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**Question Paper Code : 20273**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Fifth Semester

Civil Engineering

CE 6504 — HIGHWAY ENGINEERING

(Regulations 2013)

(Common to PTCE 6504 — Highway Engineering for B.E.(Part-Time)  
Third Semester — Civil Engineering — Regulations 2014)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List out both the Urban and Rural classification of Highways.
2. Write any four modal limitations of highway mode towards sustainability.
3. What are the types of curves in highway geometric design and write any two salient features of any one curve?
4. With neat sketches show the typical cross section of any one urban roads as per Indian Roads Congress (IRC) standards.
5. Differentiate between Rigid and Flexible pavements in pavement design.
6. Draw a typical Rigid Pavement with its vital components.
7. Differentiate between 'Geo-Textiles and Geo-Membrane' in highway construction.
8. List out the major construction machineries normally used at present in highway construction.
9. Define the term 'Pavement Serviceability Index' with its importance.
10. What do you mean by the term 'Highway Project Formulation'?

PART B — (5 × 13 = 65 marks)

11. (a) Write shortly the significance of 'Soil Suitability Analysis and Road Ecology' in highway Planning.

Or

- (b) Write in brief the history of road development in India after independence.
12. (a) Explain in brief the various classifications of rural roads with its salient components as per IRC standards with neat sketches.

Or

- (b) Explain shortly various special considerations to be given in design and construction of Hilly roads in highway design.
13. (a) Explain in brief various design principles to be adopted in flexible pavement design.

Or

- (b) Explain in detail the various design practices normally adopted in rigid pavement design as per IRC standards.
14. (a) Write in detail the different types of tests to be conducted to check the suitability of 'Aggregate Material' in highway materials.

Or

- (b) Discuss in brief the construction practice with modern material and methods to be adopted for a high type of bituminous pavement as per IRC standards.
15. (a) Explain in detail the pavement management system (PMS) with its effectiveness in pavement maintenance.

Or

- (b) Illustrate with neat sketches any four different types of pavement distress normally occur in flexible pavement with its preventive measures.

PART C — (1 × 15 = 15 marks)

16. (a) Explain in brief the modern methods of laying highway alignment being adopted at present with its merits and demerits.

Or

- (b) Write in detail the present status of highway drainage in Chennai city roads and list out the measures to be taken for effective removal of water from the pavement.