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**END SEMESTER EXAMINATION, NOVEMBER-2018**

Semester – 5th

Subject Code : CT-501

**CONSTRUCTION TECHNOLOGY**

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

**Instructions :**

1. All questions of PART-A are compulsory.
2. Answer any five questions from PART-B.

**PART - A**

Marks – 25

1. Fill in the blanks :

1 × 10 = 10

(a) Cross slope provided to the road surface to drain off rain water is known as \_\_\_\_\_.

(b) Length of road visible ahead to the driver at any point along the road is known as \_\_\_\_\_.

[Turn over

- (c)                      Width of single lane road in meter is                     .
- (d) Intermediate sight distance is                      times stopping sight distance.
- (e)                      Minimum length of overtaking zone is                      times overtaking sight distance.
- (f) Value of broad gauge in mm is                     .
- (g) Value of reaction time of driver in seconds to calculate stopping sight distance as per IRC is                     .
- (h) Rise of outer edge of pavement with respect to inner edge to counter act centrifugal force is known as                     .
- (i) Structure built to span physical obstacles without closing the way underneath such as a body of water, valley or road for the purpose of providing passage over the obstacle is known as                     .
- (j) Human made channels for conveyance of water are known as                     .

2. Write true or false : 1 × 10 = 10
- (a) Gauge is the centre to centre distance between two rails.
- (b) As the radius of horizontal curve increases, centrifugal force decreases.
- (c) As the speed of vehicle increases, frictional resistance of pavement also increases.
- (d) At horizontal curve, purpose of camber is served by superelevation.
- (e) If the cross slope of the country is 0-10% then it is classified as plain terrain.
- (f) Width of road on horizontal curve is less compared to straight road.
- (g) The height of eye level of driver above road surface is 1.2m while measuring stopping sight distance along the road.
- (h) Too steep camber is recommended for quick removal of rain water from pavement surface.
- (i) Uniform gauge adopted all over the country is narrow gauge.
- (j) Wooden sleepers satisfy all the requirements of an ideal sleeper.



3. Choose the correct answer :

1×5=5

(a) Width of shoulder as per IRC is

- (i) 1m
- (ii) 2m
- (iii) 2.5m
- (iv) 3m

(b) Wheels of the train are coned at a slope of

- (i) 1 in 10
- (ii) 1 in 20
- (iii) 1 in 30
- (iv) 1 in 40

(c) Type of rail section that is adopted nowadays is

- (i) Double headed
- (ii) Bull headed
- (iii) Flat footed
- (iv) None of these

(d) Tensile strength of the rail ( $\text{kg}/\text{cm}^2$ ) should not be less than

- (i) 50
- (ii) 72
- (iii) 100
- (iv) 125

(e) When rail ends rest on a single sleeper it is called

- (i) Supported joint
- (ii) Suspended joint
- (iii) Bridge joint
- (iv) None of these.

#### PART - B

Marks - 45

4. (a) What are the objects of providing super-elevation? 3

(b) What are the various components of bridge structure? 3

(c) What are the factors to be considered while selecting site for a bridge? 3

5. (a) What are the various types of rail joints? 3

(b) What are the various methods of welding of rails? 3

(c) What are the different types of rail failures? 3

6. (a) What are the recommendations of Jayakar Committee ? 3
- (b) Give the comparison between different rail sections. 3
- (c) What are the advantages and disadvantages of wooden sleepers ? 3
7. (a) Describe culvert. 3
- (b) Explain the components of gravity dam. 3
- (c) What are the forces acting on gravity dam ? 3
8. (a) Write the expression for stopping sight distance and explain various symbols used. 3
- (b) What are the objects of extra widening of pavement on horizontal curves ? 3
- (c) Give the classification of canal based on the function. 3
9. (a) Draw the cross-section of railway track. 4
- (b) What are the factors to be considered while selecting site for a dam ? 5

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(6)

10. (a) Explain different types of canal lining. 5
- (b) What are the disadvantages of providing too steep camber ? 4

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(7)

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