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

FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING

[Maximum Marks: 75] [Time: 3 Hours]

(PART-A)

I. (Answer all the following questions in one word or one sentence)

 $(9 \times 1 = 9 \text{ Marks})$

Module Outcome Cognitive level

1.	If the length of a material is doubled then the value of resistance		
	will be	M1.01	U
	A) Doubled C) Remains the same		
	B) Halved D) None of these		
2.	Define the term frequency related to AC wave form.	M1.04	R
3.	Write the expansion for MCB.	M2.01	R
4.	Name the commercial unit for electrical energy.	M2.03	R
5.	Write the equation for single phase active power.	M2.02	R
6.	Define the term turns ratio of transformers.	M3.04	U
7.	Write the units for inductance and capacitance.	M3.03	R
8.	Draw the symbol of a PNP transistor.	M4.03	R
9.	A—————————————————————————————————————	M4.04	U
	Find the output Y, if A=1 and B=0		

(PART-B) II. (Answer any *eight* questions from the following)

 $(8 \times 3 = 24 \text{ Marks})$

Module Outcome Cognitive level

1.	Explain laws of resistance.	M1.01	U
2.	Define the following terms	M2.02	U
	(i) Active power (ii) Reactive power (iii) Apparent power		
3.	Classify conduit type wiring and write short note on each type.	M2.01	U
4.	List out any three safety precautions to be followed while handling electricity.	M2.04	R
5.	Describe the operation of ELCB.	M2.01	U



Write the value of resistance with following colour combination. https://www.gptcthirurangadi.in 6. (i) Red, Yellow, Orange, Gold (ii) Brown, Black, Red, Gold Draw the reverse characteristics of zener diode and explain its M4.02 IJ 7. working. Explain the operation of two input NAND gate with symbol and truth R 8. M4.04 table. U 9. Draw the input and output wave forms of a half wave rectifier. M4.01 List out any six applications of diode. M4.01 R

(PART-C) III.(Answer all questions. Each question carries seven marks)

State Faraday's laws of electromagnetic induction and mention the

(6 x 7 = 42 Marks)

Module Outcome Cognitive level

M1.03

difference between statically induced emf and dynamically induced emf. OR Derive the expression for equivalent resistance of a circuit with M1.02U 2. resistors R_1 , R_2 , and R_3 are in series. 3. Find equivalent resistance of the given circuit. M1.02 Α **-√√** 4 ohm 5 ohm 6 ohm OR M1.024. Α A 100W, 250V lamp connected in series with 100W, 200V lamp across 250V supply. Calculate circuit current. 5. A residential building uses following devices in a day M2.03A A) 4 tube lights 40Watts working for 5 hours a day. B) 2 filament lamps of 60 Watts working for 8 hours a day. C) Water pump of 0.5 kilo watts working for 3 hours a day. Calculate energy consumption per day. OR A 700W, 5A single phase induction motor is connected to a 230V M2.02 6. A supply. Find the following parameters.

(iv) Power factor

(iii) Apparent power

Active power

Reactive power

(i) (ii)



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7.	Explain self inductance and mutual inductance of a coil. OR	9 F _{M3:03}					
8.	Compare wire wound resistors and carbon composition resistors. (Write any four points)	M3.01	U				
9.	Describe the constructional details and advantages and disadvantages	M3.03	U				
	of a electrolytic capacitor.						
	OR						
10.	Derive the expression for equivalent capacitance if two capacitors C_1 and C_2 are connected in series.	M3.02	U				
11.	Explain in operation of bridge rectifier with the circuit diagram and wave forms.	M4.01	U				
12.	OR Explain the operation of transistor as an amplifier.	M4.03	U				
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