

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Scheme for Valuation/Answer Key

Scheme of evaluation (marks in brackets) and answers of problems/key

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: CE407

Course Name: TRANSPORTATION ENGINEERING - II

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

- 1 (a) 1. Rails-Steel girders for carrying load
 2. Sleepers-Members generally laid transverse to the rails
 3. Rail to sleeper fastenings-Fittings used to keep the rails in proper position (5)
Five points (one mark each)
 4. Ballast-Granular material placed below sleepers to transmit load
 5. Formation-Prepared surface which is ready to receive the ballast
- (b) Functions:
 - Provide hard smooth surface
 - Bear stresses
 - Minimum wear
 - Transmit load to sleeper**Four points (one mark each)** (10)
- Requirements
 - Should be of proper composition
 - Vertical stiffness should be high
 - Withstand lateral forces
 - Head must be deep enough
 - Web should be thick
 - Foot should be wide
 - Bottom of head and top of foot should be shaped to enable the fishplate in transmitting loads**Any six points (one mark each)**
- 2 (a) Weighted average speed 53.63 km.p.h.- 2marks, radius – 875m or 860m -1 (5)
 mark, equation of e – 1 mark, $e = 4.3$ cm or 4.4 cm– 1 marks
- (b) List out various type of gradients – 1 marks (10)
 Explanation of all 4 type of gradient – $1.5 \times 4 = 6$ marks
 Explain Grade Compensation – 2marks

Necessity of grade compensation– 1 marks

- 3 (a) Definition and characteristics- 2 mark, advantage- 2 mark (4)
 (b) Political (2) social (2) and economic growth (2) (6)
 (c) Any 5 factors (1 mark for each) (5)

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) Reception signal – 2 types – 2 marks (5)
 Departure Signal – 2 types – 2 marks
 Figure – 1 marks
 b) Classification of railway stations into 3 types namely way side, Junction (10)
 station, terminal station (classification – 1 marks)
 Explain each type of station with figures (3 x 3 = 9)
- 5 a) Scissors Cross over explanation – 3 marks, sketch – 2 marks (5)
 b) Listing out different systems – 6 marks (10)
 Working principle of absolute block system – 4 marks
- 6 a) Conventional Remedies- List any 4 - Proper Education, Punishable Action, (4)
 Rewards, Psychological approach, Propaganda campaign(2 marks)
 Advanced Remedial Aids –List any 4 - Automatic warning devices , Speed
 recorders, Electronic speed governors, Miscellaneous aids (2marks)
 b) Left hand turnout sketch – 3 marks (6)
 Marking components – 3 marks
 c) Any 5 – 5*1marks (5)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) List tunnelling methods (10)
 • Hard Rock (2 marks)
 • Soft Soil (2 marks)
 Discuss one in each case (2*3=6marks)
- b) Breakwaters - Necessity(2), Function (2) and Classification (6) (10)
- 8 a) (i) Lighting and Ventilation of tunnels – 5 marks (10)
 (ii) Lining of tunnels – 5 marks
- b) (i) Coastal currents – any 1 from silting, coastal erosion, littoral drift (2) (10)
 (ii) Tides – Types and generation (2) – use of tides in harbour designing(2)
 (iii) Wind and Waves (2) – uses in harbour designing (2)



- 9 a) various forces acting on breakwater – all 4 effects – 5 marks (5)
b) Wharf and Pier (2.5) Transit shed and ware house (2.5) (5)
c) For writing procedure of any one tunnelling method in soft soil with figure-8 marks (10)

For any four advantages – 2 marks

