	Hall Ticket No Question Paper Code:	AEEB04	
INSTITUTE OF AERONAUTICAL ENGINEERING (Autonomous)			
B.Tech III Semester End Examinations (Regular), February – 2021 Regulation: IARE–R18 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING			
Time: 3 Hours (AE) Max Marks: 70 Answer any Four Questions from Part A Answer any Five Questions from Part B			
$\mathbf{PART} - \mathbf{A}$			
1.	Describe the permanent magnet moving coil instrument with essential diagrams.	[5M]	
2.	How does back EMF in a DC motor make it self-regulating?	[5M]	
3.	Explain the voltage regulation of an alternator by synchronous impedance method.	[5M]	
4.	Discuss the formation of depletion region in a PN junction diode.	[5M]	
5.	How a transistor is used as an amplifier. Illustrate.	[5M]	
6.	6. Determine the speed at which the 6 pole alternator is driven to obtain the frequency of EMF induced to		
	be 50 Hz.	[5M]	
7.	Draw the circuit of a bridge rectifier with necessary diagrams.	[5M]	
8.	Describe the active elements and passive elements. Draw the symbols of different controlled sources.	[5M]	
$\mathbf{PART} - \mathbf{B}$			
9.	Explain the working of moving iron repulsion type instrument with necessary diagram.	[10M]	
10.	Three resistors R_1 , R_2 and R_3 are connected in series. The power dissipated in R_1 is 50W. The resistance of R_2 is 5 Ω . The current through the series circuit is 5A. When the supply voltage is 100V. Determine the power dissipated in the circuit and the voltage across R_3 . [10M]		
11.	Discuss in brief about the basic concepts of EMF generation in a DC generator and derive it.	[10M]	
12.	A 250 V, four pole wave wound DC series motor has 782 conductors on its. It has armature and series field resistance of 0.75Ω . The motor takes a current of 40 A. Determine its speed and gross torque developed, if it has a flux per pole of 25mWb. [10M]		

13. Deduce the following AC circuit terminologies: Average Value, RMS Value and Form Factor for sinosoidal wave form. [10M]

14. On what factors does the induced EMF in a transformer winding depend? Explain the same with its EMF derivation. [10M]

- 15. What is the need of using filter in the output of rectifier? Explain in brief. [10M]
- 16. Determine the ripple factor value of full wave rectifier using PN junction diode. [10M]
- 17. Calculate the collector and emitter current levels for a BJT with $\alpha_{dc} = 0.99$ and $I_B = 20 \ \mu$ A. [10M]
- 18. In a common base transistor circuit, the emitter current I_E is 10mA and the collector current I_C is 9.8mA. Find the value of the base current I_B . [10M]