

 JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE	<b>Jaipur Engineering college and          research centre, Shri Ram ki Nangal,          via Sitapura RIICO Jaipur- 302 022.</b>	<b>Academic year-2020-21</b>
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## CIVIL ENGINEERING DEPARTMENT

### ASSIGNMENT-1 CONCRETE TECHNOLOGY

1. What is cement? What are its important properties?
2. Explain the functions of cement ingredients.
3. What is the role of water to cement ratio in the strength of concrete?
4. Differentiate between Segregation and Bleeding?
5. Explain the ideas/choices behind the mix proportioning? Write the steps involved in the mix design as per IS 10262:2019?
6. What is permeability? Discuss the factors influence permeability?
7. Discuss various factors affecting workability property of fresh concrete?
8. Listed different types of NDT with their application and uses?
9. Classify the aggregate categories according to the different criteria?
10. Explain various methods of placing and transportation of concrete with their suitability
11. Discuss the durability of concrete. Write various factors affecting on it particular effect of water/cement ratio.
12. What do you mean by durability of concrete? Explain various causes of deterioration.
13. The process of hardening the concrete by keeping its surface moist is known.
  - (a) placing
  - (b) wetting
  - (c) curing
  - (d) compacting
14. Placing of concrete should preferably be done at a temperature of
  - (a) 0°C
  - (b) 10°C
  - (c) 27 ± 2°C
  - (d) 20°C
15. The water cement ratio is expressed by
  - (a) volume
  - (b) weight
  - (c) density
  - (d) none of the above
16. The approximate ratio of concrete strength at 7 days to its strength at 28 days is
  - (a) (3/4)
  - (b) (2/3)
  - (c) (1/2)
  - (d) (1/3)
17.  $\Sigma(\text{curing period} * \text{temperature})$  is known as
  - (a) curing



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- (b) maturity
  - (c) shrinkage
  - (d) none of the above
18. Minimum water-cement ratio required for a workable concrete is
- (a) 0.3
  - (b) 0.4
  - (c) 0.5
  - (d) 0.6
19. workability of concrete is influenced most by its
- (a) cement content
  - (b) aggregate-cement ratio
  - (c) water-cement ratio
  - (d) water content
20. The process of mixing some mortar in the mixer at the beginning of the first batch concrete mixing is called
- (a) buttering
  - (b) borrowing
  - (c) initiating
  - (d) accelerating
21. Specific gravity of cement is
- (a) 1.15
  - (b) 2.15
  - (c) 3.15
  - (d) none of the above
22. Addition of pozzolanas into concrete mixes improves
- (a) workability
  - (b) resistance to chemical attack
  - (c) both of above
  - (d) none of the above
23. workability of concrete is increase when
- (a) when angular aggregates are use
  - (b) rounded aggregates are use when
  - (c) flacky aggregates are use
  - (d) none of the above
24. Structure of hydrated cement



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25. Basic compounds of cement/ raw material used for the production of cement
26. C-S-H gel
27. Heat of hydration with various reactions.
28. Gel-space ratio
29. Name the physical and chemical properties of the aggregate?
30. Describe the grading of aggregates as per IS 383:2016 specifications.
31. Classify the aggregate according to the different criteria?
32. Explain about manufacturing sand properties; also compare it with natural sand.
33. Explain the standard method for the determination of physical properties of the aggregates?
34. What do you understand by hydration of cement and also explain its basic compounds?
35. What do you mean by Grade of Concrete?
36. What is the role of water to cement ratio?
37. Differentiate between w/c & w/cm ratio?
38. Define the following term?
  - a. Workability
  - b. Air content
  - c. Flow ability
  - d. Viscosity
39. Differentiate the following terms:
  - a. Segregation and Bleeding
  - b. Creep and Shrinkage
40. Discuss the various factors affecting workability property of fresh concrete?
41. What do you mean by water content in concrete mix?
42. How the quality of water affects the properties of concrete?
43. What is permeability? Discuss the factors influence permeability?

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44. What is NDT? Why these tests have importance in field?
45. What is aggregate-cement interface and how its affect the properties of concrete?
46. Describe the standard tests on fresh and hardened concrete as per IS code?
47. Listed different types of NDT with their application and uses? 48. Design M30 concrete by using OPC cement as per the specification given in IS 10262:2019?
49. Design M55 concrete by using PPC cement as per the specification given in IS 10262:2019?
50. Discuss physical properties of aggregates to be used in cement concrete?