Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April / May – 2017**

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| **Code :** | **14CE2014** | **Duration :** | **3hrs** |
| **Sub. Name :** | **TRANSPORTATION ENGINEERING** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Discuss in detail about NHAI and IRC. | CO2 | 10 |
| b. | Design the rate of super elevation for a horizontal highway curve of radius 500 m and design speed of 100 kmph. | CO2 | 10 |
| (OR) | | | | |
| 2. | a. | What is the role of highways in national development? | CO1 | 5 |
| b. | Illustrate with neat sketch about different types of camber. | CO1 | 5 |
| c. | Calculate the safe stopping sight distance for design speed of 50 kmph for  two-way traffic on a two lane road  two-way traffic on a single lane road | CO2 | 10 |
| 3. | a. | The speed of overtaking and overtaken vehicles are 70 and 40 kmph respectively on a two way traffic road. If the acceleration of overtaking vehicle is 0.99 m/sec2  Calculate safe overtaking sight distance?  Mention the minimum length of overtaking zone?  Draw a neat sketch of the overtaking zone and show the positions of the sight post.  If the same stretch of road is made one-way, calculate the new overtaking sight distance? | CO2 | 10 |
|  | b. | Find the minimum sight distance to avoid head on collision of two approaching cars at 90 kmph and 80kmph. | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | A national highway passing through rolling terrain in heavy rainfall area has a horizontal curve of radius 500 m. design the length of transition curve assuming suitable data. | CO2 | 10 |
|  | b. | Calculate the extra width of pavement required on a horizontal curve of radius 700 m On a 2 lane highway, the design speed being 80 kmph. Assume wheel base l = 6m | CO2 | 10 |
| 5. | a. | What are the reasons for providing extra widening on horizontal curves? | CO2 | 5 |
|  | b. | Differentiate Flexible & Rigid pavement | CO1 | 5 |
|  | c. | Explain Rails and its types with neat sketch. | CO1 | 5 |
|  | d. | What are the factors affecting selection of gauge? | CO1 | 5 |
| (OR) | | | | |
| 6. | a. | List the factors affecting overtaking sight distance. | CO2 | 5 |
|  | b. | Write about the different components of Flexible Pavement. | CO1 | 5 |
|  | c. | What are the benefits of Uni-gauge policy? | CO1 | 5 |
|  | d. | Define creep. Explain the different theories of creep. | CO2 | 5 |

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| 7. | a. | What are the functions of sleepers? | CO1 | 10 |
|  | c. | Explain the functional classification of railway stations. | CO1 | 10 |
| (OR) | | | | |
| 8. | a. | Explain the characteristics of different types of sleepers. | CO1 | 10 |
|  | c. | What are the facilities required in a railway station? | CO1 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | What are the factors affecting airport site selection? | CO3 | 10 |
|  | c. | Define the following   1. Runway 2. Taxiway 3. Apron 4. Hanger 5. Terminal building | CO3 | 10 |