

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE – APRIL - 2022**

ELEMENTARY CONCEPTS OF ELECTRICAL SYSTEMS

(Maximum Marks: 75)

(Time : 3 Hours)

PART–A

I. Answer all the following questions in one word or sentence. Each question carries 1 mark.

(9x1=9 marks)
Module Outcome Cognitive level

1	Define electric shock.	M 1.01	R
2	Define the term energy conservation.	M 1.04	R
3	List any two applications of electric heating.	M2.02	R
4	List any two industrial applications of dielectric heating.	M2.03	R
5	Match the following. (a) Electro polishing - (i) Separating metals. (b) Electro facing - (ii) Smoothing metal surfaces. (c) Electro paring - (iii) Hardening to increase durability.	M2.04	R
6	Define the term cell.	M3.01	R
7	Material whose resistance drops abruptly to zero below its critical temperature is called.....	M3.04	R
8	SI unit of magnetic flux density is.....	M4.01	R
9	State Lenz's law.	M4.02	R

PART B

II. Answer any Eight questions from the following. Each question carries 3 marks.

(8x3=24)
Module Outcome Cognitive level

1	List any six effects of electric shock.	M 1.01	R
2	Prepare the specification table of a domestic pump.	M 1.03	A
3	List any three energy saving tips for an electric lamp.	M1.04	R
4	Explain the descriptors in star labelling.	M1.04	U
5	Draw the schematic diagram of sodium vapour lamp.	M2.01	U
6	Write any three comparisons between primary and secondary batteries.	M3.01	U
7	List any three measures adopted for the maintenance of lead acid batteries.	M3.02	R

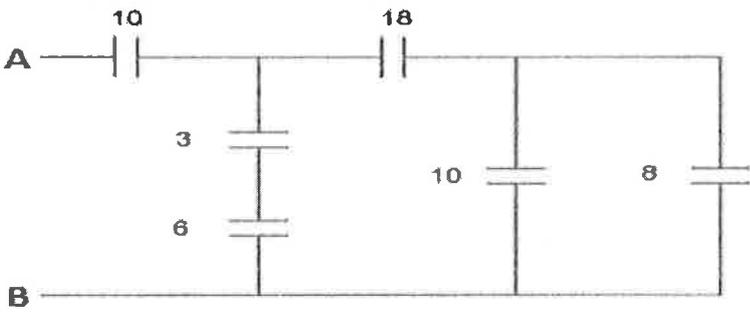
8	Explain the operation of parallel connected batteries with a circuit diagram.	M3.03	U
9	List any three properties of ferromagnetic materials.	M3.04	R
10	Draw a simple circuit and voltage-time characteristics for discharging a charged capacitor.	M4.04	U

PART C

III. Answer **all** questions from the following. Each question carries 7 marks.

(6x7=42marks)

		Module Outcome	Cognitive level
1	Explain the working of RCCB with a neat figure. OR	M 1.02	U
2	In a residential house, the following loads are connected. 40 W ceiling fans – 3 Nos. working 8 hours a day. 60 W lamps - 4 Nos. working 4 hours a day. 1 hp motor - 30 minutes a day. 360 W refrigerators - 24 hours a day. If the cost of electricity is Rs. 3/ unit, what will be the electricity charges for the month of January 2022?	M1.03	A
3	Explain the construction and working of fluorescent lamp with a neat figure. OR	M2.01	U
4	Summarize direct resistance heating with a neat figure.	M2.03	U
5	List any seven advantages of electric heating. OR	M2.02	R
6	Explain the basic principle of electrolysis.	M2.04	U
7	Explain the indications of a fully charged lead acid battery. OR	M3.02	U
8	List the classification of insulators based on temperature.	M3.04	R

9	<p>Two capacitors $12\ \mu\text{F}$ and $6\ \mu\text{F}$ are connected in parallel and a third of $36\ \mu\text{F}$ is connected in series with them. The combination is connected to 100V DC. Draw the arrangement of capacitors and find equivalent capacitance and charge.</p>	M4.04	A
OR			
10	<p>Find the equivalent capacitance of the circuit shown in fig. All capacitances are in μF.</p> 	M4.04	A
11	<p>Write any seven comparisons between electric and magnetic circuits.</p>	M4.02	U
OR			
12	<p>Derive the expression for the equivalent capacitance when a group of capacitors are connected in parallel.</p>	M4.04	U
