L

359

7E1812

Roll No. _____ Total No. of Pages: 3

7E1812

B. Tech. VII - Sem. (Main / Back) Exam., - 2024

Civil Engineering

7CE4-01 Transportation Engineering

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 What are the different modes of transportation?

Q.2 List out the various factors governing highway alignment.

Q.3 List out the various laboratory test of bitumen.

Q.4 Enumerate classification of roads as per Nagpur Road Plan in India.

Q.5 List out the various physical properties of stone aggregates.

Q.6 What are the objectives of camber?

Q.7 List out different type of sleepers used in railway.

Q.8 What are the basic function of ballast material in Railway line?

Q.9 What do you understand by runway?

Q.10 What is the difference in between port and harbors?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 What are the polices and goals of the Second Road Development Plan for 1961 - 1981?

Q.2 List out the desirable properties of road aggregates. Explain Aggregate Impact Value laboratory test of road aggregates with the help of neat diagrams.

Q.3 Calculate the safe stopping sight distance for design speed of 50 kmph. Assume a reaction time of 2.5 seconds, coefficient of friction of 0.35 -

(a) For two way traffic on two lane road.

(b) For two way traffic on one lane road.

Q.4 Write short notes on the following equipment's for highway construction -

(i) Bull dozer

(ii) Rollers

Q.5 Explain different types of rail fastenings in detail with neat sketch.

Q.6 Write a brief note on airport classification.

Q.7 Explain classification of various types of harbors, ports and docks.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 (a) Explain features of rural roads including those in (Pradhan Mantri Gram Sadak Yojna) (PMGSY).

(b) Write down the construction steps for gravel road in detail.

Q.2 (a) Give differences in between Bitumen and Tar.

(b) What do you understand by Flexible Pavement? Explain any one design method for Flexible pavement design.

Q.3 The design speed of highway is 80 kmph. There is a horizontal curve of radius 200 m on a certain locality. Calculate the super elevation needed to maintain this speed. If the maximum super elevation of 0.07 is not to be exceeded, calculate the maximum allowable speed on this horizontal curve as it is not possible to increase the radius. Safe limit of transverse coefficient is 0.15.

Q.4 (a) Explain the relative merits and demerits of different type of sleepers.

(b) Explain the various types of gauge use in railway.

Q.5 Write short notes on the followings -

(i) Apron

(ii) Runway

(iii) Hangers

(iv) Port

(v) Harbours

362

7E1813

Roll No. _____ Total No. of Pages: 2

7E1813

B. Tech. VII - Sem. (Main / Back) Exam., - 2024

Open Elective – I

7CE6-60.1 Environmental Impact Analysis

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 Define Environmental Impact Statement (EIS).

Q.2 Highlight some effects of noise on people.

Q.3 Describe the impact of any two water pollutants.

Q.4 What is land pollution?

Q.5 Differentiate air quality and air quality index.

Q.6 What do you understand by ecosystem imbalance?

Q.7 Mention the industrial policy of GoI and EIA.

Q.8 What is flora and fauna?

Q.9 Mention different classes of water.

Q.10 Define noise barriers.

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 Explain the effect of human activity on the environment.

Q.2 Summarize the guidelines of MoEF and CPCB on EIA.

Q.3 What do you understand by land pollution due to construction activities?

Q.4 Describe the following: (a) Basel Convention and (b) Copenhagen Conference.

Q.5 What are the impacts of development projects on water quality?

Q.6 Describe the environmental issues associated with thermal power plants.

Q.7 Discuss the role of an Environmental Engineer in the context of EIA.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 Explain the methodology of Environmental Impact Assessment in detail.

Q.2 How the environmental impact can be assessed on cultural and socio-environment?

Q.3 Define Biota. How can human activity create an impact on flora and fauna? Suggest a few mitigation measures and alternatives.

Q.4 Explain the noise scales and rating methods. How do we estimate the impacts of transportation noise?

Q.5 Describe any one case study of EIA in detail.

364

7E1712

Roll No. _____ Total No. of Pages: 3

7E1712

B. Tech. VII - Sem. (Re Back) Exam., - 2024

Civil Engineering

7CE4-01 Transportation Engineering

Time: 3 Hours **Maximum Marks: 120**

Min. Passing Marks: 42

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 Define alignment in brief. [2]

Q.2 Name different types of road pattern in India. [2]

Q.3 Define camber of road. [2]

Q.4 List out different types of gradients. [2]

Q.5 Define Flakiness index and Elongation index. [2]

Q.6 What is PQC and DLC? [2]

Q.7 What is embankment? [2]

Q.8 What is Roller compacted concrete road? [2]

Q.9 Name the components of Permanent way. [2]

Q.10 What is breakwater? [2]

PART – B [5×8=40]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 What are the requirements of ideal highway alignment? Also explain factors controlling the alignment. [8]

Q.2 Calculate OSD for a two-way Highway having design speed of 80 kmph and acceleration is 0.69. Assume any data if required. [8]

Q.3 Discuss superelevation of highway with neat diagram. Also prove that $e + f = \frac{v^2}{gR}$. [8]

Q.4 What are the desirable properties of aggregate? Also explain the test to determine hardness of aggregate. [8]

Q.5 Explain difference between rigid and flexible pavement in tabular form. Draw neat diagram also. [8]

Q.6 A pavement slab having width 4.5m and thickness 25cm design contraction joints, if (i) PCC used (ii) RCC used

(a) Coefficient of sub-grade friction = 1.5

(b) The allowable unit stress in tension in cement concrete = 0.8 kg/cm^2

(c) Permissible stress in steel in tension = 1400 kg/cm^2

For RCC 12 mm diameter bars @ 300mm c/c spacing has been used. [8]

Q.7 What are the factors to be considered while selection of site for airport? [8]

PART – C

[4×15=60]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any four questions

Q.1 The radius of a horizontal curve is 200 m, the total pavement width at curve is 7.0 m and superelevation is 7%. Design the transition curve length for a speed of 100 kmph. Assume pavement to be rotated about the inner edges. Also calculate the shift of the curve. Assume any data if required. [15]

Q.2 Explain steps involve in highway construction. What are the equipment's used in compaction of different layers of pavements? Explain in detail. [15]

Q.3 A CC pavement slab of thickness 22 cm is considered over a GSB having modulus of reaction 18 kg/cm^3. The maximum temperature difference between the top and bottom of the slab during summer day and night is found to be 20 °C, the design wheel load is 4500 kg, radius of contact area is 15cm, E value of CC is 3×10^5 kg/cm^2, Poisson's ratio is 0.15 and coefficient of thermal expansion of CC is 12×10^{-6} per °C and friction coefficient is 1.5. Find out stress due to load and temperature. Also find out worst combination of stress at the edge. $C_x = 1.05$ and $C_y = 0.9$. Transverse joints at 5.5 m interval whereas longitudinal at 4.2 m interval. [15]

Q.4 (a) Explain the term Superelevation. What is the objective to providing superelevation on curve of railway track? [8]

(b) Write short notes on – [7]

(i) Equilibrium Cant

(ii) Cant Deficiency

Q.5 (a) Describe various types of runway pattern with the help of neat sketches. [8]

(b) Write short notes on – [7]

(i) Hanger

(ii) Apron

367

7E1713

Roll No. _____ Total No. of Pages: 2

7E1713

B. Tech. VII - Sem. (Re Back) Exam., - 2024

Open Elective – I

7CE6-60.1 Environmental Impact Analysis

Time: 3 Hours **Maximum Marks: 120**

Min. Passing Marks: 42

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 Define EIA.

Q.2 Differentiate between EIS and EMP.

Q.3 Write two key features of Rio-Earth Summit.

Q.4 What is meant by AQI?

Q.5 List out four sources of water pollution.

Q.6 What are the noise scales?

Q.7 Differentiate between primary and secondary air pollutants.

Q.8 Write down four benefits of EIA.

Q.9 Name important methods of EIA.

Q.10 What are the steps in conducting an EIA study?

PART – B

[5×8=40]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 Explain the effects of human activity on environment and evolution of EIA in India.

Q.2 Describe the key features and decisions taken during Stockholm and Basal Convention.

Q.3 Write note on global climate change and ozone layer depletion.

Q.4 Explain the sources of land pollution and various practices adopted to control land degradation.

Q.5 Explain in detail various control measures for three major air pollutants.

Q.6 Describe the various steps in EIA process with the help of a flowchart.

Q.7 What are the types of checklists? Explain the descriptive checklist method.

PART – C

[4×15=60]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any four questions

Q.1 Explain in detail the structure and elements of EIA Report.

Q.2 Explain the methods of matrices and overlays along with their advantages & disadvantages.

Q.3 Describe the role of capacity building and public participation in improving EIA.

Q.4 What are the scope, purpose and objectives of EIA studies?

Q.5 Discuss about the socio-economic impacts associated with a thermal power plant.
