

# DUAT03 Model Question Paper

M.Sc. Electronics / M.Sc. Applied Physics

Model Set - 10 MCQs

Instructions: Choose the most appropriate answer from the four options given.

**1. Find the next term in the series: 5, 9, 17, 33, 65, \_\_\_**

- A. 97
- B. 119
- C. 127
- D. 129

**2. A current of 2 A flows through a 6  $\Omega$  resistor. What is the voltage across the resistor?**

- A. 3 V
- B. 8 V
- C. 12 V
- D. 18 V

**3. If  $A = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$ , then  $\det(A)$  is:**

- A. 5
- B. 6
- C. 7
- D. 8

**4. If  $f(x) = 3x^2 - 4x + 7$ , then  $f'(x)$  is:**

- A.  $3x - 4$
- B.  $6x - 4$
- C.  $6x + 7$
- D.  $3x^2 - 4$

**5. The standard deviation of the data set 6, 6, 6, 6 is:**

- A. 0
- B. 1
- C. 4
- D. 6

**6. Miller indices are used to describe:**

- A. Energy levels in atoms
- B. Crystal planes
- C. Electric field intensity
- D. Semiconductor band gap

**7. In an intrinsic semiconductor, the number of electrons is:**

- A. Greater than the number of holes
- B. Less than the number of holes
- C. Equal to the number of holes
- D. Always zero

**8. A Zener diode is commonly used for:**

- A. Voltage regulation
- B. Current amplification
- C. Light emission

D. Magnetic field measurement

**9. Which logic gate gives output 0 only when all inputs are 1?**

- A. AND
- B. OR
- C. NAND
- D. XOR

**10. In a purely inductive AC circuit, the current:**

- A. Leads the voltage by  $90^\circ$
- B. Lags the voltage by  $90^\circ$
- C. Is in phase with the voltage
- D. Leads the voltage by  $180^\circ$