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**3rd Sem / Agri, Auto, Chem, P & P, Civil, Mech, Plastic,  
Prod, T&D, CNC, CAD/CAM, Found. & Forg, Metallurgy,  
Print Making Tech., Mech (Ad. Manu Tech.) Mech Engg  
(Fabrication Tech), Mech. Engg. (Prod.)**

**Subject:- Basics of Electrical and Electronics  
Engineering**

Time : 3Hrs.

M.M. : 100

### SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 The unit of electric current is : (CO1)  
a) Volt                      b) Ampere  
c) Watt                      d) Joule
- Q.2 A wattmeter is used to measure: (CO1)  
a) Energy                      b) Voltage  
c) Power                      d) Current
- Q.3 The phase difference between R and Y phase is: (CO4)  
a) 90                      b) 120  
c) 180                      d) 360
- Q.4 In a pure inductive circuit, voltage \_\_\_\_\_ current by \_\_\_\_\_ degrees: (CO2)  
a) lead, 90                      b) lag, 90  
c) lead, 180                      d) lag, 180
- Q.5 The maximum power in a single phase power sub circuit is \_\_\_\_\_ watt: (CO4)

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- a) 10                      b) 100  
c) 1700                      d) 3000
- Q.6 The primary purpose of earthing is: (CO6)  
a) Voltage Regulation      b) Current Regulation  
c) Safety                      d) Cost Saving
- Q.7 A diode has \_\_\_\_\_ terminals. (CO)  
a) 1                      b) 2  
c) 3                      d) 4
- Q.8 A trivalent impurity has \_\_\_\_\_ valence electrons. (CO7)  
a) 2                      b) 3  
c) 4                      d) 5
- Q.9 Two resistances of  $2\Omega$  and  $4\Omega$  are connected in parallel. Total resistance will be. (CO1)  
a)  $4/3\Omega$                       b)  $2\Omega$   
c)  $3/4\Omega$                       d)  $6\Omega$
- Q.10 E in ELCB stands for:  
a) Earth                      b) Electron  
c) Energy                      d) Electrode

### SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Define electric current? (CO1)
- Q.12 The unit of electrical energy is \_\_\_\_\_. (CO1)
- Q.13 The instrument used to measure voltage is called \_\_\_\_\_. (CO1)
- Q.14 List one difference between AC and DC? (CO3)
- Q.15 Give one advantage of electrical energy? (CO5)

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- Q.16 State Lenz's law? (CO3)  
 Q.17 Give any one cause of low power factor? (CO2)  
 Q.18 Define phase difference? (CO4)  
 Q.19 In pure resistive circuit, angle between voltage and current is \_\_\_\_\_. (CO2)  
 Q.20 Name one electrical accessory? (CO4)

### SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 List any ten applications of electrical energy? (CO1)  
 Q.22 How voltage and current in a circuit is measured? Explain with suitable connection diagram? (CO1)  
 Q.23 State and explain Faraday's law of electromagnetic induction? (CO3)  
 Q.24 Define: Frequency, Time Period, r.m.s. value, form factor, Ohm's law. (CO1)  
 Q.25 Draw and explain 3 phase star and delta connection along with various voltage and current relationship? (CO4)  
 Q.26 List and explain various methods of cooling of transformer? (CO3)  
 Q.27 Differentiate between single and three phase system? (CO4)  
 Q.28 Define: Auto Transformer, CVT, Transformation ratio, efficiency, flame proof motor. (CO3)  
 Q.29 Examine the importance of earth wire and neutral wire in a distribution system? (CO4)

- Q.30 Define motor? List six applications of induction motor? (CO5)  
 Q.31 How direction of rotation of 3 phase induction motor is reversed? Explain? (CO5)  
 Q.32 List possible causes of electric shock and discuss its treatment? (CO6)  
 Q.33 What is earthing? Why it is an essential part of an electrical installation? (CO6)  
 Q.34 Draw and explain V-I characteristics of P-N junction diode? (CO7)  
 Q.35 Explain construction of a thyristor (SCR) with neat sketch. (CO7)

### SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Define transformer? Explain construction and working of a single phase transformer with suitable diagram? (CO3)  
 Q.37 What are various wiring arrangements in an electrical installation? Give merits and demerits of each system? (CO4)  
 Q.38 Define electric shock? Discuss various approaches for prevention of electrical shock? (CO7)