Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 53104

B.E./B.Tech. DEGREE EXAMINATION, DEC 2020

Civil Engineering

15UCE304 -HIGHWAY AND RAILWAY ENGINEERING

(Regulation 2015)

(Use of IRC 37 is permitted)

Duration: 1.15 hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. ISD is – times SSD   CO1- R

    (a) 1   (b) 2   (c) b3   (d) 4

2. Where topography of place compels adopting steeper gradient than   CO1- R
    ruling gradient, _____gradient is used

    (a) Limiting   (b)Exceptional   (c)Minimum   (d)Zero

3. _____ bars are used across the longitudinal joints of cement concrete pavements   CO2- R

    (a) Tie   (b) Dowel

    (c) Stress reinforcement   (d) Temperature reinforcement

4. The aggregate crushing value of good aggregate acceptable for wearing   CO2- R
    surface should be

    (a) less than 30%   (b) More than 30%   (c) More than 40%   (d) Zero

5. When the crack pattern on a bituminous surface course is almost of the   CO3- R
    same pattern and location as the cracks of lower pavement layer the
    cracks are known as_____ crack

    (a) Reflection   (b) Alligator   (c) Longitudinal   (d) Depression

6. Diversion or removal of excess soil-water from the subgrade is termed as   CO3- R

    (a) Surface drainage   (b)Sub surface drainage

    (c) Special drainage   (d) Capillary cut off

7. Longitudinal movement of rail with respect to sleeper in track is known as   CO4- R

    (a) Kink   (b) Creep   (c) Coning   (d) Buckling

8. _____ are used in rail joints to maintain the continuity of rails.   CO4- R

    (a) Bearing plate   (b) Spikes   (c) Fish plate   (d) Bolt

9. Name the device which is used to ensure a mechanical relationship   CO5- R
   between setting of points and taking OFF of the corresponding signal

    (a) Stretcher bar   (b) Tappet   (c) Detector   (d) Point lock

10. First stop signal at a station is known as   CO5- R

    (a) Home signal   (b) Outer signal   (c) . Departure signal   (d) Starter signal

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11.	Briefly outline the main features of various road patterns commonly used.	CO1- U	(8)
12.	Narrate the step by step procedure involved in bituminous mix design.	CO2- App	(8)
13.	Describe the purpose and use of Benkelman Beam with neat sketches.	CO3- U	(8)
14.	Draw a typical cross section of permanent way and explain the functions of any two components of permanent way.	CO4- U	(8)
15.	Design all the elements required for a turnout of .1 in 8.5 taking off from a straight B.G. track with its curve starting from the toe of switch. i.e. tangential to the gauge face of the outer main rail and passes through theoretical nose of crossing, ie TNC .Given heel divergence = 11.4 cm. Assume suitable data if required	CO5- App	(8)

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