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Question Paper Code: 53104

B.E./B.Tech. DEGREE EXAMINATION, MAY 2018

Civil Engineering

15UCE304 - HIGHWAY AND RAILWAY ENGINEERING

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10x 1 = 10 Marks)

1. The Central road fund was formed in the year CO1- R
(a) 1982 (b) 1985 (c) 1876 (d) 1929
2. Minimum stopping distance for moving vehicles on road with a design speed of 80 km/hour, is CO1- R
(a) 80 m (b) 100 m (c) 150 m (d) 200 m
3. The method of design of flexible pavement as recommended by IRC is CO2- R
(a) Group index method (c) Benkelmen beam method
(b) CBR method (d) Westergaard method
4. The maximum thickness of expansion joints in rigid pavement is CO2- R
(a) 5 mm (b) 25 mm (c) 50 mm (d) 100 mm
5. The suitable surfacing material for a bridge deck slab is CO3- R
(a) sheet asphalt (c) bituminous carpet
(b) mastic asphalt (d) rolled asphalt

6. The maximum spacing of construction joints in rigid pavement is CO3- R
(a) 2.5 (b) 3.5 (c) 4.5 (d) 5.5
7. In India, the first train was run between CO4- R
(a) Bombay and Pune (c) Delhi and Calcutta
(b) Delhi and Bombay (d) Bombay and Thane
8. The place where a railway line and a road cross each other at the same level, CO4- R
is known as
(a) cross over (c) road junction
(b) railway junction (d) Level crossing
9. In India, usually plate laying is done by the method of CO5- R
(a) American method (c) Side method
(b) Telescopic method (d) None of the above methods used
10. _____ signals are rectangular or fish tailed arm fixed to a vertical post. CO5- R
(a) Flare signal (c) Whistle
(b) Semaphore (d) Fixed signal

PART – B (5 x 2= 10Marks)

11. How will you classify the urban roads? CO1- U
12. Define ESWL. CO2- U
13. What is mud pumping? CO3- U
14. What are the various guages adopted by Indian Railways? CO4- U
15. Define Crossings CO5- U

PART – C (5 x 16= 80Marks)

16. (a) Discuss in detail about the focus of various twenty year plans for a highway development in India. CO1-U (16)

Or

- (b) Explain the classification of urban roads in India. CO1 -U (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. CO2 -U (16)

Or

- (b) Design the flexible pavement for construction of new highway with the following data. CO2 -U (16)

Number of commercial vehicles as per last count = 1000 commercial vehicles

Period of construction = 3 years

Annual traffic growth rate = 8 %

Design CBR of subgrade soil = 10%

Category of road : National highways, two lane single carriage way

Design life : 15 Years

18. (a) (i) Distinguish the alternate bay and continuous bay methods of construction of cement concrete roads. CO3- U (10)

- (ii) Mention the various types of failure in flexible pavements. CO3- U (6)

Or

- (b) Write the major defects in flexible pavements and their remedial measures. CO3- U (16)

19. (a) Draw a typical cross section of a permanent way and indicate its components. Explain various functions of each component. CO4-U (16)

Or

- (b) What are the requirements of an ideal permanent way. CO4 -U (16)

20. (a) Enumerate the types and classification of signals with suitable sketch. CO5- U (16)

Or

(b) Explain in detail about the various methods of plate laying in the construction of a railway track. CO5- U (16)