



Academic year 2021-2022 (Odd Sem)

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Date	19 <sup>th</sup> JAN 2023	Maximum Marks	60
Course Code	22ES14C	Duration	110 Min
Sem	I Semester	Test-1	
Principles of Electronics Engineering			

Sl. No.	Questions	M	BT	CO
	PART-A			
1	The values of $\beta$ that correspond to $\alpha$ value of 0.985 and 0.992 respectively are _____ and _____.	1	2	2
2	If a PNP transistor is operating as an open switch, its base-emitter junction is _____ biased.	1	1	1
3	Three amplifiers with voltage gain of 20, 100 and 2000 are connected in cascade, the overall gain in dB = _____.	1	1	1
4	In a regulated DC power supply the output voltage drops from 12V to 11.8V when the input voltage reduces by 10%. The line regulation is _____.	1	3	4
5	BJT is _____ controlled device.	1	2	1
6	The lower cut off frequency of an RC coupled amplifier is 300Hz. It has a voltage gain of 70 at 300Hz and has a bandwidth of 25KHz. The mid frequency gain of the amplifier = _____.	1	3	3
7	An NPN transistor has $I_{co} = 25\text{nA}$ , $I_B = 0$ , $V_{CE} = 4\text{V}$ and $I_C = 20\mu\text{A}$ . The value of $\beta$ is _____.	1	1	2
8	In NPN transistor, if $V_B = 3\text{V}$ , $V_E = 2\text{V}$ , $V_C = 1\text{V}$ , the transistor is operating in _____ region.	1	1	4
9	Three amplifiers of voltage gains 20dB, 26dB and 32dB are cascaded to obtain an output voltage of 2V. Calculate the input voltage needed.	2	2	3



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Sl. No.	Questions PART-B	M	BT	CO
1.a	A full wave bridge rectifier drives a load resistance of $330\Omega$ in parallel with a filter capacitor, C. If the ac input to the rectifier is $100\sin 628t$ , calculate the capacitor value needed so that the ripple factor is 1%. Determine the output dc voltage, peak to peak ripple voltage and the load regulation.	6 5	3	3
1.b	Bring out the differences between Avalanche breakdown and Zener breakdown in PN junction diodes.	4	1	2
2.a	Draw the circuit diagram of a Full wave Bridge rectifier with filter and explain its operation along with waveform.	6	2	1
2.b	Briefly explain the three regions of operation of a BJT. Draw the output characteristics of a BJT.	4	2	1
3.a	Explain the working of RC coupled amplifier with the circuit diagram. Draw its frequency response.	6 5	1	1
3.b	An amplifier having a power gain of 17dB delivers a power output of 40W to a load of $1K\Omega$ . Calculate i) the input power needed and (ii) the input voltage needed, if the voltage gain of the amplifier is 38dB.	4 4	3	3
4.a	Three amplifier stages are cascaded with $0.05V_{p-p}$ input providing $150V_{p-p}$ output. If the voltage gain of the first stage is 20 and the input to the third stage is $15V_{p-p}$ . Find i) Overall gain in dB ii) Voltage gains of 2 <sup>nd</sup> and 3 <sup>rd</sup> stages iii) Input voltage to the second stage	6 6	4	3
4.b	With a neat diagram, illustrate the operation of Regulated Power Supply.	4	1	2
5.a	Design the Zener regulator for the give specification. $V_{in}$ varies from 6.6V to 9.9V $R_L$ varies from $66\Omega$ to $165\Omega$ $V_z=3.3V$ $I_z(\min)=10mA$ $P_d(\max)=660mW$	6 6	3	4
5.b	Explain the working principles of the following. i) Photodiode ii) LED	4 4	2	2

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	Test	Max Marks	18	15	19	8	19	14	19	6	-	-