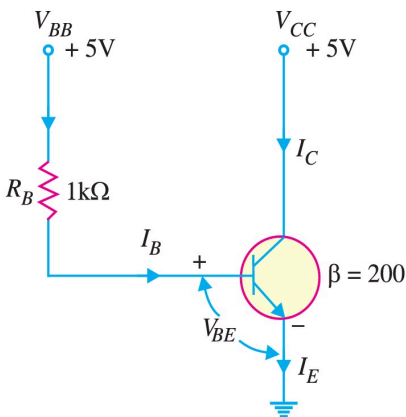


QP CODE: D2BPH2501	(Pages: 2)	Reg. No :
		Name :
SECOND SEMESTER FYUGP EXAMINATION, APRIL 2026		
(Regular/Improvement/Supplementary)		
Discipline Specific Core (DSC) Courses - Major		
PHY2CJ101 : Electronics - I		
(Credits: 4)		
Time: 2 Hours	Maximum Marks: 70	
Section A		
Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)		
1. Metals have positive temperature coefficients while semiconductors have negative temperature coefficients. Justify.	BL4	CO1
2. Define knee voltage and give its significance.	BL1	CO2
3. At absolute zero temperature a pure semiconductor behaves as a perfect insulator. Justify this statement.	BL4	CO1
4. Why the ripple factor decreases with increase in RC value of the filter circuit.	BL3	CO3
5. What is voltage doubler? Draw a neat circuit diagram of voltage doubler circuit.	BL2	CO3
6. Explain the role of transformers used in rectifiers?	BL2	CO3
7. What is a transistor? Why is it called so?	BL2	CO4
8. Define bit, byte, and nibble.	BL2	CO6
9. List the BCD for all the decimal digits.	BL2	CO6
10. Define analogue and digital signal.	BL2	CO6
Section B		
Answer the following questions. Each carries 6 marks (Ceiling: 36 Marks)		
11. What value of series resistor is required to limit the current through an LED to 25mA with forward voltage drop of 1.6V when connected to 12V supply?	BL4	CO2
12. Draw forward and reverse characteristics of a diode. Explain the current flow through the diode in both the cases.	BL4	CO2
(PTO)		

13.	Draw the circuit diagram and input, output waveforms for a half wave circuit. Discuss the nature of output waveform if the diode terminals are interchanged.	BL3	CO3
14.	For the circuit shown in figure, find the transistor power dissipation. Assume that $\beta = 200$.	BL4	CO5
			
15.	A transistor employs a $4\text{ k}\Omega$ load and $V_{CC} = 13\text{V}$. What is the maximum input signal if $\beta = 100$? Given $V_{knee} = 1\text{V}$ and a change of 1V in V_{BE} causes a change of 5mA in collector current.	BL4	CO5
16.	A CE amplifier circuit is biased using a voltage divider method. If $R_1 = 10\text{ k}\Omega$, $R_2 = 5\text{ k}\Omega$, $R_C = 2\text{ k}\Omega$, and $R_E = 1\text{ k}\Omega$, calculate the quiescent current I_C and voltage V_{CE} .	BL3	CO5
17.	Describe all the steps involved double-dabble method with the help of an example.	BL2	CO6
18.	Using necessary steps find the binary equivalents of the hexadecimal number $(CAA)_{16}$ and $(FF32)_{16}$.	BL3	CO6
Section C			
Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)			
19.	With necessary diagram, explain input and output characteristics of a common emitter transistor amplifier. Obtain an expression for the total collector current.	BL3	CO4
20.	Discuss the purpose and operation of a Zener diode as a voltage stabilizer in a circuit. Explain how a Zener diode maintains a relatively constant output voltage despite variations in input voltage and load resistance.	BL3	CO3
CO : Course Outcome			
BL : Bloom's Taxonomy Levels (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)			