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G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI - 628 502.



UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.

(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.Sc., ELECTRONICS

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
I	PART - III	CORE - 1	U23EL101	ELECTRONIC DEVICES

Date &amp; Session: 09.11.2024/FN

Time : 3 hours

Maximum: 75 Marks

Course Outcome	Bloom's K-level	Q. No.	SECTION - A (10 X 1 = 10 Marks) Answer ALL Questions.
CO1	K1	1.	In a PN junction with no external voltage, the electric field between acceptor and donor ion is called as _____. a) Peak                      b) Barrier                      c) Threshold                      d) Path
CO1	K2	2.	PN junction failure below 5 V is caused primarily by _____. a) Avalanche breakdown                      b) Zener breakdown c) Electromigration                      d) None of the above
CO2	K1	3.	Why is self bias circuit not used in IC amplifier? a) To reduce power losses                      b) To reduce area used on the chip c) Stability factor small in the IC                      d) Voltage gain is reduced
CO2	K2	4.	The thermal runaway is avoided in a self bias because _____. a) of its independence of $\beta$ b) of the positive feedback produced by the emitter resistor c) of the negative feedback produced by the emitter resistor d) of its dependence of $\beta$
CO3	K1	5.	External ____ voltages are applied to bias a FET. a) AC                      b) DC                      c) Both AC or DC                      d) Analog
CO3	K2	6.	The Shockley equation is _____. a) $I_D = (1 - V_{gs}/V_p)^2$ b) $I_D = I_{DSS} (1 - V_{gs}/V_p)^2$ c) $I_D = I_{DSS} (1 - V_{gs}/V_p)$ d) $I_D = I_{DSS} (1 + V_{gs}/V_p)^2$
CO4	K1	7.	An SCR is made up of _____. a) Germanium                      b) Silicon                      c) Carbon                      d) None of the above
CO4	K2	8.	An SCR is an _____ triggered device. a) Voltage                      b) Current                      c) Voltage as well as current                      d) None of the above
CO5	K1	9.	The _____ is photosensitive to act as light gathering element. a) Base-emitter junction b) Base-collector junction c) Collector-emitter junction d) Base-collector junction and Base-emitter junction
CO5	K2	10.	A large secondary current _____ in n-p-n InGaAs phototransistor is achieved. a) Between base and collector                      b) Between emitter and collector c) Between base and emitter                      d) Plasma.

Course Outcome	Bloom's K-level	Q. No.	<b>SECTION - B (5 X 5 = 25 Marks)</b> <b>Answer ALL Questions choosing either (a) or (b)</b>
CO1	K3	11a.	Explain the Drift current in diodes. <b>(OR)</b>
CO1	K3	11b.	Identify the behaviour of forward bias at diode.
CO2	K3	12a.	Write a short note on the NPN transistor. <b>(OR)</b>
CO2	K3	12b.	Give detailed note on transistor biasing.
CO3	K4	13a.	Describe FET and its operation. <b>(OR)</b>
CO3	K4	13b.	Write a note on the UJT.
CO4	K4	14a.	Discover SCR potential as switch. <b>(OR)</b>
CO4	K4	14b.	Review MOSFET operation and list comparative advantage over other devices.
CO5	K5	15a.	Estimate the current requirements of 7 segment LED and importance of current limiting resistor. <b>(OR)</b>
CO5	K5	15b.	Interpret the operation LED with light matter interaction principle.

Course Outcome	Bloom's K-level	Q. No.	<b>SECTION - C (5 X 8 = 40 Marks)</b> <b>Answer ALL Questions choosing either (a) or (b)</b>
CO1	K3	16a.	Determine what happens when a PN Junction is formed? Visualize the PN diode characteristics with neat diagram. <b>(OR)</b>
CO1	K3	16b.	Show how to classify the Zener diode as Voltage regulator with neat sketch.
CO2	K4	17a.	Write a note on following terms. (a) PNP transistor (b) Transistor as a switch. <b>(OR)</b>
CO2	K4	17b.	Summarize the CB configuration of a transistor with neat diagram.
CO3	K4	18a.	Identify the basic principles and construction of JFET with necessary diagram. <b>(OR)</b>
CO3	K4	18b.	Paraphrase about the UJT as a relaxation oscillator with suitable diagram.
CO4	K5	19a.	Investigate the construction and operation of Enhancement mode MOSFET with neat sketch. <b>(OR)</b>
CO4	K5	19b.	Illustrate detail on construction and operation of the N channel MOSFET with neat diagram.
CO5	K5	20a.	Justify the operating principles and characteristics of LDR with neat diagram. <b>(OR)</b>
CO5	K5	20b.	Evaluate the working and operating principles of Photo transistor with neat diagram.