Register Number:……..

KUMARAGURU
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B.E DEGREE EXAMINATIONS: JUNE 2017

(Regulation 2015)

Second Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U15ECT202 : Electron Devices

COURSE OUTCOMES

CO1: Recognize the concepts of Electron Ballistics

CO2: Understand the principles of Semiconductor Physics

CO3: Illustrate the characteristics of diodes, BJT,FET,MOSFET and their applications

CO4: Develop skills to implement simple projects using the basic devices.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match list I with list II and select the correct answer using the codes given below the list CO1 [K_2]

List I	List II
A. The bending of path due to interaction of electric and magnetic fields	(i) 1.602×10^{-19}
B. mass of the electron in Kg	(ii) negatively charged
C. charge of the electron in coulombs	(iii) 9.107×10^{-31}
D. electron s are	(iv) cycloid in nature

	A	B	C	D
a)	i	ii	iii	iv
b)	ii	iv	iii	i
c)	iv	iii	i	ii
d)	iv	iii	ii	i

2. Force on each electron in a magnetic field is CO1 [K_2]

a) BNqv b) Bqv

c) Bq d) BNqL

3. Pn junction diode CO2 [K_3]

a) Can be used a multi vibrator b) Can be used as oscillator

c) Can be used as rectifier d) Can be used a regulator

4. Varactor diode CO3 [K_3]

a) Can be used as capacitor b) Can be used as inductor

c) Can be used as a resistor d) Can be used as a non linear resistor.

5. Consider the following statements. CO2 [K_3]

1. Bipolar Transistor has collector base source
2. JFET consists of three terminals gate source and drain
3. MOSFET consists of three terminals gate source drain
4. BJT consists of three terminals gate source and drain

Which of the statements are correct

a) 1,2 b) 3,4

c) 2,3 d) 1,4

6. The formula for α value of a transistor is equal to CO3 [K_2]

a) I_c/ I_E b) I_B/I_E

c) I_B/I_C d) I_E/I_B

7. Assertion (A): Photo diode converts light energy into current CO3 [K_2]

Reason (R):Photo transistor converts light energy into current but it is inferior to photo diode Since conversion efficiency is poor.

a) Both A and R are individually true and R is the correct explanation for A b) A is true but R is false

c) Both A and R individually true but R is not correct explanation of A d) A is false but R is true

8. The expansion for DIAC is CO4 [K_2]

a) Dynode insulator AC b) Double insulatorAC

c) Diode AC d) diode insulator AC

9. Consider the following possible sequence of ICS in terms of integration of components CO3 [K_2]

1. ULSI 2. SSI 3. VLSI 4. MSI .

The correct sequence in terms of integration count of components is (smaller count to largest count)

a) 4,3,2,1 b) 1,2,3,4

c) 3,4,1,2 d) 2,4,3,1

10. The material used as impurities for doping semiconductors is CO3 [K_2]

a) alumina b) Silicon dioxide (SiO_2)

c) arsenic d) copper

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11.	Define electrostatic deflection sensitivity of a cathode ray tube	CO1	[K_2]
12.	What is the speed of an electron after it has moved through a potential difference of 500 V?	CO1	[K_2]
13.	Write the expression for conductivity in an extrinsic semiconductor	CO2	[K_2]
14.	Calculate the diode current for the forward biased voltage of 0.6 at 25°C, if the reverse saturation current is 10μA.	CO2	[K_2]
15.	Compare FET and MOSFET.	CO3	[K_2]
16.	When a FET acts as a voltage variable resistor?	CO3	[K_2]
17.	What is tunneling phenomenon	CO4	[K_2]
18.	Name two applications of photoconductive cells?	CO3	[K_2]
19.	Define SSI, LSI, MSI and VLSI circuits.	CO3	[K_2]
20.	List the steps involved in the construction of a MOSFET as an integrated circuit.	CO4	[K_2]

Answer any FIVE Questions:-

PART C (5 x 14 = 70 Marks)

(Answer not more than 300 words)

Q.No. 21 is Compulsory

21.	With the neat diagram,explain the input and output characteristics of a CB configuration of transistor.	CO3	[K_2]
22.	Draw the block diagram of a Cathode ray oscilloscope and explain its working	CO1	[K_2]
23.	Draw the graph of V I characteristics PN junction diode and explain its features	CO2	[K_2]
24.	With neat diagram explain the constructional details and working principles of SCR.	CO3	[K_2]
25.	With suitable diagrams explain how integrated resistors are fabricated using Monolithic technology.	CO3	[K_2]
26.	With relevant sketches explain the construction working and characteristics of tunnel diode.	CO3	[K_2]
27.	Explain the operation of N channel JFET. Sketch and explain the drain characteristics.	CO3	[K_2]

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