

II B. Tech II Semester Regular Examinations, April - 2018
CONCRETE TECHNOLOGY
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

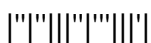
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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART -A

1. (a) what do you mean by graded aggregate?
(b) How workability of concrete can be improved?
(c) Define gel space ratio.
(d) Define creep of concrete
(e) Write the different methods of concrete mix design
(f).List the benefits of high performance concrete.

PART -A

2. (a) Explain the process of hydration of cement.
(b) Explain the Initial setting time of cement with neat sketches.
3. (a) Explain the flow table test on fresh concrete
(b) Explain the factor effecting workability of concrete
4. (a) Discuss the relation between modulus of elasticity and strength
(b) Write a brief note on Flexure strength of Concrete with sketch
5. (a) Write the factors which cause the shrinkage of concrete.
(b) Write short notes on: (i) Modulus of elasticity. (ii) Poissons ratio.
6. Design a concrete mix for characteristic strength of 35MPa at 28 days with a standard deviation of 4MPa. The specific gravity of FA and CA are 2.65 and 2.75 respectively. A slump of 40mm is necessary. The specific gravity of cement is 3.15. Assuming the necessary data design the mix as per IS code method.
7. Explain the following,
a) Cellular concrete
b) Polymer concrete
c) High performance concrete



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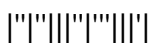
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**PART -A**

1. (a) What is meant by 53 grade cement?
- (b) How does water cement ratio affect the strength of concrete?
- (c) What are the uses of NDT?
- (d) Write the factors influencing creep
- (e) Write the purpose of using mineral admixtures.
- (f) Write the applications of S.C.C.

**PART -B**

2. (a) Explain the alkali aggregate reaction of aggregates.  
 (b) List the deleterious substance in aggregates and explain their influence on concrete
3. (a) Explain the methods available in construction practice to control “segregation” of a concrete mixture.  
 (b) List out the importance of concrete curing.
4. Write the test procedure followed to carry out NDT by using rebound hammer with sketch
5. (a) Explain how modulus of elasticity of concrete is determined.  
 (b) What are the factors influencing the elastic modulus of concrete.
6. Design M25 grade concrete using IS 10262 method of mix design for the following data:
  - (i) Size and shape of aggregate: 20 mm angular
  - (ii) Exposure condition: severe
  - (iii) Minimum cement content: 320 kg/m<sup>3</sup>
  - (iv) Maximum free water cement ratio: 0.55
  - (v) Degree of supervision: good
  - (vi) Maximum cement content : 450 kg/m<sup>3</sup>
  - (vii) Specific gravity of cement: 3.15, fine aggregate: 2.7, coarse aggregate: 2.74
  - (viii) Water absorption:  
 Coarse aggregate: 1.0%, fine aggregate: 1.5%
  - (ix) Fine aggregate conforming to zone II
7. (a) Explain salient features of Sulphur infiltrated concretes.  
 (b) Explain applications of various sulphur-infiltrated concrete



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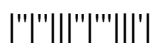
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**PART -A**

1. (a) Define hydration of cement.  
(b) Define workability.  
(c) What is meant by Maturity concept?  
(d) Define creep of concrete  
(e) How acceptance criteria help in mix design of concrete?  
(f) What is the principle of mix proportioning?

**PART -B**

2. (a) What is hydration of cement and explain the influences of Bogue's compounds.  
(b) What are the different types of admixtures used in concrete and explain any two of them
3. (a) What are the factors that influence the strength of cement concrete? Explain Briefly.  
(b) Write A notes on shot create with sketch
4. (a) Explain in detail the factors influencing the strength results in case of hardened concrete.  
(b) Write a brief note on rebound hammer test and factors affecting rebound hammer test
5. (a) Explain the factors affecting the creep of concrete  
(b) Explain in detail the classification of Shrinkage.
6. Explain in detail the various steps involved in designing concrete mixes using I.S.I method.
7. Write about
  - (a) High density concrete
  - (b) Self compacting concrete
  - (c) SIFCON



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**PART -A**

1. (a) State the chemical composition of cement.  
(b) What are the factors affecting workability of concrete.  
(c) List out different methods of curing of concrete  
(d) What are the factors influencing creep  
(e) Distinguish between 'Mean strength' and 'Target strength of concrete'  
(f) State different types of light weight aggregate concretes

**PART -B**

2. (a) Discuss in detail the various tests to be carried out to determine the quality of cement.  
(b) What is alkali aggregate reaction? How to control alkali aggregate reaction?
3. (a) What is segregation & bleeding of concrete and how to minimize these effects in concrete?  
(b) How to measure workability of concrete and explain any one of them.
4. (a) What is the importance of Non-Destructive tests?  
(b) Write a brief note on split tensile strength of Concrete
5. (a) Explain phenomenon of creep in concrete.  
(b) Explain measurement of creep in creep with loading diagram.
6. (a) Write step wise procedure for mix design as per Indian standards.  
(b) Explain durability of concrete and list out factors affecting durability of concrete.
7. What is the need to study fiber reinforced concrete and explain briefly the factors effecting properties of fiber reinforced concrete?

