BRAINWARE UNIVERSITY

Term End Examination 2020 - 21

Programme – Bachelor of Science (Honours) in Advanced Networking & Cyber Security

Course Name – Electronics

Course Code - GEEC101

Semester / Year - Semester I

Time allotted : 75 Minutes Full Marks : 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 60=60

1. *(Answer any Sixty)*

(i) Convert (0.345)10 into an octal number

a) (0.16050)8 b) (0.26050)8

c) (0.19450)8 d) (0.24040)8

(ii) Divide the binary numbers: 111101 ÷ 1001 and find the remainder

a) 10 b) 1010

c) 1100 d) 11

(iii) On subtracting (001100)2 from (101001)2 using 2's complement, we get

a) 1101100 b) 11101

c) 11010101 d) 11010111

(iv) 1's complement can be easily obtained by using

a) Comparator b) Inverter

c) Adder d) Subtractor

(v) What is the octal equivalent of the binary number: 10111101

a) 675 b) 275

c) 572 d) 573

(vi) The value of base x is: (211) x = (152)8

a) 5 b) 6

c) 7 d) 8

(vii) Which is the prohibited state/ condition in S-R latch and needs to be avoided due to unpredictable nature of output?

a) S = R = 0 b) S = 0, R = 1

c) S = 1, R = 0 d) S = R = 1

(viii) In the toggle mode a JK flip-flop has

a) J = 0, K = 0 b) J = 1, K = 1

c) J = 0, K = 1 d) J = 1, K = 0

(ix) In 1-to-4 demultiplexer, how many select lines are required?

a) 2 b) 3

c) 4 d) 5

(x) The decimal number 10 is represented in its BCD form as

a) 10100000 b) 1010111

c) 10000 d) 101011

(xi) In Zener diode, for currents greater than the knee current, the V-I curve is:

a) Almost a straight line parallel to y-axis b) Almost a straight line parallel to x-axis

c) Equally inclined to both the axes with a positive slope d) Equally inclined to both the axes with a negative slope

(xii) The advantages of a junction transistor over the vacuum triode is_____.

a) high power consumption b) High efficiency

c) large size d) Less doping

(xiii) What is the left hand section of a junction transistor called?

a) base
b) Collector
c) depletion region
d) Emitter

(xiv) Which of the following is true in construction of a transistor?

a) the collector dissipates less power
b) The emitter supplies minority carriers
c) the collector is made physically larger than the emitter region
d) The collector collects minority charge carriers

(xv) In the operation of an NPN transistor, the electrons cross which region?

a) emitter region
b) The region where there is high depletion
c) the region where there is low depletion
d) P type base region

(xvi) The transfer of a signal in a transistor is _____.

a) low to high resistance
b) High to low resistance
c) collector to base junction
d) Emitter to base junction

(xvii) In a PNP transistor operating in active region, the main stream of current is__

a) drift of holes
b) Drift of electrons
c) diffusion of holes
d) Diffusion of electrons

(xviii) The AC current gain in a common base configuration is_____.

a) -?IC/?IE
b) ?IC/?IE
c) ?IE/?IC
d) -?IE/?IC

(xix) The application of a CC configured transistor is_____.

a) voltage multiplier
b) Level shifter
c) rectification
d) Impedance matching

(xx) How many NAND circuits are contained in a 7400 NAND IC?

a) 2 b) 4

c) 8 d) 6

(xxi) . In a combinational circuit, the output at any time depends only on the _____ at that time.

a) Voltage b) Intermediate values

c) Input values d) Clock pulses

(xxii) All logic operations can be obtained by means of-

a) AND and NAND operations b) OR and NOR operations

c) OR and NOT operations d) NAND and NOR operations

(xxiii) If A and B are the inputs of a half adder, the sum is given by-

a) A AND B b) A OR B

c) A XOR B d) A EX-NOR B

(xxiv) Half subtractor is used to perform subtraction of-

a) 2 bits b) 3 bits

c) 4 bits d) 5 bits

(xxv) What does minuend and subtrahend denotes in a subtractor?

a) Their corresponding bits of input b) Its outputs

c) Its inputs d) Borrow bits

(xxvi) The full subtractor can be implemented using:

a) Two XOR and an OR gates b) Two half subtractors and an OR gate

c) Two multiplexers and an AND gate d) Two comparators and an AND gate

(xxvii) When performing subtraction by addition in the 2’s-complement system-

a) The minuend and the subtrahend are both b) The minuend is changed to 2’s-

changed to the 2’s-complement

complement and the subtrahend is left in its original form

c) The minuend is left in its original form and the subtrahend is changed to its 2’s-complement

d) The minuend and subtrahend are both left in their original form

(xxviii) The role of the _____ is to convert the collector current into a voltage in RTL.

a) Collector resistor

b) Base resistor

c) Capacitor

d) Inductor

(xxix) When a differential amplifier is operated single-ended-

a) the output is grounded

b) one input is grounded and signal is applied to the other

c) both inputs are connected together

d) the output is not inverted

(xxx) In differential-mode

a) opposite polarity signals are applied to the inputs

b) the gain is one

c) the outputs are of different amplitudes

d) only one supply voltage is used

(xxxi) In the common mode

a) both inputs are grounded

b) the outputs are connected together

c) an identical signal appears on both the inputs

d) the output signal are in-phase

(xxxii) If ADM = 3500 and ACM = 0.35, the CMRR is _____.

a) 1225

b) 80 dB

c) 10000

d) Both 1225 and 80 dB

(xxxiii) With zero volts on both inputs, an OP-amp ideally should have an output-

a) equal to the positive supply voltage
b) equal to the negative supply voltage
c) equal to zero
d) equal to CMRR

(xxxiv) The output of a particular Op-amp increases 8V in 12microsecond. The slew rate is_____.

a) 90 V/microsecond
b) 0.67 V/microsecond
c) 1.5 V/microsecond
d) None of these

(xxxv) Negative feedback-

a) increases the input and output impedances
b) increases the input impedance and bandwidth
c) decreases the output impedance and bandwidth
d) does not affect impedance or bandwidth

(xxxvi) A voltage follower:

a) has a voltage gain of 1
b) is non-inverting
c) has no feedback resisto
d) All of these

(xxxvii) The common-mode voltage gain is _____.

a) smaller than differential voltage gain
b) equal to differential voltage gain
c) greater than differential voltage gain
d) None of these

(xxxviii) Current cannot flow to ground through:

a) a mechanical ground
b) an a.c. ground
c) a virtual ground
d) an ordinary ground

(xxxix) The inputs of a NAND gate are connected together. The resulting circuit is

a) OR gate
b) AND gate
c) NOT gate
d) None of these

(xl) In which of the following base systems is 123 not a valid number?

a) Base 10
b) Base 16
c) Base 8
d) Base 3

(xli) Storage of 1KB means the following number of bytes

a) 1000
b) 964
c) 1024
d) 1064

(xlii) Most of the digital computers do not have floating point hardware because

a) floating point hardware is costly
b) It is slower than software
c) It is not possible to perform floating point addition by hardware
d) No specific reason

(xliii) An AND gate will function a OR if

a) All the inputs to the gates are “1”
b) All the inputs are “0”
c) Either of the inputs is “1”
d) All the inputs and outputs are complemented

(xliv) NAND gates are preferred over others because thee

a) Have lower fabrication area
b) Can be used to make any gate
c) Consume least electronic power
d) Provide maximum density in cheak

(xlv) The fan out of a 7400 NAND gate is

a) 2 TTL
b) 5 TTL
c) 8 TTL
d) 10 TTL

(xlvi) Exce-3 code I known as

a) Weighted code
b) Cyclic redundancy code
c) Self-complementing code
d) Algebraic code

(xlvii) In Boolean algebra, the bar sign (-) indicates

a) OR operation
b) AND operation
c) NOT operation
d) None of these

(xlviii) When a P-N junction is reverse-biased,

a) Its depletion layer become narrow
b) Its barrier potential decreased
c) Its breaks
d) It offers high resistance

(xlix) The outermost electrons of an atom are called ……. electrons.

a) Free
b) Valence
c) Conduction
d) Bound

(l) An atom is said to be ionized when any one of its orbiting electron

a) Jumps from one orbit to another
b) Is raised to a higher orbit
c) Comes to the ground state
d) Is completely removed

(li) A LED is made up of a ……junction

a) PNP
b) NPN
c) PIN
d) PN

(lii) When used in circuit, the Zener diode is always

a) Forward-biased
b) Connected in series
c) Troubled by overheating
d) Reverse-biased

(liii) When the E/B junction of a transistor is reverse-biased, collector current

a) Is reversed
b) Increases
c) Decreases
d) Stops

(liv) The universal bias stabilization circuits is most popular because

a) Ic does not depend on transistor characteristics
b) Its sensitivity is high

c) Voltage divider is heavily loaded by transistor base

d) Ic equals IE

(lv) The a.c. load line of a transistor circuit is steeper than its d.c. load line because

a) a.c. signal sees less load resistance

b) It has greater slope

c) Ic is higher

d) Input signal varies in magnitude.

(lvi) The maximum peak-to-peak output voltage swing is obtained when the Q-point of a circuit is located

a) Near saturation point

b) Near cut-off point

c) At the Centre of the load line

d) At least on the load line

(lvii) The d.c. load line of a transistor circuit

a) Has a negative slope

b) Is a curved line

c) Gives graphic relation between Ic and IB

d) Does not contain the Q-point

(lviii) In a JFET, drain current is maximum when VGS is

a) Zero

b) Negative

c) Positive

d) Equal to V

(lix) FET's have similar properties to

a) PNP transistors

b) NPN transistors

c) Thermionic valves

d) Uni-junction transistors

(lx) The binary equivalent of the decimal number 10 is

a) 1010

b) 10101

c) 10011

d) None of these