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Reg. No. :

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**Question Paper Code: 99176**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Open elective

Computer Science and Engineering

19UCE976 - METRO SYSTEMS AND ENGINEERING

(Common to ECE, EEE, MECH,IT, Chemical, AGRI, BME,CSBS & Biotechnology  
Engineering branches)

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which one of the following cities does not have Metro Rail System in India? CO1- U  
(a) Lucknow                      (b) Nagpur                      (c) Hyderabad                      (d) Amritsar
2. \_\_\_\_\_ Metro is the largest and busiest metro in India. CO1- U  
(a) Mumbai                      (b) Kolkata                      (c) Delhi                      (d) None of the above
3. The first rapid transit network in the world was discovered in CO1- U  
(a) France                      (b) Netherlands                      (c) Britain                      (d) Germany
4. The height of a semaphore signal above the ground is CO1- U  
(a) 6.5m                      (b) 7.3m                      (c) 6.8m                      (d) 7.5m
5. Which of the following is an advantage of electric traction over other methods of traction? CO1- U  
(a) Faster acceleration                      (b) No pollution problems  
(c) Better braking action                      (d) All of the above
6. Which of the following is the voltage for single phase A.C. system ? CO1- U  
(a) 22 V                      (b) 440 V                      (c) 5 kV                      (d) 15 kV
7. The term \_\_\_\_\_ is used to mean the free passage of clean air in a structure CO1- U

- (a) Circulation                      (b) Ventilation                      (c) Dissipation                      (d) Condensation
8. For comfortable working, the \_\_\_\_\_ content should be limited to about 0.6% by volume. CO1- U
- (a) Oxygen                      (b) Hydrogen                      (c) Carbon monoxide                      (d) Carbon dioxide
9. The voltage rating of the transformer in a pole-mounted Sub Station is \_\_\_\_\_ CO1- U
- (a) 11 KV / 400 V      (b) 11 KV / 240 V      (c) 33 KV / 400 V      (d) None of the above
10. How many types of ecological pyramids are there CO1- U
- (a) 3                      (b) 2                      (c) 4                      (d) 5

PART – B (5 x 2= 10 Marks)

11. Write the difference between railway and metro CO1- U
12. Brief about viaduct spans CO1- U
13. What are the functions in OCC? CO1- U
14. Write minimum size of coach in metro train? CO4- U
15. Write about Carbon credits and clean air mechanics followed in metro projects CO5- U

PART – C (5 x 16= 80 Marks)

16. (a) Write down the different construction methods involved in metro Systems. CO1- App (16)
- Or
- (b) Elaborate about the initial surveys and investigations carried out in metro schemes CO2- App (16)
17. (a) Give a brief report about Traffic integration and multimodal transfers, which can be adopted at Madurai Metro Project ? CO2- Ana (16)
- Or
- (b) Explain the basic construction Quality and safety systems in metro? CO1- App (16)
18. (a) What are the Purposes of Platform Screen Doors in metro stations CO1- App (16)
- Or
- (b) Write down the requirements to establish Operational Control Centre in metro stations CO1- App (16)

19. (a) Describe in detail the tunnel ventilation that will be used for sanitary and mechanical purposes. CO1- App (16)
- Or
- (b) Describe how to use the escalators and lifts in metro stations. CO1- App (16)
20. (a) Explain the source of power supply for a metro project in more detail. CO1- App (16)
- Or
- (b) How much power would a metro station in Madurai City need to operate? Explain with all requirements and Power Sources CO1- App (16)

