portland cement with the help of flow diagram.

b) What is the influence of the tri and di-calcium silicates and tricalcium aluminate on the properties of cement?

c) Write short note on chemical properties of cement.

d) What is hydration? Discuss the factors on which rate of hydration depends.

e) How the initial setting time of cement is determined? Discuss the significance of initial and final setting time of cement.

f) Discuss the role of use of pozzolanas and slag in the manufacture of cement.
2 Attempt any four of the following:  

a) Which shape of aggregate is considered the best for making concrete? Why?  
b) Explain bulking of sand. How does it affect the quantity of sand in volume batching?  
c) What is grading of aggregate? How is the aggregate graded?  
d) How is the strength of aggregate determined?  
e) Explain the following types of cement with their uses.  
i) Slag cement  
ii) Portland pozzolana cement  
iii) High alumina cement.  
f) What is fineness modulus? Explain the method of determining the fineness modulus for coarse aggregate.  

3 Attempt any two of the following:  

a) Discuss the factors you consider while deciding the strength of concrete to be used for a given work. Which factors should be considered while deciding the stripping time of form work?  
b) What is workability of concrete? Discuss the various methods by which workability of concrete is measured.  
c) Discuss the various factors which influence the strength of concrete. Explain the water-cement ratio law.  

4 Attempt any two of the following:  

a) Discuss the design mix and nominal mix concretes. Explain the steps involved in IS code method of concrete mix design.
b) What is curing? How it is done? How does it influence the strength of concrete?
c) Discuss the various objectives of using admixtures in concrete. What are the various types of admixtures?

5 Write short notes on any four of the following: 5×4=20
i) High strength concrete
ii) Fibre reinforced concrete
iii) Light weight concrete
vi) Sulphur impregnated concrete
v) Rebound hammer method of non-destructive testing of concrete
vi) Need for non-destructive testing methods for concrete? Discuss the advantages of non-destructive testing for concrete