

SEMESTER END EXAMINATION, APRIL-MAY, 2025

Course Name: - B.Tech. (ECE)

Semester:- II

Paper Code:- NEC-201

Paper Name: -Repairing and Measurement of Electronic System

Time - 3 Hrs + 20 minutes per hour extra time for V.I. & examinees with writer.

Max Marks-70

Additional 30 Minutes for Mid-Test.

समय- 3 घण्टे + 20 मिनट प्रति घंटे अतिरिक्त-दृष्टिबाधित एवं सह लेखक परीक्षार्थियों के लिए।
30 मिनट अतिरिक्त मिड-टेस्ट के लिए।

अधिकतम अंक-70

Instructions:

- The question paper consists of three sections namely A, B, C. All sections are compulsory.
- Section A- Each question carries 3 mark. All questions are compulsory.
- Section B- Answer any 5 out of 7 given questions. Each question carries 7 marks.
- Section C- Answer any 2 out of 3 given questions. Each question carries 10 marks.
- Section D- Each question carries 02 mark. All questions are compulsory.

निर्देश:

- प्रश्न पत्र में तीन खण्ड अ, ब, व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड-अ में प्रत्येक प्रश्न तीन अंक का है। सभी प्रश्न अनिवार्य हैं।
- खण्ड-ब में सात प्रश्नों में से किन्हीं पाँच प्रश्नों के उत्तर दें। प्रत्येक प्रश्न सात अंक का है।
- खण्ड-स में तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर दें। प्रत्येक प्रश्न 10 अंक का है।
- खण्ड-द में प्रत्येक प्रश्न 02 अंक का है। सभी प्रश्न अनिवार्य हैं।

Section - A (खण्ड-अ)

Objective Questions (वस्तुनिष्ठ प्रश्न)

1. Answer all the following questions.

5x3 =15

निम्नलिखित सभी प्रश्न अनिवार्य हैं।

- Which of the following color codes represents a 1.2 k Ω resistor with $\pm 5\%$ tolerance?
A. Brown, Black, Orange, Gold
B. Brown, Red, Orange, Gold
C. Brown, Red, Red, Gold
D. Red, Black, Brown, Gold
- In a Zener regulator, the input voltage is 18 V, Zener voltage is 12 V, and the series resistor is 300 Ω . If load draws 18 mA, find the Zener current.
A. 2 mA
B. 2.5 mA
C. 3 mA
D. 1 mA
- Why is grounding essential in electronic equipment?
A. For saving power
B. For cooling
C. For safety and noise reduction
D. For increasing voltage
- TTC stands for:
A. Test and Troubleshoot Circuit
B. Test and Technical Communication
C. Total Technical Coverage
D. Test, Troubleshooting, and Calibration

v) Which capacitor is polarized?

- A. Ceramic
- B. Electrolytic
- C. Mica
- D. Paper

Section - B (खण्ड-ब)
Short Answer Questions (लघुउत्तरीय प्रश्न)

5x7=35

2. Answer any five of the following questions.

निम्नलिखित में से किन्हीं पाँच प्रश्नों के उत्तर दें।

- i. What is the step-by-step procedure for detecting faults in electronic circuits?
- ii. Why are grounding systems crucial in electronic equipment? Discuss their significance.
- iii. What is a transformer? Explain its types and working principle.
- iv. How does a Zener diode function as a voltage regulator? Explain the working with a circuit diagram and calculate the output voltage if the Zener diode has a breakdown voltage of 5.1V and the input voltage is 12V.
- v. What is the difference between a dry solder joint and a cold solder joint? How can these defects be prevented during the soldering process?
- vi. What precautions should be followed during the soldering and desoldering processes to ensure safety and prevent defects?
- vii. What are the different security measures that can be implemented to protect a computer system? Explain their significance.

Section - C (खण्ड-स)
Descriptive Questions (विवरणात्मक प्रश्न)

3. Answer any two of the following question.

2x10=20

निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर दें।

- i. What are test and measuring instruments? Explain the working principles of any three instruments used for testing electronic circuits.
- ii. Explain the different types of resistors. Describe the color coding system used for resistors with an example.
- iii. What are the typical hardware problems in a computer system? Identify and explain three common hardware issues, providing examples of faults along with their respective repair solutions.

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Mid-Test

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Time - 30 minutes.

Max Marks-20

All questions are compulsory.

सभी प्रश्न अनिवार्य हैं।

2×10=20

Objective Questions.

बहुविकल्पीय प्रश्न।

1. The main function of a fuse in an electrical circuit is to:
☐ A. Amplify signals
☒ B. Protect against overcurrent
☐ C. Convert AC to DC
☐ D. Provide grounding
2. Which of the following is a characteristic of a cold solder joint?
☒ A. Dull and grainy appearance
☐ B. Shiny and smooth surface
☐ C. Strong electrical connection
☐ D. High thermal conductivity
3. What is the primary cause of a dry solder joint?
☐ A. Overheating of the component
☒ B. Excessive solder application
☐ C. Insufficient heat during soldering
☐ D. Using lead-free solder
4. What is the first step in any fault-finding procedure?
☐ A. Replacing components
☒ B. Visual inspection
☐ C. Using an oscilloscope
☐ D. Refer to manuals
5. Which instrument is used to locate a fault in a circuit?
☐ A. Signal generator
☒ B. Multimeter
☐ C. Function generator
☐ D. RF amplifier
6. When does blue screen error usually occur in computers?
☐ A. When software is installed
☒ B. On power supply surge
☐ C. On system crash
☐ D. On pressing any key

7. Fault in software is commonly referred to as:

- A. Fault
- B. Bug
- C. Error
- ☒ D. All of the above

8. A relay is used to:

- A. Increase voltage
- ☒ B. Store energy
- C. Electrically isolate two circuits
- D. Decrease current

9. Which of the following is a soldering material?

- A. Epoxy
- ☒ B. Tin-lead alloy
- C. Steel
- D. Nylon

10. Peripheral devices include:

- A. RAM
- ☒ B. CPU
- C. Printer
- D. Motherboard
