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Code No. : 13317

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (EEE: CBCS) III-Semester Main Examinations, December-2018

Electronics Engineering-I

Time: 3 hours

Max. Marks: 60

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q. No	Stem of the Question	M	L	CO	PO
Part-A (10 × 2 = 20 Marks)					
1.	Sketch the waveform at the output of half wave rectifier followed by inductor filter.	2	2	2	1
2.	Interpret the temperature dependence of a PN junction diode on its V-I characteristics	2	2	2	2
3.	What are the operating modes of a transistor and write their applications.	2	2	1	1
4.	Define thermal runaway. How can it be avoided?	2	1	1	1
5.	Draw the equivalent hybrid model of a transistor in CE configuration.	2	2	5	2
6.	Define Alpha, Beta and Gamma of a transistor and derive the relation between them.	2	1	5	2
7.	Draw the small signal model for common source FET.	2	2	5	1
8.	Give the distinction between Enhancement MOSFET and Depletion MOSFET.	2	2	1	1
9.	Draw the V-I characteristics of UJT and indicate negative resistance region.	2	2	1	1
10.	Write the applications of SCR.	2	2	1	1
Part-B (5 × 8 = 40 Marks)					
11. a)	Write the necessity of electronic filters and analyse and compare the performance of Inductive, L-section and π -section filters.	4	4	2	2
b)	In a full wave rectifier, the transformer RMS secondary voltage from center tap to each end of the secondary winding is 50V. The load resistance R_L is 900 Ω . If diode resistance and transformer secondary winding resistance together has a resistance of 100 Ω , determine the average load current and the RMS value of the load current.	4	3	2	2
12. a)	How do you bias a transistor using self-bias (voltage-divider-bias) technique and what is its advantage over other methods?	3	2	4	1
b)	In a CE germanium transistor amplifier using potential divider bias circuit, $R_C=2.2K\Omega$, $\beta=50$, $V_{CC}=9V$ and the operating point is required to be set at $I_C=2mA$ and $V_{CE}=3V$. Determine the values of R_1 , R_2 and R_E .	5	3	4	2
13. a)	State and derive Miller's theorem.	5	2	5	1
b)	Draw the I/O characteristics of common base configuration of PNP transistor.	3	2	2	1

Contd...2

14. a)	Draw the small signal equivalent circuit of BJT amplifier in common Emitter connection and derive input and output impedances.	5	2	5	2
b)	Define the parameters of JFET and derive the relation between them.	3	3	1	2
15. a)	Describe the working of CRO with the help of block diagram.	6	2	1	1
b)	Analyse and compare LED and LCD.	2	4	1	1
16. a)	Draw and explain the V-I characteristics of PN junction diode.	4	2	1	1
b)	A transistor has $\beta=150$. Find the collector and base currents if $I_E=10\text{mA}$.	4	3	1	2
17.	Answer any <i>two</i> of the following:				
a)	With the help of a neat sketch, explain the working of FET.	4	2	1	1
b)	Zener voltage regulator	4	4	1	1
c)	Write short notes on varactor diode.	4	2	2	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	64
2	Knowledge on application and analysis (Level-3 & 4)	36
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	---

