Printed page: 02

Subject Code: AEC0101 / AMIEC0101

Roll No: | | | | | | | | | | | | |

**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY ,GREATER NOIDA**

**(An Autonomous Institute Affiliated to AKTU, Lucknow)**

**B.Tech / M.Tech (Integrated)**

**(SEM: I) SESSIONAL EXAMINATION –III (2020-2021)**

**Subject Name: Basic Electrical & Electronics Engineering**

**Time: 1.15Hours** **Max. Marks:30**

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**General Instructions:**

- All questions are compulsory. Answers should be brief and to the point.
- This Question paper consists of two pages & five questions.
- It comprises of three Sections, A, B, and C. You are to attempt all the sections.
- Section A -Question No- 1 is objective type questions carrying 1 mark each, Question No- 2 is very short answer type carrying 2 mark each. You are expected to answer them as directed.
- Section B - Question No-3 is Short answer type questions carrying 5 marks each. You need to attempt any two out of three questions given.
- Section C -Question No. 4 &5 are Long answer type (within unit choice) questions carrying 6marks each. You need to attempt any one part *a* or *b*.
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

| | | **SECTION – A** | **[8]** | |
|---|---|---|---|---|
| **1.** | **Answer all questions-** | | **(4×1=4)** | |
| | **a.** | ELCBs are specially used to disconnect the supply under:<br>i. short circuit condition<br>ii. earth fault condition<br>iii. open circuit condition<br>iv. over load condition | **(1)** | **CO3** |
| | **b.** | The ripple factor of a full-wave rectifier circuit compared to that of a half wave rectifier circuit without filter is:<br>i. half of that for a half wave rectifier<br>ii. less than half that for a half-wave rectifier circuit<br>iii. equal to that of a half wave rectifier.<br>iv. none of the above. | **(1)** | **CO4** |
| | **c.** | Which type of sensor is used to measure the distance between the vehicle and other objects in its environment:<br>i. Ultrasonic sensor<br>ii. Tactile sensor<br>iii. Motion sensor<br>iv. None of these | **(1)** | **CO5** |

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|---|---|---|---|---|
| | d. | Output Impedance of an ideal op-amp is:<br>i. Infinite<br>ii. Very high<br>iii. Low<br>iv. Zero | (1) | CO5 |
| | | | | |
| 2. | **Answer all questions-** | | (2×2=4) | |
| | a. | If a home has 10 tube lights of 30W that run for 4 hours daily, 5 fans of 70W running for 10 hours daily. Calculate total amount to be paid in a month, if the cost per unit is Rs. 7. | (2) | CO3 |
| | b. | What are the advantages of OLED display? | (2) | CO4 |
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| | | **SECTION – B** | | |
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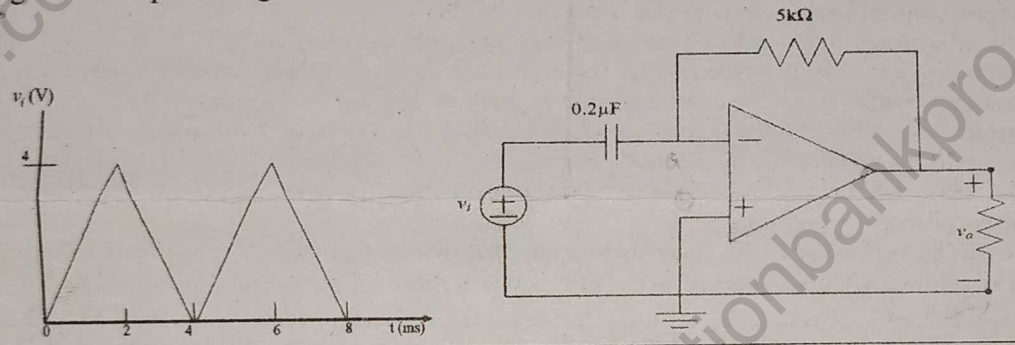
| 3. | **Answer any two of the following-** | | [2×5=10] | |
| | a. | Explain the formation of depletion layer in P-N junction diode and also define barrier potential. | (5) | CO4 |
| | b. | Obtain the expression for output voltage $v_o(t)$ for the circuit shown, given the input voltage waveform below.<br>  | (5) | CO5 |
| | c. | Give the introduction to Internet of Things (IoT). What impacts will the Internet of Things (IoT) have on the Transportation Sector? | (5) | CO5 |
| | | | | |
| | | **SECTION – C** | [2×6=12] | |
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| 4 | **Answer any one of the following-** | | | |
| | a. | Explain the working of center-taped full wave rectifier with diagram. Define Ripple factor and calculate the ripple factor for full wave rectifier. | (6) | CO4 |
| | b. | Define Input bias current and input offset current. If the base currents for the emitter coupled transistors of a differential amplifier are 18μA and 22μA, determine (i) input bias current (ii) input offset current. | (6) | CO5 |
| 5. | **Answer any one of the following-** | | | |
| | a. | What of the need of electrical earthing? Explain different type of earthing used in electrical system. | (6) | CO4 |
| | b. | Draw and explain the positive and negative biased clipper circuits with waveforms. Also explain the combinational clipper circuit. | (6) | CO5 |