

B.A. / B.Com. / B.Sc. (NEP) Semester-II
SEC52 - Physics - Electrical Circuit & Network Skills

P. Pages : 2

Time : Two Hours



GUG/S/25/16443S

Max. Marks : 40

- Notes :
1. All questions are compulsory.
 2. Draw neat labelled diagram wherever necessary.
 3. Scientific calculator is allowed.

Either:

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|----|----|------|--|---|
| 1. | a) | i) | Explain the fundamental concepts of voltage, current, resistance and power in electrical circuits. | 4 |
| | | ii) | State and explain Ohm's Law. | 2 |
| | | iii) | Explain the series combination of resistance. | 2 |

OR

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|--|----|----|--|---|
| | b) | a) | Explain the difference between AC and DC electricity. | 2 |
| | | b) | Explain the concept of voltage drop in a DC circuit. | 2 |
| | | c) | What are single and three phase alternating current sources? | 2 |
| | | d) | Explain the principle of operation of a voltmeter. | 2 |

Either:

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|----|----|-----|---|---|
| 2. | a) | i) | What is an AC generator? Explain its construction and working? | 5 |
| | | ii) | Define conductance and write its mathematical formula. What factors affect conductance? | 3 |

OR

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|--|----|----|--|---|
| | b) | a) | Draw a schematic diagram of a simple power circuit. | 2 |
| | | b) | What is the significance of ladder diagrams in electrical circuits? | 2 |
| | | c) | Explain the significance of electrical drawings and symbols in electrical systems. | 2 |
| | | d) | Explain the working principle of a transformer. | 2 |

Either:

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|----|----|-----|---|---|
| 3. | a) | i) | Explain electric motors with their construction, working principle. | 4 |
| | | ii) | Explain construction and working of single phase motor. | 4 |

OR

- b) a) What is a light-emitting diode (LED), and how does it work? 2
- b) Define rectifier. Explain half wave rectifies. 2
- c) What is a Zener diode and how is it used in voltage regulation? 2
- d) What is a thermistor? Explain its two types? 2

Either:

- 4. a) i) Describe the construction, working principle and applications of relays. 4
- ii) What are overload devices ? Explain their construction and working principle? 4

OR

- b) a) What is a fuse? Explain in brief? 2
- b) What is a disconnecting switch? How does it work? 2
- c) What is ground-fault protection? Explain its significance? 2
- d) Define phase reversal and explain why it is dangerous. 2

5. Attempt **any eight** questions from the following.

- a) Name one active and one passive circuit component. 1
- b) What is the function of a galvanometer? 1
- c) What is multimeter? 1
- d) What is an electrical schematic? 1
- e) What is the unit of conductance? 1
- f) Draw symbol of capacitor and resistor. 1
- g) What is a diode? 1
- h) What is SI unit of inductance? 1
- i) What is a capacitive reactance? 1
- j) What is grounding? 1
- k) Name any two types of circuit breakers. 1
- l) What is a thermal relay? 1
