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 Section No. (1, 2,.....) 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 धरणा अंश-शारी अन्तर्गती एवं शीर्षनांशो आपेक्ष
O.M.R. Sheet-ले पात्र आपेक्ष छन्.

Important instructions to fill up O.M.R. Sheet
is given on back side of the provided O.M.R. Sheet.
1 If 4 Inductors connected in series and \( L_1 \), \( L_2 \), and \( L_3 \) is equal to 120 mH, 45 mH, 25 mH and the total inductance \( L \) equal to 340 mh, then find \( L_3 \).

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

2 Zener breakdown occurs due to:

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

3 A winding of wire can be called:

(A) an inductor
(B) a coil
(C) a choke
(D) All of these

4 A zener diode is always used in zener regulator in

(A) forward bias only
(B) forward and reverse bias
(C) reverse Bias
(D) All of these
5 One Ampere means:
(A) flow of one coulomb of charge
(B) flow of one coulomb of charge in unit time through a cross section area
(C) flow of one coulomb of charge per unit area
(D) None of these

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

7 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) 10 V and 2 V respectively
(B) 2 V and 10 V respectively
(C) 6 V and 6 V respectively
(D) None of these

8 Full form of SSI:
(A) Small Size Integration
(B) Small Scale Integration
(C) Small Structure Integration
(D) Small Side Integration
9 Scale of Integration:

(A) SSI < 30 circuit per chip
(B) MSI 30 to 100 circuit per chip
(C) LSI is 100 to100000 circuit per chip
(D) All option are true

10 The Donor (n) type of impurity element has ____ valency.

(A) Pentavalent
(B) Trivalent
(C) Tetraivalent
(D) All of these

11 The acceptor (p) type of impurity element has ____ valency.

(A) Pentavalent
(B) Trivalent
(C) Tetraivalent
(D) All of these

12 The acceptor (p) type of impurity is:

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

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

15 A Battery has emf of 2 Volts when shorted gives a current of 4A. The terminal resistance of the battery is:
(A) 4 Ohms
(B) 0.5 Ohms
(C) 2 Ohms
(D) None of these

16 A certain wire has a resistance R, it is cut in two real parts and connected in parallel the resistance of the combination is
(A) R/2
(B) R/4
(C) R/8
(D) 2R

17 In Norton Equivalent circuit the current source is connected in parallel with _____ and its unit is ______.
(A) Resistance, Ohms
(B) Resistance, Micro Farad
(C) Admittance, Mho
(D) Capacitance, Farad
18 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) 1 W
(B) 10 W
(C) 50 W
(D) 0.1 W

19 Classification of IC by function

(A) Analog and Digital
(B) Calculus and Integral
(C) Linear and Non Linear
(D) Theoretical and Practical

20 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) 3Ω and 6Ω in series and 2Ω in parallel
(B) 3Ω and 6Ω in Parallel and 2Ω in Series
(C) All in parallel
(D) 2Ω and 6Ω in parallel and 3Ω in series

21 Two most commonly used semiconductor are _____ and _____.

(A) Germanium, Copper
(C) Silicon, Germanium
(B) Silicon, Almumium
(D) Copper, Almumium

22 In a pure semiconductor number of _____ produced at temperature to number of free _____.

(A) holes, electron
(B) elements, compounds
(C) holes, elements
(D) All of these
23 If \( \beta_{dc} = 100 \) then, find \( \alpha_{dc} \)

(A) 0.99
(B) 100
(C) 0.01
(D) 150

24 Find base current (IB) if transistor, if \( \beta_{dc} = 50 \) and emitter current is 10 mA:

(A) 20 mA
(B) 200 mA
(C) 0.2 mA
(D) 0.002 mA

25 A wave shaping circuit are ______ and _______, and made using ______.

(A) rectifiers, filters, regulators
(B) transistors, resistors, diodes
(C) clipping, clamping, diodes
(D) None of these
26. In an energy band diagram of Semiconductor the energy from lower to high is ______, ______ and ______ energy band.

(A) Conduction, Forbidden gap, Valance band
(B) Conduction, Valance band, Forbidden gap
(C) Deactive, Valance band, Forbidden gap
(D) Active, Valance band, Forbidden gap

27. If $\alpha_{dc} = .98$ then, find $\beta_{dc}$

(A) 490
(B) 49
(C) 0.49
(D) .049

28. 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 $\mu$S
(B) 0.0002 $\mu$S
(C) 2000 $\mu$Ohms
(D) None of these