

**II B. Tech II Semester Supplementary Examinations, June/July - 2022**  
**CONCRETE TECHNOLOGY**  
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

- 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  
4. I S code is allowed
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PART -A

1. a) Discuss about the effect of mineral admixtures on mass concreting. (3M)
- b) What are the different types of tests for finding the physical properties of cement? (2M)
- c) What are the retarders and accelerators? (2M)
- d) What is segregation and bleeding? (2M)
- e) What is the Effect of time and temperature on workability of concrete? (3M)
- f) Write about Gel space Ratio. (2M)

PART -B

2. a) Write about bulking of aggregate and soundness of aggregate. (7M)
- b) What are the different types of admixture? Write about flyash and silica fume. (7M)
3. a) What are the different steps in the manufacture of concrete? (7M)
- b) Define workability. Write the factors influencing the workability. (7M)
4. a) What are the different tests performed on hardened concrete? Explain two tests. (7M)
- b) Explain the principle and methodology non-destructive testing of concrete using Rebound Hammer Method. (7M)
5. a) Write the factors effecting the modulus of elasticity. (7M)
- b) What is shrinkage of concrete? Explain about classification of shrinkage. (7M)
6. Design a concrete mix for characteristic strength of 30MPa at 28 days with a standard deviation of 4MPa. The specific gravity of FA and CA are 2.60 and 2.70 respectively. A slump of 50mm is necessary. The specific gravity of cement is 3.15. Assuming the necessary data design the mix as per IS code method. (14M)
7. Write about the following (14M)
  - a) High density concrete
  - b) Self consolidating concrete
  - c) No fines concrete

**II B. Tech II Semester Supplementary Examinations, February - 2022**  
**CONCRETE TECHNOLOGY**  
 (Civil Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (Part-A and Part-B)  
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 3. Answer any FOUR Questions from Part-B

**PART -A**

1. a) What is Alkali aggregate reaction? (2M)
- b) Define segregation and bleeding of concrete. (3M)
- c) What is the affect of aspect ratio of specimen on compressive strength of concrete? (2M)
- d) What is short term and long term elastic modulus? (2M)
- e) Discuss about the Acceptance criteria of concrete sample. (3M)
- f) What is Shotcrete mention its applications? (2M)

**PART -B**

2. a) Discuss about the contribution of cement compounds towards strength development. (7M)
- b) What is the importance of grading of aggregates and discuss about the test to determine fineness modulus of fine aggregate? (7M)
3. a) Discuss about the Factors Affecting Workability of fresh concrete. (7M)
- b) Discuss about the compaction factor test to determine the workability of fresh concrete. (7M)
4. a) Mention the advantages and disadvantages of Non-destructive testing methods and discuss about the rebound hammer test to assess the strength of concrete. (7M)
- b) Discuss any two tests carried out on the hardened concrete: (7M)
5. a) What is Shrinkage and explain about different types of shrinkage occurs in concrete? (7M)
- b) Discuss about the static and dynamic modulus of elasticity of concrete. (7M)
6. Design a concrete mix for RCC construction. The specified characteristic strength is 25MPa at 28 days. Standard deviation can be taken as 4MPa. The specific gravity of FA and C.A. are 2.66 and 2.78 respectively. The dry rodded bulk density of C.A. is 1600 kg/m<sup>3</sup>, and fineness modulus of FA is 2.80. Ordinary Portland cement (TypeI) will be used. A slump of 100 mm is necessary. C.A. is found to be absorptive to the extent of 2% and free surface moisture in sand is found to be 4 per cent. Assume any other essential data. (14M)
7. a) What are the different metallic and non metallic fibers used to prepare fiber reinforced concrete (FRC) and discuss their influence on FRC properties? (7M)
- b) Write short notes on no fines concrete and their applications. (7M)

**II B. Tech II Semester Supplementary Examinations, April - 2021**  
**CONCRETE TECHNOLOGY**  
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

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**PART -A**

1. a) Write about fineness and setting time of cement. (3M)
- b) Write about curing of concrete. (2M)
- c) What are the different types of curing? (2M)
- d) What is meant by acceptance criteria? (2M)
- e) What is Dynamic modulus of elasticity? (2M)
- f) What is self healing concrete? (3M)

**PART -B**

2. a) Write in detail about fly ash and silica fume. (7M)
- b) What is bulking of sand and write about the sieve analysis of fine aggregate. (7M)
3. a) Write about mixing and vibration of concrete. (7M)
- b) What are the different properties of fresh concrete? (7M)
4. a) What is strength in tension and compression for concrete? What are the factors affecting the strength? (10M)
- b) Write the codal provisions of NDT. (4M)
5. a) What are the different types of creep and show the relation between creep and shrinkage? (7M)
- b) Mention different types of shrinkages (7M)
6. Design a concrete mix for characteristic strength of 20MPa at 28 days. The specific gravity of FA and CA are 2.60 and 2.75 respectively. A slump of 50mm is necessary. The specific gravity of cement is 3.15. Assuming the necessary data design the mix as per IS code method. (14M)
7. a) Write about High performance concrete. (7M)
- b) What are the properties of polymer concrete? (7M)

**II B. Tech II Semester Regular/Supplementary Examinations, November - 2020**  
**CONCRETE TECHNOLOGY**  
 (Civil Engineering)

Time: 3 hours

Max. Marks: 70

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

PART -A

1. a) What is sulphate attack? (2M)
- b) Mention the Effect of time and temperature on workability (3M)
- c) What is the affect of rate of loading on compressive strength of concrete (2M)
- d) Mention how the shrinkage of concrete is prevented (2M)
- e) List the factors considered in the concrete mix design (3M)
- f) What is aspect ratio of fiber and mention its affects on fresh properties of concrete (2M)

PART -B

2. a) Discuss about the different stages of hydration of cement (7M)
- b) Discuss about the different chemical admixtures and their functions (7M)
3. a) Discuss about the slump test to determine the workability of fresh concrete (7M)
- b) What is bleeding and explain method of Test for Bleeding of Concrete (7M)
4. a) Briefly discuss about the methods to assess tensile strength of concrete (7M)
- b) Discuss about the Factors Affecting Compressive Strength of concrete (7M)
5. a) What is creep and discuss about the Factors affecting Creep of concrete (7M)
- b) Explain in detail about the determination of Young's Modulus and Stress-strain curve for concrete. (7M)
6. Design a concrete mix of grade M40 for the following data as per IS:10262 (14M)  
 The specific gravity of FA and C.A. are 2.67 and 2.75 respectively. The dry rodded bulk density of C.A. is  $1600 \text{ kg/m}^3$ , and fineness modulus of FA is 2.80. Ordinary Portland cement with specific gravity 3.06 to be used. A slump of 40 mm is required. water absorptive of C.A. is 1% and free surface moisture in sand is found to be 3 per cent. Type of work is RCC and SP is allowed. Assume any other suitable data if required.
7. a) Distinguish high strength and High performance concrete and their applications (7M)
- b) Discuss about the manufacture of light weight concrete and its application (7M)

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2. Answer **ALL** the question in **Part-A**  
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**PART -A**

1. a) Write about accelerators and retarders. (3M)
- b) Write about setting time of concrete. (2M)
- c) Mention the different types of NDT tests. (2M)
- d) List out the factors in the choice of mix proportions. (2M)
- e) What is Poisson's ratio? (2M)
- f) What is self consolidating concrete? (3M)

**PART -B**

2. a) Write about specific gravity test and bulk density test of Coarse aggregate. (7M)
- b) Write about plasticizers and super plasticizers. (7M)
3. What is workability and how measurement of workability can be done by various tests? (14M)
4. a) Mention the different curing methods. (7M)
- b) What are the different Non-destructive methods? Explain any one. (7M)
5. a) Describe the relation between creep and shrinkage with a neat sketch. (7M)
- b) Discuss the relation between creep and time. (7M)
6. Design a concrete mix for characteristic strength of 35MPa at 28 days. The specific gravity of FA and CA are 2.65 and 2.70 respectively. A slump of 70mm is necessary. The specific gravity of cement is 3.15. Assuming the necessary data design the mix as per IS code method. (14M)
7. a) Write about high density concrete. (7M)
- b) Explain about light weight concrete? (7M)

**II B. Tech II Semester Regular/ Supplementary Examinations, April/May - 2019**  
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 (Civil Engineering)

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 2. Answer **ALL** the question in **Part-A**  
 3. Answer any **FOUR** Questions from **Part-B**

**PART -A**

- |       |  |    |
|-------|--|----|
| 1. a) | Name any four mineral admixtures.  | 2M |
| b)    | What is significance of workability?                                     | 3M |
| c)    | What is Abram's law?   | 2M |
| d)    | Define secant modulus of concrete.                                       | 2M |
| e)    | Differentiate between impermeable and durable of concrete.               | 3M |
| f)    | Difference between High Strength Concrete and High Performance Concrete. | 2M |

**PART -B**

- |       |  |     |
|-------|--|-----|
| 2. a) | What is consistency of cement and how it is tested?  | 7M  |
| b)    | Explain about alkali aggregate reaction and what precautions are necessary to minimize it.   | 7M  |
| 3. a) | Define workability and explain how it is going to be measured in terms of slump test.  | 7M  |
| b)    | Explain the effect of time and temperature on workability of concrete.   | 7M  |
| 4. a) | Explain how the splitting tensile strength relates to the modulus of rupture.  | 7M  |
| b)    | Explain how water cement ratio influences the strength of the cement paste matrix.   | 7M  |
| 5. a) | What is truly elastic material? Explain about non linearity of the stress strain relationship in concrete.   | 7M  |
| b)    | What are the typical ranges of drying shrinkage strain and creep strain in concrete, What is their significance?   | 7M  |
| 6.    | Design a M30 grade concrete mix by BIS method with the following data: Specific gravity of cement, Coarse aggregate and Fine aggregate are: 3.06, 2.50 and 2.60 respectively. Water absorption for coarse aggregate and fine aggregate are 0.70 and 0.60 percentage respectively. Free moisture Nil. Degree of quality control good and exposure moderate. Determine the quantities of ingredients in kg/m <sup>3</sup> of concrete. | 14M |
| 7. a) | What are the various methods of producing lightweight aggregate artificially?  | 7M  |
| b)    | What are the advantages of using ready mixed concrete instead of site mixed concrete.  | 7M  |

**Note : Only IS10262: 2009 mix design related graphs allowed**

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**PART -A**

- |       |   |    |
|-------|---|----|
| 1. a) | What do you mean by ettringite?                                   | 2M |
| b)    | Define slump loss.  | 2M |
| c)    | How strength and porosity related to each other?                  | 2M |
| d)    | Define poisson's ratio of concrete.                               | 3M |
| e)    | Explain the effect of water cement ratio in strength of concrete. | 3M |
| f)    | What is saponification?   | 2M |

**PART -B**

- |       |   |     |
|-------|---|-----|
| 2. a) | Explain about the reactions of hydration of the main compounds in Portland cement.  | 7M  |
| b)    | Explain about important reasons why it is desirable to use pozzolanic admixtures in concrete.   | 7M  |
| 3. a) | What are the various factors affecting workability.   | 7M  |
| b)    | What are the special features of transportation of ready mixed concrete from the plant to the site?   | 7M  |
| 4. a) | Split tensile test is a direct test or indirect test, Explain with a neat sketch.   | 7M  |
| b)    | Explain about ultra pulse velocity test to determine the quality of concrete.   | 7M  |
| 5. a) | Draw a typical stress strain curve of concrete and from that find the different types of static elastic moduli.   | 7M  |
| b)    | Explain about the factors affecting drying shrinkage.   | 7M  |
| 6.    | Design a M20 grade concrete mix by BIS method with the following data: specific gravity of cement, coarse aggregate and fine aggregate are: 3.05, 2.60 and 2.62 respectively. Water absorption for coarse aggregate and fine aggregate are 0.70 and 0.60 percentage respectively. Free moisture Nil. Degree of quality control good and exposure moderate. Determine the quantities of ingredients in kg/m <sup>3</sup> of concrete | 14M |
| 7.    | Explain about the following concretes and also write at what circumstances these are used.  | 14M |
|       | a) Self Consolidating Concrete    b) Self Healing Concrete  |     |

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**PART -A**

- |       |  |    |
|-------|--|----|
| 1. a) | Define specific gravity.                       | 2M |
| b)    | Why internal vibrators are used in concrete?   | 2M |
| c)    | Define water cement ratio.                     | 2M |
| d)    | What is plastic shrinkage cracking?            | 2M |
| e)    | Difference between nominal mix and design mix. | 3M |
| f)    | What is artificial aggregate?                  | 3M |

**PART -B**

- |       |  |     |
|-------|--|-----|
| 2. a) | Explain the importance of Bogues compound in ordinary Portland concrete.   | 7M  |
| b)    | Explain about the fineness modulus of coarse aggregate.  | 7M  |
| 3. a) | Explain briefly about Rheology of concrete. Explain the factors affecting Rheology.  | 7M  |
| b)    | Explain in detail how workability is measured by compaction factor test.   | 7M  |
| 4. a) | Explain about the relationship between compressive and tensile strength of concrete.   | 7M  |
| b)    | Explain about rebound hammer test to determine the quality of concrete.  | 7M  |
| 5. a) | What is modulus of elasticity of concrete? Explain the difference between the dynamic and static moduli of elasticity of concrete.   | 7M  |
| b)    | What is creep of concrete? Explain about the factors affecting creep of concrete.  | 7M  |
| 6.    | Design a M25 grade concrete mix by BIS method with the following data: specific gravity of cement, Coarse aggregate and fine aggregate are: 3.10, 2.55 and 2.60 respectively. Water absorption for coarse aggregate and fine aggregate are 0.80 and 0.60 percentage respectively. Free moisture Nil. Degree of quality control good and exposure moderate. Determine the quantities of ingredients in kg/m <sup>3</sup> of concrete. | 14M |
| 7. a) | What is Fibre reinforced concrete and write about its applications.  | 7M  |
| b)    | Explain about the factors which control the performance of HPC.  | 7M  |

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**PART -A**

- |       |   |    |
|-------|---|----|
| 1. a) | Define Fineness Modulus.                      | 2M |
| b)    | Write about Shotcrete Concrete.               | 2M |
| c)    | What is air entrainment in concrete?          | 2M |
| d)    | Differentiate between swelling and shrinkage. | 3M |
| e)    | Explain characteristic strength.              | 3M |
| f)    | What is aspect ratio?                         | 2M |

**PART -B**

- |       |  |    |
|-------|--|----|
| 2. a) | Explain about important reasons why it is desirable to use pozzolanic admixtures in concrete.  | 7M |
| b)    | Define the terms grading and maximum aggregate size use in concrete technology. Discuss the reason why grading limits are specified. | 7M |
| 3. a) | Compare the various factors which affect the workability of concrete.  | 7M |
| b)    | Define the following phenomena, and give their significance and factors affecting them: segregation and bleeding.                    | 7M |
| 4. a) | Explain the principles behind the test procedures of Schmidt hammer test and Ultra pulse velocity test.                              | 7M |
| b)    | What do you understand by curing of concrete and what is the significance of curing.   | 7M |
| 5. a) | Discuss about the beneficial and harmful effects of creep of concrete.   | 7M |
| b)    | From typical stress strain curve for concrete how would you determine the dynamic modulus of elasticity.                             | 7M |
| 6. a) | Explain importance of mix design in concrete.  | 7M |
| b)    | Discuss the step by step procedure of mix design by BIS method.  | 7M |
| 7. a) | What is polymer reinforced concrete and what are different types of polymers used in concrete.                                       | 7M |
| b)    | What are the various quality control tests to be done to ensure good performance of polymer concrete?                                | 7M |

**Note : Only IS10262: 2009 mix design related graphs allowed**

**II B. Tech II Semester Supplementary Examinations, November - 2018****CONCRETE TECHNOLOGY**

(Civil Engineering)

Time: 3 hours

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 2. Answer **ALL** the question in **Part-A**  
 3. Answer any **FOUR** Questions from **Part-B**

**PART -A**

1. a) Write about deleterious substance in aggregate. (2M)
- b) What is ready mixed concrete? (3M)
- c) What is Gel-Space ratio? (2M)
- d) Write about creep of concrete. (3M)
- e) What is durability of concrete? (2M)
- f) Write about no fines concrete. (2M)

**PART -B**

2. a) What is gap graded and well graded aggregate as per IS CODE? (7M)
- b) What are the mineral and chemical admixtures? Explain any two admixtures with example (7M)
3. a) Write the steps in the manufacture of concrete. (7M)
- b) What is segregation and bleeding? (7M)
4. a) What are the different tests of hardened concrete? Explain any one test (7M)
- b) Write about water cement ratio and Abram's law with neat sketches (7M)
5. What is shrinkage of concrete? What are the different types of shrinkages? Explain (14M)
6. Design a concrete mix for characteristic strength of 30MPa at 28 days with a standard deviation of 5MPa. The specific gravity of FA and CA are 2.60 and 2.70 respectively. A slump of 60mm is necessary. The specific gravity of cement is 3.15. Assuming the necessary data design the mix as per IS code method. (14M)
7. a) What is a Fibre Reinforced concrete? What are the factors affecting FRC? (7M)
- b) Write the different fresh property tests of self consolidating concrete. Discuss any one method with sketch (7M)



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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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**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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**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?

