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Question Paper Code: 50134

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Civil Engineering

15UCE304 - HIGHWAY AND RAILWAY ENGINEERING

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. While calculating the overtaking sight distance, the height of the object above road surface, is assumed
 - (a) 50 cm
 - (b) 100 cm
 - (c) 120 cm
 - (d) 150 cm
2. Minimum stopping distance for moving vehicles on road with a design speed of 80 km/hour, is
 - (a) 80 m
 - (b) 100 m
 - (c) 150 m
 - (d) 200 m
3. Which of the following tests measure the toughness of road aggregates?
 - (a) crushing strength test
 - (b) abrasion test
 - (c) impact test
 - (d) shape test
4. Most suitable material for highway embankment is
 - (a) Granular soil
 - (b) Organic soil
 - (c) silt
 - (d) clay
5. The suitable surfacing material for a bridge deck slab is
 - (a) sheet asphalt
 - (b) mastic asphalt
 - (c) bituminous carpet
 - (d) rolled asphalt

6. The maximum spacing of construction joints in rigid pavement is
(a) 2.5 m (b) 3.5 m (c) 4.5 m (d) 5.5 m
7. In India, the first train was run between
(a) Bombay and Pune (b) Delhi and Bombay
(c) Delhi and Calcutta (d) Bombay and Thane
8. The place where a railway line and a road cross each other at the same level, is known as
(a) cross over (b) railway junction
(c) road junction (d) Level crossing
9. In India, usually plate laying is done by the method of
(a) American method (b) Telescopic method
(c) Side method (d) None of the above methods used
10. _____ signals are rectangular or fish tailed arm fixed to a vertical post.
(a) Flare signal (b) Semaphore
(c) Whistle (d) Fixed signal

PART - B (5 x 2 = 10 Marks)

11. State PIEV theory.
12. Mention the components of flexible and rigid pavements.
13. What is mud pumping?
14. What are the various gauges adopted by Indian Railways?
15. Define Crossings.

PART - C (5 x 16 = 80 Marks)

16. (a) Briefly explain the engineering surveys needed for locating a new highway. (16)
- Or
- (b) Explain the classification of urban roads in India. (16)
17. (a) Discuss the desirable properties of road aggregate. List the various test carried out on road aggregate and briefly mention the use of each test. (16)

Or

(b) Explain the penetration test and softening point test on bitumen. (16)

18. (a) Explain “Benkelman beam deflection” test procedure with neat sketches. (16)

Or

(b) Write the major defects in flexible pavements and their remedial measures. (16)

19. (a) Draw a typical cross section of a permanent way and indicate its components. Explain various functions of each component. (16)

Or

(b) What are the requirements of an ideal permanent way. (16)

20. (a) Enumerate the types and classification of signals with suitable sketch. (16)

Or

(b) Explain in detail about the various methods of plate laying in the construction of a railway track. (16)
