


Second Year B.Tech. (Electrical Engg.) (Sem-III)
END SEMESTER EXAMINATION (ESE) MAY-JUNE-2026 (SUMMER)
Course Name: ENGINEERING MATHEMATICS FOR ELECTRICAL ENGINEERS **Course Code** 25UGPCCEE301

Day & Date: Monday, 22-June-26,

Max Marks: 60 Marks

Time: 10.00 AM TO 12.00 PM.

Instructions:

- All Questions are compulsory
- Figure to the right indicates full marks.
- Assume suitable data if missing.
- Use of non-programmable calculators is allowed.

Q. No.		Mark	BL	CO
1	Attempt any Two from the following.	12		
a	Solve $(D^2 + 5D + 6)y = e^{2x} + \sin x$		2	I
b	Solve $(D^2 - 3D + 2)y = e^{-x} \cos x$		2	I
c	Find the directional derivative of $\Phi = 4x^2y + yz^2$ at point $(1, -1, 1)$ in the direction of the normal to the surface $x \log z - y^2 = -4$ at point $(-1, 2, 1)$		2	II
2	Attempt any Two from the following	12		
a	Find $L \left\{ \frac{e^{-t} \sin t}{t} \right\}$		2	III
b	Find inverse Laplace Transform of $\frac{s+10}{(s-4)(s+9)}$		2	III
c	Find Half range Fourier cosine Series for $f(x) = x^2$, in the $(0, 2)$		2	IV
3	Attempt any Two from the following	12		
a	Find the Fourier Cosine transform of $f(x) = e^{-3x} + 5e^{-2x}$		2	V
b	Find the Fourier transform of $f(x) = \begin{cases} 1+x^2, & x < 1 \\ 0, & x > 1 \end{cases}$		2	V
c	Obtain the Fourier Sine transform of $f(x) = \begin{cases} \cos x, & 0 < x < a \\ 0, & x > a \end{cases}$		3	V

- a A random variable X has the following probability distribution,

X	1	2	3	4	5	6	7
P(X)	k	2k	3k	k ²	k ² +k	2k ²	4k ²

1 VI

Find i) The value of k, ii) $P(X > 6)$, iii) $P(0 \leq X \leq 4)$.

- b If 10% of people suffer from certain disorder, what is the probability that in a sample of 15 people i) Exactly 3 people will have disorder? ii) At least 2 people will have disorder? iii) At the most two people will have disorder?

2 VI

- c The marks of 1000 students in a university are found to be normally distributed with mean 70 and standard deviation 5. Estimate the number of students whose marks will be more than 75 & lies between 60 & 75. (Given: For S.N.V.z area from $z=0$ to $z=2$ is 0.4772 and $z=0$ to $z=1$ is 0.3413)

2 VI

- 5 Attempt any Two from the following

12

- a Show that the vector field given by

$$\vec{F} = (3x^2y)i + (x^3 - 2yz^2)j + (3z^2 - 2y^2z)k$$

2 II

is irrotational and hence find its scalar potential.

- b A manufacturer who produces medicine bottles finds that 0.1 % of the bottles are defective. The bottles are packed in boxes containing 500 bottles. A drug manufacturer purchases such 100 boxes from the producer of bottles. Using Poisson distribution find how many boxes will contain i) no defective ii) at least 2 defective bottles.

2 VI

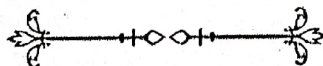
- c Evaluate by using Laplace Transform $\int_0^{\infty} e^{-t} \left(\frac{\cos at - \cos bt}{t} \right) dt$

2 III

- d Obtain Fourier Series for

$$f(x) = \begin{cases} 0, & -\pi < x \leq 0 \\ x, & 0 < x < \pi \end{cases}$$

3 IV





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Second Year B.Tech. (Sem-III)**END SEMESTER EXAMINATION (ESE) DECEMBER-2025 (WINTER)****Course Name :** Electrical Measurement and Instrumentation**Course Code:** 25UGPCC-EE304**Day & Date :** 31/12/2025 Wednesday**Max Marks :** 60 Marks**Time :** 02.00-04.00 pm.**Instructions:**

- All Questions are compulsory
- Figure to the right indicates full marks.
- Assume suitable data if missing.
- Use of non-programmable calculators is allowed.

Q. No.	Marks	BL	CO
1 Attempt any Two from the following.	12		
a Illustrate the following terms with examples: (a) Resolution (b) Precision c) Sensitivity.	3		II
b Attribute the construction and operation of a single-phase dynamometer power factor meter.	2		I
c Define Half wave and full wave with neat diagrams.	2		I
2 Attempt any Two from the following	12		
a Derive the balance condition of a Wheatstone bridge.	3		III
b Explicate the construction and working of an Instrument Transformer.	1		IV
c Resistances of the ratio arms of a Wheatstone bridge are 100Ω and 10Ω respectively. An unknown resistance is placed in fourth arm and the galvanometer current becomes zero when 153Ω resistance is placed in third arm. What is value of unknown resistance?	3		III
3 Attempt any Two from the following	12		
a State the operation of a successive approximation type DVM.	2		V
b Paraphrase the construction and working of a standard signal generator.	1		V
c Describe the function of AF sine wave and square wave generators.	2		V
4 Attempt any Two from the following	12		
a Classify various display devices used in digital instruments LED and LCD displays.	2		IV
b State advantages of LCDs over LEDs.	3		IV
c Explain the working principle of a digital display system with a neat block diagram	1		IV
5 Attempt any Two from the following	12		



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Second Year B.Tech. (Electrical Engineering) (Sem-III)**END SEMESTER EXAMINATION (ESE) DECEMBER-2025 (WINTER)**

Course Name : DC Machine & Transformer

Course Code: 25UGPCCEE303

Day & Date : Monday, 29/12/2025

Max Marks : 60 Marks

Time : 02:00 PM to 04:00 PM

Instructions:

- All Questions are compulsory
- Figure to the right indicates full marks.
- Assume suitable data if missing.
- Use of non-programmable calculators is allowed.

Q. No.	Marks	BL	CO
1 Attempt any Two from the following.	12		
a Explain the function of a compensating winding and its use in D.C. machines	2		I
b Draw and explain the characteristics of a D.C. shunt motor	2		I
c A 240V D.C. shunt motor armature resistance is 0.8 ohm & takes a no-load current of 6A and runs at 1450 rpm. Find its speed when taking an armature current of 38 A. If armature reactions reduced flux by 8%	3		III
2 Attempt any Two from the following	12		
a Explain construction, working, characteristics and applications of Variable Reluctance type Stepper Motor	2		II
b Comparison between core type & shell type transformer	3		III
c The primary winding of single phase transformer is connected to 220V, 50 Hz supply, the secondary winding has 800 turns. If the maximum value of flux is 2.03mwb. Find, i). The primary number of turns ii). The secondary induced voltage iii). The cross sectional area if the flux density has a maximum value of 0.465 Tesla	3		III
3 Attempt any Two from the following	12		
a Explain polarity test of a transformer with neat sketch	4		IV
b Explain the Sumpner's test on two identical transformers. Draw the circuit diagram and state its advantages	4		IV
c 30KVA transformer, iron losses are 360 W and full-load copper losses are 540 W. Find the efficiency at full load and half load, at unity power factor	3		III

4 Attempt any Two from the following 12

- a Draw the equivalent circuit of a three-winding transformer and explain how its parameters are obtained
- b Explain the Scott connection used for converting three-phase supply to two-phase supply with a neat diagram & write its applications
- c Explain the V-V (open delta) connection of three-phase transformers with a neat diagram & write its advantages

4 IV

4 IV

4 IV

5 Attempt any Two from the following 12

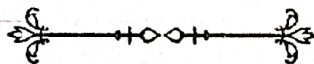
- a Explain the constructional details of a D.C. machine with neat sketch
- b Explain the speed control methods of D.C. series motor
- c Explain construction, working, characteristics and applications of DC Servo Motor
- d Derive EMF Equation of transformer & also write voltage, current & Turns ratio Equation

2 I

2 I

2 II

1 I





Second Year B.Tech. (Electrical Engineering) (Sem-III)
END SEMESTER EXAMINATION (ESE) NOV-DEC-2025 (WINTER)

Course Name : ELECTRICAL CIRCUIT ANALYSIS

Course Code: 25UGPCCSE302

Day & Date : Tuesday & 06-Jan-26

Max Marks : 60 Marks

Time : 02.00 PM TO 04.00 PM

Instructions:

- All Questions are compulsory
- Figure to the right indicates full marks.
- Assume suitable data if missing.
- Use of non-programmable calculators is allowed.

Q. No.

Marks

BL

CO

- 1 Attempt any Two from the following.**
- State and explain Maximum Power Transfer Theorem.
 - State and explain the KCL and KVL.
 - Convert the given delta network into an equivalent star network.

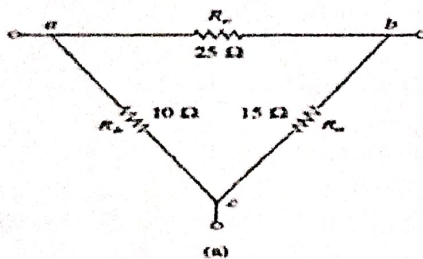
12

2

II

2

I



3

I

- 2 Attempt any Two from the following**
- Explain the different types of power with the neat diagram of power triangle.
 - What do you mean by Energy in Coupled Coils?
Two coils have self-inductances $L_1 = 4H$, $L_2 = 9H$, and coefficient of coupling $k = 0.5$. Find mutual inductance
 - In the circuit shown in Figure, the switch K is closed at $t = 0$, with zero current in the conductor. Find the values of i , di/dt , d^2i/dt^2 at $t = 0^+$, for element values as follows $V = 100V$, $R = 1000\Omega$, and $C = 1 \mu F$.

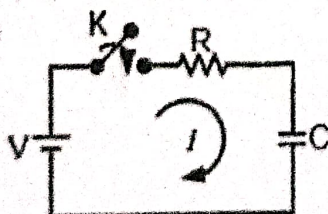
12

2

III

3

III



3

IV

- 3 Attempt any Two from the following**
- Three equal impedances, each of $(8 + j10) \Omega$, are connected in star across a 440 V, 50 Hz three-phase supply. Find (a) Phase voltage (b) Phase angle (c) Phase current (d) Line current (e) Active power (f) Reactive power
 - Define 1. Phase Sequence 2. Phase Voltage 3. Phase Current 4. Line

12

3

V

2

V

Voltage 5. Line Current 6. Symmetrical or Balanced System

- c Three similar coils A, B, and C are available. Each coil has a $9\ \Omega$ resistance and a $12\ \Omega$ reactance. They are connected in delta to a three-phase, 440 V, 50 Hz supply. Calculate for this load, the (a) phase current, (b) line current, (c) power factor, (d) total kVA, (e) active power, and (f) reactive

3 V

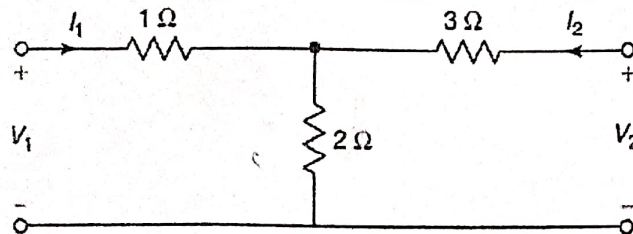
4 Attempt any Two from the following

12

- a Explain the Z-parameters (Impedance parameters) of a two-port network.
b Explain the Series interconnections of two-port networks with neat diagrams
c Find Y-parameters for the network shown in Fig.

2 VI

2 VI



3 VI

5 Attempt any Two from the following

12

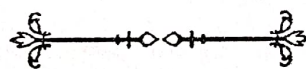
- a Explain the advantages of a three-phase system over a single-phase system in terms of: (a) Power transmission efficiency (b) Equipment design and economy (c) Voltage regulation and load balancing.
b Differentiate between star (Y) and delta (Δ) connections in a three-phase system.
c Define a two-port network. Draw its general structure and explain the terms port, input port, and output port with examples
d A 415 V, 50 Hz, three-phase voltage is applied to three star-connected identical impedances. Each impedance consists of a resistance of $15\ \Omega$, a capacitance of $177\ \mu\text{F}$ and an inductance of 0.1H in series. Find the (a) power factor, (b) phase current, (c) line current, (d) active power, (e) reactive power

2 I

2 II

2 VI

3 V



SEAT NO.:

QP SET : Choose an item.


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Second Year B.Tech. (Electrical. Engg.) (Sem-III)
END SEMESTER EXAMINATION (ESE) DECEMBER-2025 (WINTER)
Course Name : Management concepts & techniques

Course Code: 25UGBEC1-EE306

Day & Date : 02/01/2026 Friday

Max Marks : 60 Marks

Time : 02.00 - 04.00

Instructions:

- i. All Questions are compulsory
- ii. Figure to the right indicates full marks.
- iii. Assume suitable data if missing.
- iv. Use of non-programmable calculators is allowed.

Q. No.		Marks	BL	CO
1	Attempt any Two from the following.	12		
a	Explain the Human Relations and Behavioral Approach to management with examples.		2	II
b	Write short notes on any two: (a) Planning (b) Organizing (c) Staffing (d) Controlling.		2	I
c	Write short notes on Role of Manager.		1	I
2	Attempt any Two from the following	12		
a	Explain the importance and purpose of communication in management.		2	III
b	Explain the objectives and importance of Government Enterprises.		1	IV
c	Define Human Resource Management. Explain its basic functions.		2	IV
3	Attempt any Two from the following	12		
a	Describe the characteristics and advantages of a Partnership Firm.		2	III
b	Explain the functions and importance of production planning and control (PPC).		2	IV
c	Define types of layout (in brief).		2	III
4	Attempt any Two from the following	12		
a	Write short notes on: (a) Job production (b) Mass production (c) Continuous production.		2	III
b	Explain how efficient production operations management contributes to productivity.		2	IV
c	Define Recruitment, Selection, Training and Development, Placement		1	IV
5	Attempt any Two from the following	12		
a	What is manpower planning? Describe its steps.		2	II
b	Describe training and development methods used for employees.		2	IV

- c Explain the levels of management and roles of managers at each level. 2 I
- d Define organization. Explain the principles of organization. 3 III

