(1)

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002701

Dec. 2021

B.TECH. (CIVIL)-7TH SEM

Metro System and Engineering (CIVIL-OEC-26)

Time : 90 Minutes] [Max. Marks : 25

Instructions :

1. *It is compulsory to answer all the questions (1 mark each) of Part-A in short.*
2. *Answer any three questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) What are the various metro system type based on ridership considered by Ministry of Govt. of India? (1)

(b) What is DPR? What are the important aspects considered in DPR for Metro Project? (1)

(c) Which explosive is used in tunnel construction for metro using NATM method? (1)

(d) Define EIA study. (1)

(e) Which underground construction technique requires the installation of retaining walls and struts? (1)

(f) Maximum design speed and maximum operating speed for metro designated by DMRC is ? (1)

(g) What is TBM and what are the applications and limitations of TBM in underground construction? Answer briefly. (1)

(h) What is SCADA? (1)

(i) What is viaduct and which are the various girder types using construction of metro viaduct? (1)

(j) How many minimum points required for Gold certification of green building as recommended by India Green Building Council? (1)

PART - B

2. (a) Define NATM and Cut & Cover Methods briefly. Also write the application, advantage and disadvantages of both methods. (3)

(b) What is the difference in bottom - up and top - down methods of excavation? (2)

3. (a) Define the requirement of Metro system. What are the key considerations during planning and designing phase of proposed metro system? (2)

(b) Write down various construction steps in sequential manner for construction of elevated metro viaduct consisting precast box girders. (3)

4. What is green building, and how it is certified? Also write the important aspects considered in green building rating and rating levels as per Indian Green Building Council. (5)

5. (a) Define tunnel ventilation system (TVS) and write various techniques used in TVS. (3)

(b) Define various components including OHE, TSS and ASS in electricity transmission for metro system. (2)

6. (a) What are the various important aspects considered in EIA study for metro system? (2)

(b) What are the quality control parameters at various construction stages of metro system? (3)