



HEF-003-1151001

Seat No. _____

M. Sc. (Electronics) (Sem. I) (CBCS) Examination

November / December – 2017

Paper - I : Fundamental of Electronics Technology

(New Course)

Faculty Code : 003

Subject Code : 1151001

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions carry equal marks.
(2) Figures on right hand side indicate marks.

1 Answer the following : 14

- (1) Cells are connected in parallel when higher _____ is required.
(Voltage, Current)
- (2) Norton's equivalent of a circuit consists of a constant-current source and a resistance in _____ with it.
(Parallel, Series)
- (3) SCR is a _____ device.
(Bidirectional, Unidirectional)
- (4) An ideal constant-current source has _____ resistance.
(Infinite, Zero)
- (5) Tungsten filament of an electric bulb represents an example of _____ resistant.
(Linear, Non-linear)
- (6) Schottky diode utilize metal-semiconductor junction.
(T/F)
- (7) Common drain configuration also source follower.
(T/F)
- (8) UJT exhibits positive resistance characteristics.
(T/F)
- (9) Zener diode is a reverse-biased lightly -doped P-N junction diode.
(T/F)

- (10) Common Collector configuration is called emitter follower. (T/F)
- (11) What is the decimal equivalent of 110011 of the binary number?
- (12) Subtract 0111_2 from 1110_2 .
- (13) Add 110011_2 to 101101_2 .
- (14) Draw symbol of Tunnel diode.

2 Answer the following : (Any **two**)

- (1) Explain Kirchhoff's current and voltage laws with determination of algebraic sign. **7**
- (2) Explain zero reference level with chassis ground. **7**
- (3) Give the Ohm's law and Discuss about Linear and Non-linear resistor. **7**

3 Answer the following :

- (a) State the Thevenin's theorem. Which steps are taken while applying this theorem? **5**
- (b) State the Norton's theorem. How to Nortonise a given circuits? **5**
- (c) Write notes on Maximum power transfer theorem. **4**

OR

3 Answer the following :

- (a) Discuss about different types of Capacitors. How can we check capacitor with ohmmeter? **5**
- (b) What are breakdown devices? Discuss about Unijunction transistor. **5**
- (c) Write notes on two transistor analogy of SCR. **4**

- 4** Answer the following : (any **two**)
- (1) (a) Give the name of different Number systems also discuss Hexadecimal number system in detail. **4**
 - (b) Convert $23A_{16}$ into its binary equivalent. **3**
 - (2) Define the term logic gate. Discuss about OR, AND, NOT and Exclusive OR gate with symbols and truth tables. **7**
 - (3) State the De Morgan's theorems with illustration and prove the expression $(AB+C)(AB+D) = AB+CD$ **7**
- 5** Answer the following : (any **two**)
- (1) Which types of arithmetical functions can be done by logical gates? Discuss about NOR Gate and NAND gate are Universal gates. **7**
 - (2) Write the unique feature of Boolean algebra and give the laws of Boolean algebra with names. **7**
 - (3) Define the terms analog and digital instruments and discuss about Direct current FET Voltmeter. **7**
 - (4) Describe an overview of application of a CRO. Draw and discuss about Cathode Ray Tube. **7**
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