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TDC (CBCS) Even Semester Exam., 2023

PHYSICS

(4th Semester)

Course No. : PHSSEC-401T

(Electrical Circuits and Network)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

SECTION—A

Answer any *fifteen* questions from the following : 1×15=15

1. What is the maximum voltage in DC?

2. Which current is used in home?

3. How is power related to Ohm's law?

4. What is the difference between AC and DC?

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5. Can current flow without voltage drop?

6. What do you mean by power factor of an AC circuit?

7. State the rules of Kirchhoff's laws for DC circuits.

8. Which AC value is most commonly used when analysing an AC circuit?

9. State the relation between impedance and capacitance.

10. Why are symbols used in electrical drawing?

11. Is single-phase generator AC or DC?

12. What are the examples of DC power?

13. Why is ground fault protection needed?

14. What is grounding and isolation?

15. Which device is used for overload?

16. How many HP can be used in single-phase AC motor?

17. What is star- and delta-wiring?

18. How many types of cable insulation are there?

19. Which instrument is used to measure power in AC circuit?

20. Can we use AC ammeter to measure DC current?

SECTION—B

Answer any *five* questions from the following : 2×5=10

21. State why AC is better than DC.

22. How is multimeter used as voltmeter and ammeter?

23. How many types of circuit combination are there?

24. What methods can be used to measure electrical power in DC series circuit?

25. State the difference between a schematic diagram and a diagram.

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26. State the principle of working of AC and DC generator.

27. Why does an inductor oppose AC current?

28. What are the two basic types of overload devices?

29. What is the advantage of PVC as cable insulation?

30. What is the DOL and VFD starter?

SECTION—C

Answer any *five* questions from the following : 5×5=25

31. What is a series-parallel circuit? Explain the rules regarding series and parallel circuits.

32. *(a)* Why do we use the shunt resistance in parallel and series with galvanometer?

(b) Why don't we call a galvanometer as an ammeter as both measures current?

33. What is the complex power in AC and how does it figure in power analysis?

34. *(a)* What are the basic fundamentals of AC circuit analysis?

(b) What are the three types of DC circuits?

35. *(a)* Why is transformer rating in kVA not in kW?

(b) Explain why DC is not used in transformer.

36. *(a)* State the difference between resistance and impedance.

(b) Why do we need electrical and electronic symbols and why are electrical symbols important?

37. Why is grounding important? What are the types of earthing? How does grounding work?

38. *(a)* State the differences between single-phase and three-phase inductor motor.

(b) What happens when a DC or an AC source is applied over to an inductor?

39. State the basic difference between wires and cables. What are the different uses of wire and cable? Why is it necessary to insulate the electric cables and wires?

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40. *(a)* How do you measure AC and DC voltage with a digital multimeter?

(b) What is the difference between solid cable and standard cable?

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