**18CE604**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **August, 2021** | **Civil Engineering** | | |
| **Sixth Semester** | **Highway Engineering** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | Write a short note on CRRI | CO1 | |  |
|  | b) | Define CRF | CO1 | |  |
|  | c) | Define super elevation | CO1 | |  |
|  | d) | Define sight distance | CO1 | |  |
|  | e) | Define Rotary | CO2 | |  |
|  | f) | Define Minimum Turning radius | CO2 | |  |
|  | g) | State the test used to determine wear and tear of the aggregate | CO3 | |  |
|  | h) | State the test used to determine grade of bitumen | CO3 | |  |
|  | i) | Sketch the typical cross section of a flexible pavement | CO4 | |  |
|  | j) | List out various steps involved in maintenance of rigid pavement | CO4 | |  |
| **Unit - I** | | | | | |
| 2. | a) | Discuss various road network patterns with neat sketch | CO1 | **5M** | |
|  | b) | Write a detailed note on various engineering surveys conducted for a highway | CO1 | **5M** | |
|  |  | **(OR)** |  |  | |
| 3. | a) | Write a detailed note on various highway cross section elements of highway | CO1 | **5M** | |
|  | b) | Derive an expression for over taking sight distance with neat sketch | CO1 | **5M** | |
| **Unit - II** | | | | | |
| 4. | a) | Write a detailed note on various road user characteristics to be studied in Traffic engineering. | CO2 | **5M** | |
|  | b) | Write a brief note on various methods of conducting spot speed studies and mention various uses of it | CO2 | **5M** | |
|  |  | **(OR)** |  |  | |
| 5. | a) | Explain Webster’s method of signal design in detail | CO2 | **5M** | |
|  | b) | Explain with the help of neat sketches, different types traffic signs. | CO2 | **5M** | |
| **Unit - III** | | | | | |
| 6. | a) | Write about aggregate impact test performed in the laboratory with neat sketch | CO3 | **5M** | |
|  | b) | Write about softening point test conducted on bitumen with neat sketch | CO3 | **5M** | |
|  |  | **(OR)** |  |  | |
| 7. | a) | Explain briefly various factors affecting design of flexible pavement | CO3 | **5M** | |
|  | b) | Write the various equations for stress calculation at interior edge and corner by Westergard. Also explain various terms involved. | CO3 | **5M** | |
| **Unit - IV** | | | | | |
| 8. | a) | Explain various steps involved in construction of cement concrete pavements in detail | CO4 | **5M** | |
|  | b) | What are the various types of rigid pavement failures? Explain briefly | CO4 | **5M** | |
|  |  | **(OR)** |  |  | |
| 9. | a) | Briefly explain various steps involved in construction of embankment and subgrade | CO4 | **5M** | |
|  | b) | Write a detailed note on maintenance of flexible pavement | CO4 | **5M** | |

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