GIET UNIVERSITY, GUNUPUR – 765022

RD19BTECH012

Registration No: | | | | | | | | | | |

Total Number of Pages :2 AR-19

B.TECH 1ST SEMESTER EXAMINATIONS (REGULAR), NOV/DEC 2019

BESBS1033 – Basics of Electronics

Time : 3 Hours Maximum : 70 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) 10 × 1=10 Mark

Q.1. Answer *All* Questions.

a The forward voltage drop across a silicon diode is about [CO 1][PO 1]

a)2.5 V b)3 V c)10 V d) 0.7 V

b The most widely used rectifier is [CO 1][PO 1]

a) half-wave rectifier b) centre-tap full-wave rectifier

c) bridge full-wave rectifier d)none of the above

c The number of depletion layers in a transistor is [CO 1][PO 2]

a)four b)three c)one d)two

d The power gain in a transistor connected in which arrangement is the highest [CO 2][PO 2]

a)common emitter b)common base c)common collector d)none of the above

e If the reverse bias on the gate of a JFET is increased, then width of the conducting channel. [CO 2][PO 1]

a) is decreased b)is increased c)remains the same d)none of the above

f For an Op-amp with negative feedback, the output is [CO 2][PO 1]

a)equal to the input b)increased

c) fed back to the inverting input d)fed back to the noninverting input

g The input stage of an Op-amp is usually a [CO 3][PO 1]

a) differential amplifier b)class B push-pull amplifier

c)CE amplifier d)swamped amplifier

h The material used to coat inside the face of CRT is [CO 3][PO 1]

a) Carbon b)Sulphur c)Silicon d)Phosphorous

i Both OR and AND gates can have only two inputs. [CO 4][PO 1]

a) True b) False

j In 2's complement representation the number 11100101 represents the decimal number . [CO 4][PO 1]

a) +37 b)-31 c)+27 d)-27

PART – B: (Short Answer Questions) 10x2=20 Marks

Q.2. Answer ALL questions

a Explain the term doping and its need? [CO1] [PO1]

b Why diodes are not operated in the breakdown region in rectifiers? [CO1] [PO1]

c Discuss the need for biasing the transistor? [CO1] [PO1]

d What is Op-Amp? [CO2] [PO2]

e What is the use of horizontal and vertical amplifier in CRO? [CO2] [PO1]

f How α and β are related to each other? [CO2] [PO2]

g Represent -27 in 2's complement form. [CO3] [PO1]

h Why a two-input NAND gate is called universal gate? [CO3] [PO1]

i What is meant by LED? What precautions are required to be observed in the use of LEDs? [CO4] [PO1]

j What are the main purposes for which a common-collector amplifier may be used? [CO4] [PO1]

PART – C: (Long Answer Questions) 4x10=40 Marks

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Answer *ALL* questions

Q.3			
a	Explain the working of PN junction diode under forward and reverse biased conditions?	5 Marks	[CO1] [PO1]
b	With the circuit diagram, explain the operation of center-tapped full wave rectifier? Draw input and output waveforms?	5 Marks	[CO1] [PO1]
	OR		
c	Draw and explain the V-I characteristics of a silicon diode?	5 Marks	[CO1] [PO2]
d	Explain the operation of half wave rectifier and capacitor filter with a neat circuit diagram and waveform?	5Marks	[CO1] [PO1]
Q.4			
a	Draw CE circuit and sketch the input and output characteristics also explain the operating regions by indicating them on the characteristics curve?	6 Marks	[CO2] [PO2]
b	Explain the basic structure and operation of JFET with neat diagrams?	4 Marks	[CO2] [PO2]
	OR		
c	With a neat diagram explain input, output characteristics of a transistor in a CB configuration?	5 Marks	[CO2] [PO1]
d	Explain the operation of an enhancement MOSFET with neat circuit diagram?	5 Marks	[CO2] [PO4]
Q.5			
a	Explain the block diagram of an operational amplifier?	5 Marks	[CO3] [PO1]
b	Explain the op-amp as a adder with neat circuit diagram?	5Marks	[CO3] [PO1]
	OR		
c	Explain the operation of an op-amp as a non-inverting amplifier with neat diagram and waveforms?	6 Marks	[CO3] [PO2]
d	Define the following terms w.r.t op-amp?[4M] (i) CMRR (ii) Slew-rate	4Marks	[CO3] [PO1]
Q.6			
a	Realise Ex-OR using only NAND gates?	4Marks	[CO4] [PO1]
b	State and prove De-Morgans theorems?	6Marks	[CO4] [PO2]
	OR		
c	Realize Full adder circuit using NAND gates?	3 Marks	[CO4] [PO2]
d	Write the logical symbol, truth table and Boolean expressions of all the logic gates (AND,OR,NOT,NOR,NAND ,EX-OR,EX-NOR)?	7 Marks	[CO4] [PO1]