Paper code

U-219-113(BE-F & FS).

Total No. of Questions – [8] Total No. of Printed Pages 2

G.R. No.	

DECEMBER 2019: END-SEM EXAM – Backlog Exam

S. Y. B. TECH. (Civil Engineering) (SEMESTER-I)

COURSE NAME: Infrastructure Engineering

COURSE CODE: CVUA21173

(2017 PATTERN)

Time: [**2 Hours**] [Max. Marks: **50**]

Instructions to candidates:

1) **Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Assume suitable data wherever required and state them clearly**

Q.1 a)Outline the importance of infrastructure engineering with reference to National Development (Minimum 6 points expected). [6 marks]

OR

b)Write six differences between roadways and railways. [6 marks]

Q.2 a) What is meant by 'ballast' (for a railway track)? State four types of ballast. State six requirements of good ballast. [6 marks]

OR

b)Briefly explain six requirements of a good (ideal) railway track. [6 marks]

Q.3 a) Calculate equilibrium super-elevation (in mm), and maximum permissible speed (in km/h). Given: (i)BG Track with 2 degree curve, (ii)Equilibrium speed 90 km/h, (iii)Sanctioned maximum speed 125 km/h. [6 marks]

OR

b)Explain alignment of a railway track using following points: Meaning, necessity, characteristics of good alignment, factors of selecting an alignment. [6 marks]

Q.4 a) Write two differences between each of the following: **(i)**Cable Stayed Bridge-Suspension Bridge, and (ii)Swing Bridge-Bascule Bridge. [4 marks]

OR

b) Why is drilling an essential step in tunneling? Explain briefly any one pattern of drilling with sketch. [4 marks]

Q.5 a) State whether 'True' or 'False'; giving justification. Marks will not be given if justification is not written. **(i)**Platform built along or parallel to shore is called jetty, **(ii)**Slipway consists of gently sloping rail track for launching ships, and **(iii)**Breakwater is a big wall constructed to resist tidal and wave forces. [6 marks]

b)What is meant by dredging work? State three advantages and three disadvantages of any one dredging method. [4 marks]

c)Describe with sketch natural harbor and artificial harbor. [4 marks]

OR

Q.6 a)Discuss briefly six factors to be considered while finalizing the site for a harbor. [6 marks]

b)Briefly explain four environment related concerns with reference to a proposed port. [4 marks]

c)Clearly explain 'primary dredging' with neat sketch. How is the dredged material disposed of? [4 marks]

Q.7 a)Discuss the effect of topography, soil characteristics and local meteorological conditions on the airport site selection/ airport design. [6 marks]

b)State two purposes of: (i)Runway strip, (ii)Design of Runway. [4 marks]

c)Explain briefly the procedure for deciding the runway orientation for an airport. [4 marks]

OR

Q.8 a) Length of an airport runway at MSL with standard temperature and zero gradients is 2 km. If site elevation is 330 m and effective gradient for runway is 0.25%, compute actual length of runway. Neglect temperature variations. [6 marks]

b) Define: airport reference point, clearway, landing strip, runway. [4 marks]

c) State two differences between: (i)Airport type 'A' – Airport type 'B', (ii)Parallel runways – Intersecting runways. [4 marks]

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