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Question Paper Code: 97223

B.E./B.Tech. DEGREE EXAMINATION, DECEMBER 2015/JANUARY 2016.

Second Semester

Electronics and Communication Engineering

EC 6201 — ELECTRONIC DEVICES

(Regulations 2013)

Time: Three hours

Maximum: 100 marks

Answer ALL questions.

PART A — $(10 \times 2 = 20 \text{ marks})$

- 1. What is meant by doping in a semiconductor?
- 2. Define drift and diffusion current.
- 3. What is meant by thermal runaway?
- 4. The common-base d.c. current gain of a transistor is 0.967. If the emitter current is 10mA, what is the value of base current?
- 5. Compare JFET with BJT.
- 6. Define the pinch-off voltage.
- 7. Explain Zener breakdown.
- 8. What is tunnelling?
- 9. What is the advantage of TRIAC over SCR?
- 10. What is the principle of operation of LCD?

PART B — $(5 \times 16 = 80 \text{ marks})$

- 11. (a) (i) Describe the action of PN junction diode under forward bias and reverse bias. (10)
 - (ii) Explain the switching characteristics of diode. (6)

Or

- (b) (i) Explain and derive the diode current equation. (12)
 - (ii) Explain how a barrier potential is developed at the PN junction. (4)

12.	(a)	(1)	circuit for determining its input and output characteristics. (1	(a)
		(ii)		to (6)
			Or	
	(b)	(i)	Briefly explain CE transistor hybrid- π model.	(8)
		(ii)	그렇게 보고 있는데 그리고 하는데 그리고 있다. 그는 이번 경에 가면 하고 있다면 하는데 그리고 있다면 하는데 그리고 있다면 하는데 그리고 있다면 다른데 그렇게 되었다면 다른데 그리고 있다면 다른데	he (8)
13.	(a)	(i)	With the help of neat sketches and characteristics curves expla the operation of the junction FET.	in (8)
		(ii)	Define and explain the parameters transconductance g_m , drawn resistance r_d and, amplification factor μ of a JFET. Establish the relation between them.	
			\mathbf{Or}	
	(b)	(i)	With the help of a suitable diagram explain the working E-MOSFET and D-MOSFET. (1	of 2)
		(ii)	What is channel length modulation in MOSFET?	(4)
14.	(a)	(i)	Draw the structure of a metal-semiconductor junction and expla the energy band structure before and after contact.	in (8)
		(ii)	Explain the principle behind the laser diode with a neat sketch. ((8)
			\mathbf{Or}	
	(b)	(i)	What is Schottky diode? Explain the flow of carriers across in junction during forward and reverse biased conditions with energy band diagrams.	
		(ii)	Explain the principle behind the varactor diode and list out is applications.	its (8)
15.	(a)	(i)	Draw the V-I characteristics of a UJT and explain its working principle.	ng (8)
		(ii)		its (8)
	MEIE		Or	
	(b)	(i)	Explain the operation of a DMOS and VMOS transistor.	(8)
		(ii)	20 E J	its (8)
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