DE-2908
First Year B. Sc. (Sem. I) Examination
March / April – 2016
Electronics for Computer Science : Paper - I
(Component & Devices)

Time : Hours [Total Marks : 50]

Instructions :

(1) Fill up strictly the details of signs on your answer book.

Name of the Examination :
First Year B. Sc. (Sem. I)

Name of the Subject :
Electronics for Computer Science : Paper - I

Subject Code No. : 2908
Seat No. : 1, 2, 3

(2) This exam contains 28 multiple choice questions.

(3) Choose only ONE most appropriate answer per question.

(4) Do not crease or fold the answer sheet.

(5) Q. 1 to 12 Multiple choice questions each carry 1 mark.
    Q. 13 to 22 Multiple choice questions each carry 2 marks.
    Q. 23 to 28 Multiple choice questions each carry 3 marks.

O.M.R. Sheet भरवा अंग्रेजी अनुसार यूनिव्यर्सिटी सूचनाओ आधार पर अस्थायी अनुसार.
O.M.R. Sheet-ली पावले आपेक्षित हो. विशिष्ट मान्यता प्रदान गरीएको हो.

Important instructions to fillup O.M.R. Sheet is given on back side of the provided O.M.R. Sheet.
1  A zener diode is always used in zener regulator in
   (A) reverse Bias
   (B) All of these
   (C) forward bias only
   (D) forward and reverse bias

2  One Ampere means :
   (A) flow of one coulomb of charge per unit area
   (B) None of these
   (C) flow of one coulomb of charge
   (D) flow of one coulomb of charge in unit time through a cross section area

3  Two resistance of the same value are connected in parallel, then its equivalent resistance will be :
   (A) equal to the value of the original resistance
   (B) None of these
   (C) greater than the value of original resistance
   (D) half the value of original resistance

4  Two resistance of the same value with colour code Brown, Black, Red are connected in series to a power supply of 12V the voltage across each resistance would be :
   (A) 6 V and 6 V respectively
   (B) None of these
   (C) 10 V and 2 V respectively
   (D) 2 V and 10 V respectively
5 Full form of SSI:
   (A) Small Structure Integration
   (B) Small Side Integration
   (C) Small Size Integration
   (D) Small Scale Integration

6 Scale of Integration:
   (A) LSI is 100 to 100000 circuit per chip
   (B) All option are true
   (C) SSI < 30 circuit per chip
   (D) MSI 30 to 100 circuit per chip

7 The Donor (n) type of impurity element has ______ valency.
   (A) Tetra-valent
   (B) All of these
   (C) Pantavalent
   (D) Trivalent

8 The acceptor (p) type of impurity element has ______ valency.
   (A) Tetra-valent
   (B) All of these
   (C) Pantavalent
   (D) Trivalent
The acceptor (p) type of impurity is:

(A) boron
(B) All of these
(C) gallium
(D) almunium

If 4 Inductors connected in series and $L_1$, $L_2$, and $L_4$ is equal to 120 mH, 45 mH, 25 mH and the total inductance $L$ equal to 340mH, then find $L_3$.

(A) 220 mH
(B) 325 mH
(C) 295 mH
(D) 150 mH

Zener breakdown occurs due to:

(A) a high electrostatic field
(B) All of these
(C) a high p and n doping
(D) very thin depletion layer

A winding of wire can be called:

(A) a choke
(B) All of these
(C) an inductor
(D) a coil
13 Two most commonly used semiconductor are _____ and _____.
   (A) Silicon, Alumium
   (B) Copper, Alumium
   (C) Germanium, Copper
   (D) Silicon, Germanium

14 In a pure semiconductor number of _____ produced at temperature to number of free _____.
   (A) holes, elements
   (B) All of these
   (C) holes, electron
   (D) elements, compounds

15 A 10,000 Ohms resistance has a tolerance band of 10% its value would be between :
   (A) 10000 to 11000 ohms
   (B) 9500 to 10500 ohms
   (C) 9000 ohms to 11000
   (D) 9000 ohms to 10000 ohms

16 Electromagnetism induction is the generation of _____ from _____.
   (A) Electricity, Magnetism
   (B) Magnetism, Magnetism
   (C) Magnetism, Electricity
   (D) Electricity, Electricity

17 A Battery has emf of 2 Volts when shorted gives a current of 4A. The terminal resistance of the battery is :
   (A) 2 Ohms
   (B) None of these
   (C) 4 Ohms
   (D) 0.5 Ohms
18 A certain wire has a resistance R, it is cut into two real parts and connected in parallel the resistance of the combination is

(A) \( \frac{R}{8} \)

(B) 2R

(C) \( \frac{R}{2} \)

(D) \( \frac{R}{4} \)

19 In Norton Equivalent circuit the current source is connected in parallel with ______ and its unit is ______.

(A) Admittance, Mho

(B) Capacitance, Farad

(C) Resistance, Ohms

(D) Resistance, Micro Farad

20 A certain wire has a resistance of 1000 ohms and the voltage across the wire is 100 V the electric power in the wire is:

(A) 50 W

(B) 0.1 W

(C) 1 W

(D) 10 W

21 Classification of IC by function

(A) Linear and Non Linear

(B) Theoretical and Practical

(C) Analog and Digital

(D) Calculus and Integral

22 You have three resistance of value 2 ohm, 3 ohm, and 6 ohm. Then an effective resistance of 4 Ohms can be obtained by connecting:

(A) All in parallel

(B) \( 2\Omega \) and \( 6\Omega \) in parallel and \( 3\Omega \) in series

(C) \( 3\Omega \) and \( 6\Omega \) in series and \( 2\Omega \) in parallel

(D) \( 3\Omega \) and \( 6\Omega \) in Parallel and \( 2\Omega \) in Series

DE-2908_C] 6 [ Contd...
23 If $\alpha_{dc} = .98$ then, find $\beta_{dc}$

(A) 0.49

(B) .049

(C) 490

(D) 49

24 If in a JFET the change in Drain current is 0.2mA for 0.001 V of Gate to source volts, then find Transconductance:

(A) 2000 $\mu$Ohms

(B) None of these

(C) 2000 $\mu$S

(D) 0.0002 $\mu$S

25 If $\beta_{dc} = 100$ then, find $\alpha_{dc}$

(A) 0.01

(B) 150

(C) 0.99

(D) 100
26 Find base current (IB) if transistor, if βdc = 50 and emitter current is 10 mA:

(A) 0.2 mA

(B) 0.002 mA

(C) 20 mA

(D) 200 mA

27 A wave shaping circuit are _____ and _____, and made using _____.

(A) clipping, clamping, diodes

(B) None of these

(C) rectifiers, filters, regulators

(D) transistors, resistors, diodes

28 In an energy band diagram of Semiconductor the energy from lower to high is _____, _____ and _____ energy band.

(A) Deactive, Valance band, Forbidden gap

(B) Active, Valance band, Forbidden gap

(C) Conduction, Forbidden gap, Valance band

(D) Conduction, Valance band, Forbidden gap