

## ADVANCED CONSTRUCTION TECHNIQUES & EQUIPMENTS

Time Allowed: 3 Hours

Full Marks: 70

**Answer to Question No.1 is compulsory and to be answered first.**

**This answer is to be made in separate loose script(s) provided for the purpose.**

**Maximum time allowed is 45 minutes, after which the loose answer scripts will be collected and fresh answer scripts for answering the remaining part of the question will be provided.**

**On early submission of answer scripts of Question No.1,  
a student will get the remaining script earlier.**

**Answer any five questions from the rest.**

1. A. Answer the following questions (any ten): 10x1
- i) What is the diameter of tendon used in pre-stressed concrete (5/7/8/10)mm?
  - ii) Specific gravity of bentonite solution \_\_\_\_\_.
  - iii) Forms are moulds to receive concrete in its' \_\_\_\_\_ form.
  - iv) The formwork from the slabs excluding props, can be removed only after – (a) 3 day (b) 7 days (c) 14 days (d) 21 days.
  - v) \_\_\_\_\_ frames are faster to erect compared with reinforced concrete frames in multistoried buildings.
  - vi) Prefabricated construction reduce energy consumption. (True/False)
  - vii) One of the advantages of prefabricated construction is increase of construction waste. (True/False)
  - viii) Capacity of Transit mixers \_\_\_\_\_.
  - ix) Earthmoving equipments are – (a) Tower cranes (b) JCB (c) Dumpers (d) Derricks.
  - x) A dump truck is also called \_\_\_\_\_.
  - xi) Length of conveyor is about \_\_\_\_\_.
  - xii) Tower cranes are preferably use for structures above \_\_\_\_\_.
  - xiii) A scraper is a combination of loading and \_\_\_\_\_ machine.
  - xiv) The equipment used for cement concrete pavement construction include – (a) batching device (b) concrete mixers (c) vibrators (d) tools & plants.
  - xv) The equipment is used for bituminous pavement construction include – (a) Hot mix plant (b) Bitumen distributor (c) paver finisher (d) all the above.
- B. Answer any five questions: 5x2
- i) What are the various concreting equipments?
  - ii) State the capacity & uses of concrete mixers.
  - iii) What are the types of concrete vibrator?
  - iv) State the use of different vibrators.
  - v) What do you mean by wall claddings?
  - vi) What is Power shovel?
  - vii) What are the uses of Tower Cranes?
  - viii) State the uses of Derricks.
2. Write short notes on – (a) Steel fiber (b) Glass fiber (c) Carbon fiber. 3+4+3
3. a) Write the properties of artificial timber.  
 b) Write the uses of artificial timber.  
 c) State the procedure of RMC by the help of a flow chart. 3+3+4

4. a) What is Prestressing? What are the types of Prestressing?  
 b) What is the difference between pretensioning & post tensioning?  
 c) Describe how underwater concreting is done by the help of Tremie method? 3+3+4
5. a) Write short notes on - (i) Roller compacted concrete, (ii) Steel Fiber Reinforced Concrete  
 b) What do you mean by the term Guniting or Shotcreting? What are the techniques of shotcreting? (2+3)+5
6. a) What are the advantages of Pre-stressed method over conventional method.  
 b) What do you mean by RMC?  
 c) State the concept of Green concrete and Mass concrete. 4-2-4
7. a) Briefly state different conveying equipments.  
 b) What are the advantages and uses of Belt conveyor?  
 c) Write short note on Dumper.  
 d) What are the components of Derricks? On what purpose it is used? 2+3-2+3
8. Write short notes on the followings:  
 a) Steel formwork 5x2  
 b) Slip Formwork  
 c) Tubular Formwork  
 d) Belt Conveyors  
 e) Use of Lifts
9. a) Write down the name of some excavation equipment.  
 b) What is Scraper? Name the types of Scrapers.  
 c) What is Grader? State its use. 3+4-3
10. a) Write down the name of various types of compacting equipments used for construction purpose.  
 b) Write short notes on - (i) Sheep footed rollers (ii) Pneumatic rollers. 4+6

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