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**Barasat, Kolkata -700125**

**BRAINWARE UNIVERSITY**

**Term End Examination 2023**

**Programme – Dip.CSE-2022/Dip.ME-2022/Diploma in Robotics & Automation-2022/Dip.EE-2022/Dip.CE-2022**

**Course Name – Fundamentals of Electrical & Electronics Engineering**

**Course Code - ES201**

**( Semester II )**

**Full Marks : 60**

**Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

**Group-A**

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

(i) Choose out of the following, which one is not a source of electrical energy?

- |                  |              |
|------------------|--------------|
| a) Solar cell    | b) Battery   |
| c) Potentiometer | d) Generator |

(ii) Write, when a silicon diode is forward biased, what is VBE for a C-E configuration.

- |                         |                    |
|-------------------------|--------------------|
| a) voltage-divider bias | b) 0.4 V           |
| c) 0.7 V                | d) emitter voltage |

(iii) Recall, what will be the reverse saturation current in the junction when the voltage across the junction is 0.

- |         |          |
|---------|----------|
| a) 0.3A | b) 0.7A  |
| c) 0A   | d) 1.24A |

(iv) Label the right option: Ripple factor of a half wave rectifier is \_\_\_\_\_

- |          |         |
|----------|---------|
| a) 1.414 | b) 1.21 |
| c) 1.4   | d) 0.48 |

(v) Write, in an NPN transistor, the arrow is pointed towards

- |                                 |                |
|---------------------------------|----------------|
| a) the collector                | b) the base    |
| c) depends on the configuration | d) the emitter |

(vi) Determine, which of the following are true for a PNP transistor.

- |   |   |
|---|---|
| a) the emitter current is less than the collector current | b) the collector current is less than the emitter current |
| c) the collector current is less than the emitter current | d) the holes are the minority charge carriers             |



5. Explain the input output characteristics of CB connection (3)  
 6. Illustrate the current voltage relationship for a p-n junction diode with proper curve. (3)

OR

Describe common emitter transistor configuration with input characteristics curve. (3)

**Group-C**

(Long Answer Type Questions)

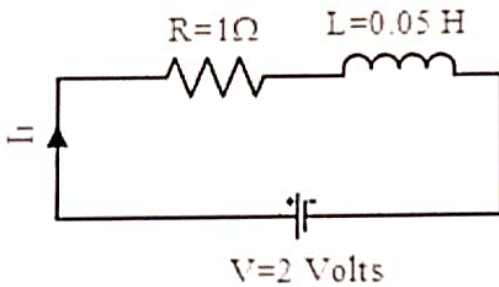
5 x 6=30

7. Explain the center-tap Full wave rectifier with a neat diagram (5)  
 8. Explain the working of a photodiode. (5)  
 9. In a CB connection, current amplification factor is 0.09. If the emitter current is 1mA, determine the value of base current. (5)  
 10. A 6 pole lap wound armature has 840 conductors and flux per pole pf 0.018 web . Calculate the emf generated when the machine is running at 600 rpm. (5)  
 11. Explain the emf equation of a dc machine. (5)  
 12. An ac circuit consist of resistance of 10 Ω and inductive reactance of 30 ohm are connected across an ac supply of 230V, 50hz. Evaluate current. (5)

OR

Evaluate The value I1 for series RL circuit.

(5)



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