

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Summer Examination – 2026

Course: B.Tech.

Branch : COMMON TO ALL

Semester : I

Subject Code & Name: Basic Electrical and Electronics Engineering (24AF1000ES106B)

Max Marks: 60

Date: 24/06/2026

Duration: 3 Hrs

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective-type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

(CO) Marks

Q. 1 Objective type questions. (Compulsory Question)

12

- | | | | |
|---|---|-----|---|
| 1 | PMMC instrument works only on:
A) AC
B) DC
C) Both AC and DC
D) Three phase AC | | |
| 2 | Moving Iron instruments can measure:
A) Only DC
B) Only AC
C) Both AC and DC
D) High frequency only | | |
| 3 | RC coupled amplifiers are mainly used for:
A) Audio frequency amplification
B) Rectification
C) Power transmission
D) Measurement | CO1 | 1 |
| 4 | The purpose of transistor biasing is:
A) Increase resistance
B) Establish operating point
C) Reduce voltage
D) Increase frequency | CO2 | 1 |
| 5 | In an NPN transistor, majority carriers are:
A) Holes
B) Electrons
C) Protons
D) Neutrons | CO2 | 1 |
| 6 | The 7805 regulator provides:
A) +5 V output
B) -5 V output
C) +12 V output
D) -12 V output | | |

7	A bridge rectifier uses: A) 1 diode B) 2 diodes C) 3 diodes D) 4 diodes	CO4	1
8	A PN junction diode conducts when: A) Reverse biased B) Forward biased C) Unbiased D) Open circuited	CO4	1
9	The core losses in a transformer are: A) Copper losses B) Hysteresis and Eddy current losses C) Mechanical losses D) Friction losses	CO4	
10	The unit of capacitance is: A) Henry B) Ohm C) Farad D) Siemens	CO5	1
11	Back EMF in a DC motor opposes: A) Load current B) Supply voltage C) Flux D) Torque	CO5	1
12	The torque developed in a DC motor is proportional to: A) Flux $\times$ Armature current B) Voltage only C) Current ² D) Resistance	Co5	
Q. 2	Solve the following.		12
A)	State and explain Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL) with suitable examples	CO1	6
B)	Define RMS value, Average value, Active Power, Reactive Power, Apparent Power, and Power Factor. Explain their significance in AC circuits.	CO1	6
Q.3	Solve the following.		12
A)	Explain the construction of a DC Motor.	CO2	6

B)	Derive the EMF equation of a Single-Phase Transformer and explain voltage regulation.	CO2	6
Q. 4	Solve Any Two of the following.		12
A)	Explain the construction, working, and V-I characteristics of a PN Junction Diode.	CO3	6
B)	Draw and explain the block diagram of a DC Power Supply.	CO3	6
C)	Explain the working of a Full-Wave Bridge Rectifier with capacitor filter.	CO3	6
Q.5	Solve Any Two of the following.		12
A)	Explain the construction and working principle of NPN and PNP transistors.	CO4	6
B)	Derive the relationship between current gains α , β , and γ in CB, CE, and CC configurations.	CO4	6
C)	Explain DC Load Line and Stability Factor. Discuss the need for transistor biasing.	CO4	6
Q. 6	Solve Any Two of the following.		12
A)	Explain the functional elements of a measuring instrument with a neat block diagram.	CO5	6
B)	Describe the construction and working principle of Permanent Magnet Moving Coil (PMMC) instruments.	CO5	6
C)	Draw the block diagram and explain the working of a Digital Multimeter	CO5	6
*** End ***			