ST. ANNE'S COLLEGE OF ENGINEERING AND TECHNOLOGY

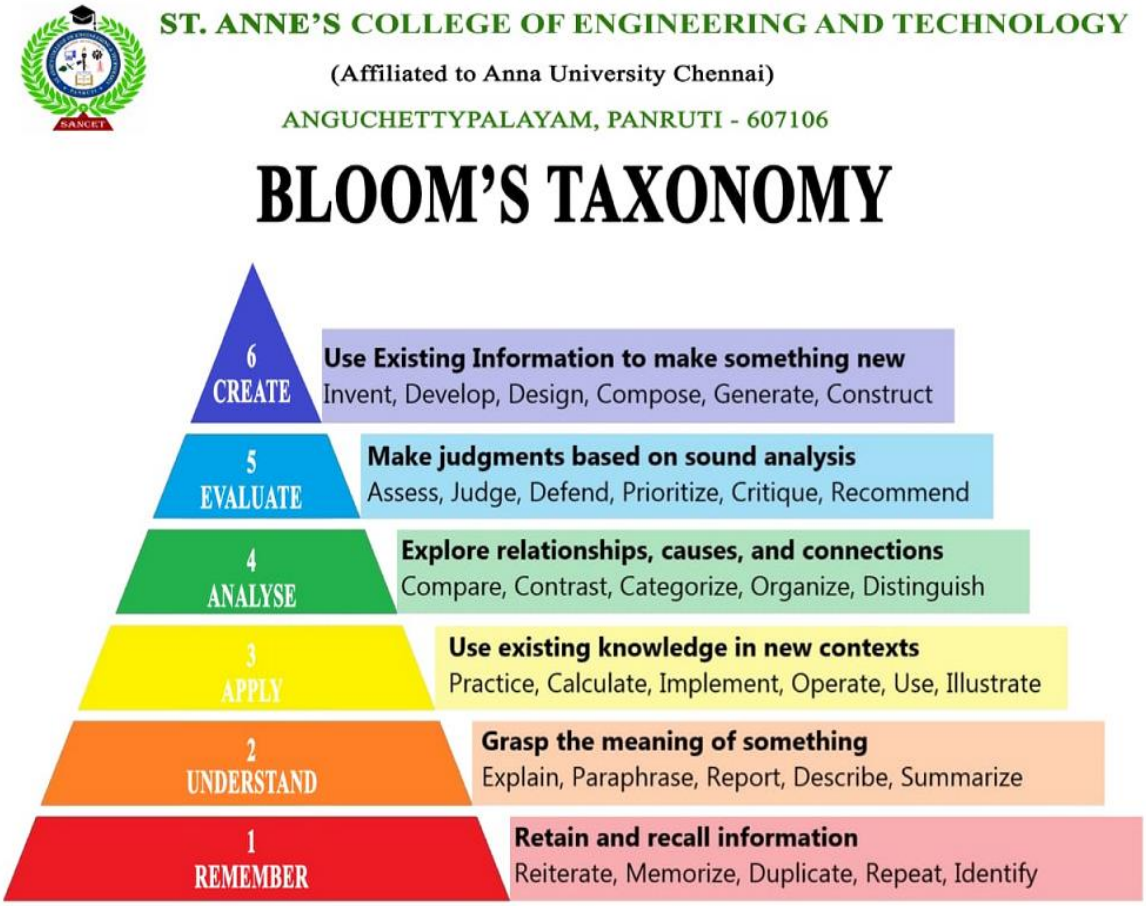
Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai
Accredited by NAAC
ANGUCHETTYPALAYAM, PANRUTI – 607 106.

Programme Outcomes (POs) and Programme Educational Objectives and Programme Specific Outcomes (PSOs) for all Programmes offered by the institution are stated and displayed on website

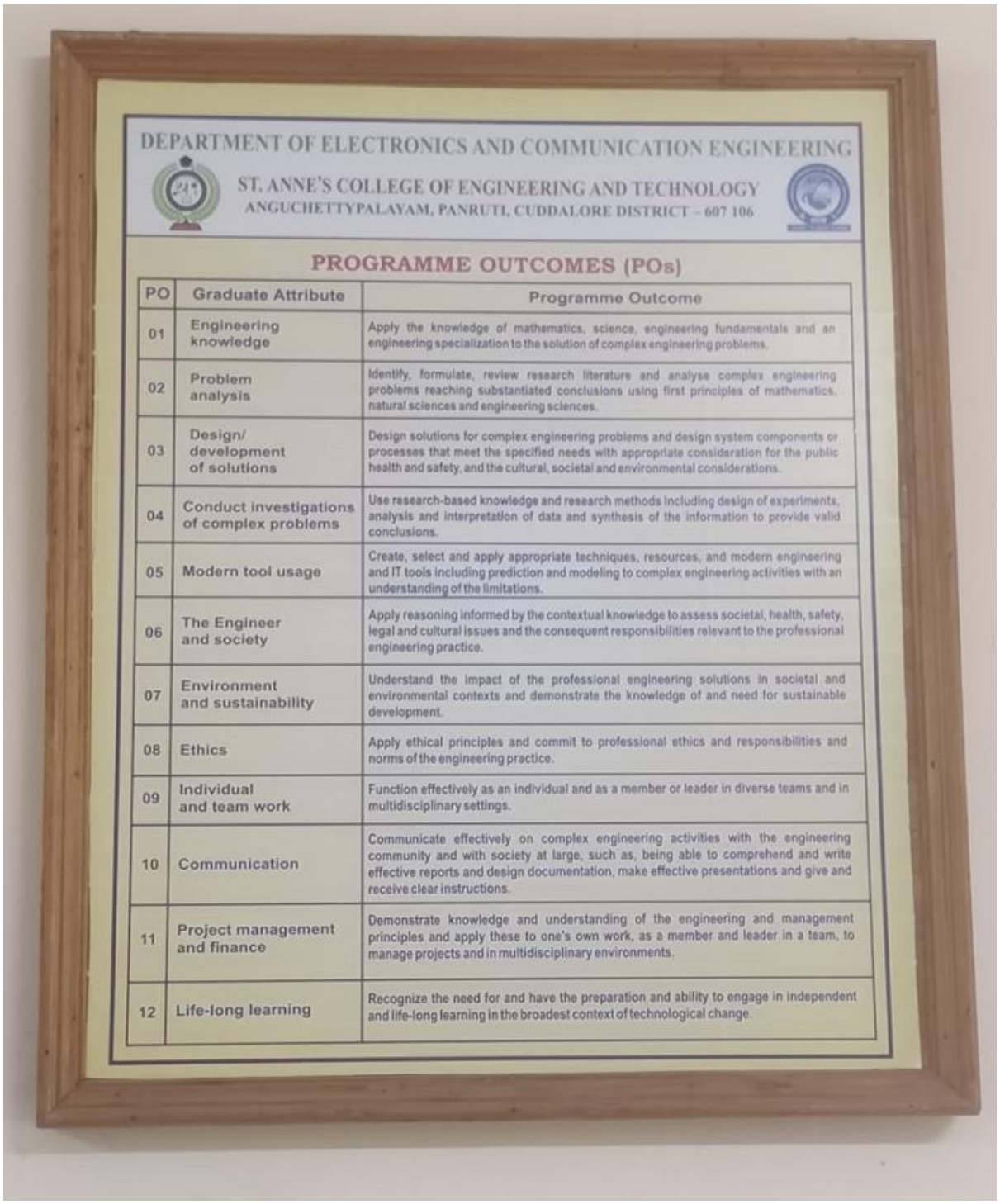
AROKIADASS RAJARATHANAM

Digitally signed by AROKIADASS RAJARATHANAM
DN: cn=AROKIADASS RAJARATHANAM c=IN o=PERSONAL
Reason: I am the author of this document
Location:
Date: 2024-12-23 18:22+05:30

BLOOM'S TAXONOMY DISPLAY PANEL



PROGRAMME OUTCOMES DISPLAY PANEL



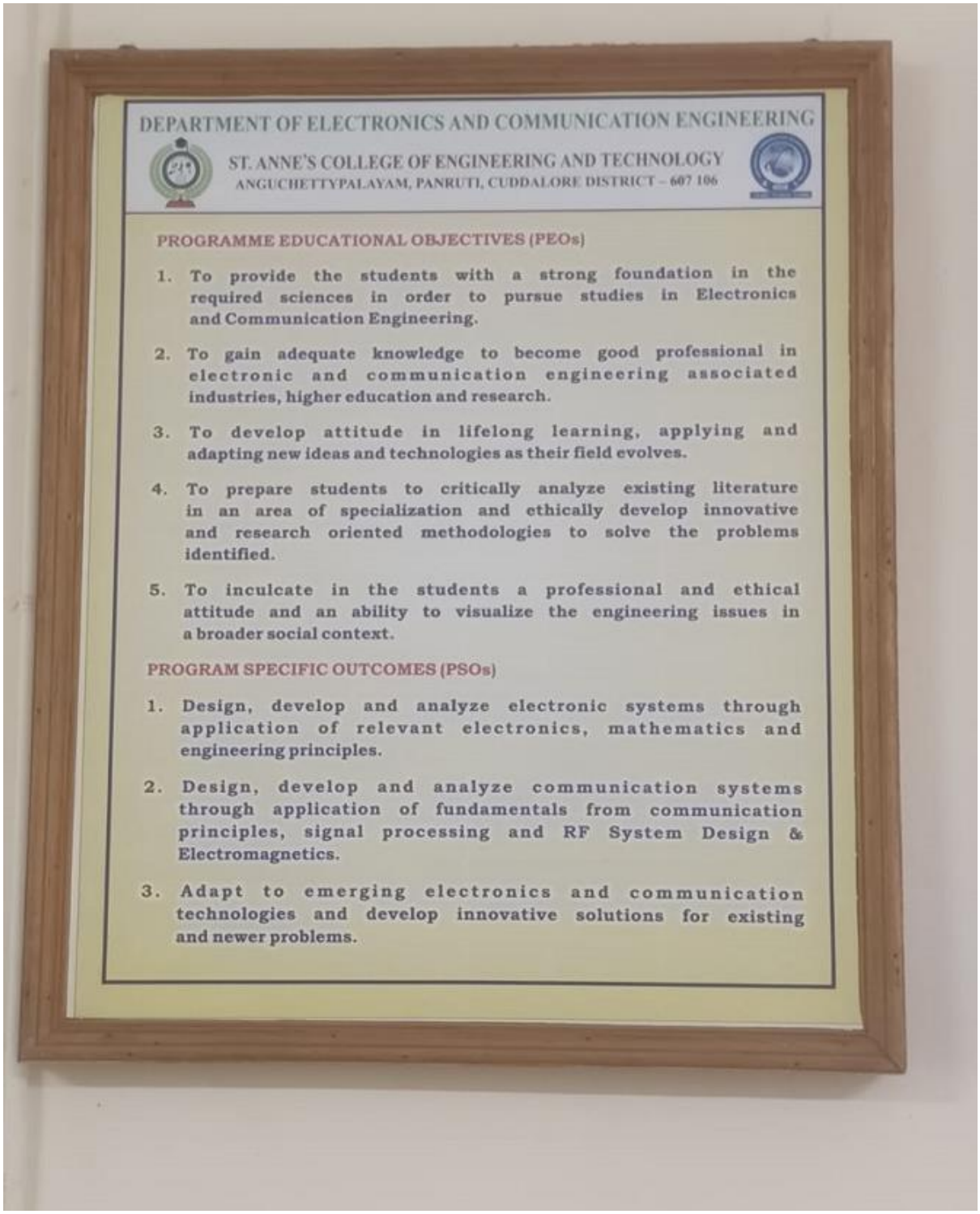
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ST. ANNE'S COLLEGE OF ENGINEERING AND TECHNOLOGY
ANGUCHETTYPALAYAM, PANRUTI, CUDDALORE DISTRICT – 607 106

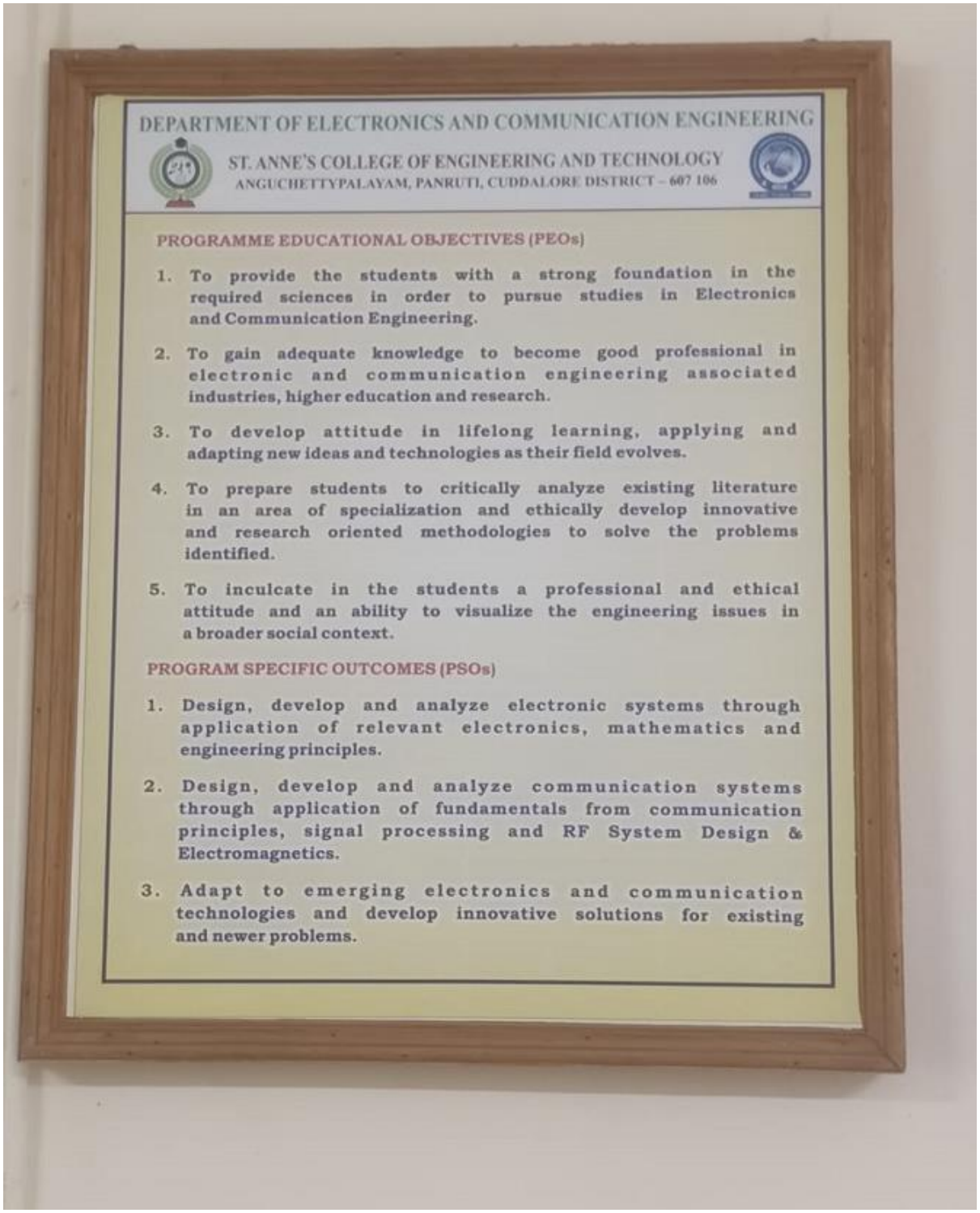
PROGRAMME OUTCOMES (POs)

PO	Graduate Attribute	Programme Outcome
01	Engineering knowledge	Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
02	Problem analysis	Identify, formulate, review research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
03	Design/ development of solutions	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.
04	Conduct investigations of complex problems	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
05	Modern tool usage	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
06	The Engineer and society	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
07	Environment and sustainability	Understand the impact of the professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development.
08	Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
09	Individual and team work	Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.
10	Communication	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
11	Project management and finance	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12	Life-long learning	Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME EDUCATIONAL OBJECTIVES DISPLAY PANEL



PROGRAMME SPECIFIC OUTCOMES DISPLAY PANEL



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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ANGUCHETTYPALAYAM, PANRUTI, CUDDALORE DISTRICT – 607 106

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

1. To provide the students with a strong foundation in the required sciences in order to pursue studies in Electronics and Communication Engineering.
2. To gain adequate knowledge to become good professional in electronic and communication engineering associated industries, higher education and research.
3. To develop attitude in lifelong learning, applying and adapting new ideas and technologies as their field evolves.
4. To prepare students to critically analyze existing literature in an area of specialization and ethically develop innovative and research oriented methodologies to solve the problems identified.
5. To inculcate in the students a professional and ethical attitude and an ability to visualize the engineering issues in a broader social context.

PROGRAM SPECIFIC OUTCOMES (PSOs)

1. Design, develop and analyze electronic systems through application of relevant electronics, mathematics and engineering principles.
2. Design, develop and analyze communication systems through application of fundamentals from communication principles, signal processing and RF System Design & Electromagnetics.
3. Adapt to emerging electronics and communication technologies and develop innovative solutions for existing and newer problems.

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CIA QUESTION PAPER

REG. NO.												

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ANGUCHETTYPALAYAM, PANRUTI – 607 106.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – I

SUBJECT CODE / NAME: EC3552 / VLSI AND CHIP DESIGN

Year: III **Semester: V** **Period: 2023-2024**

Date: 20 / 09 / 2023 **Time: 09.30 AM to 11.00 AM** **Max.: 50 Marks**

Part – A (10*2=20)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	What is Moore's Law?	CO1	K1
2	What are the advantages of scaling	CO1	K2
3	Draw 2:1 MUX using transmission gate.	CO1	K1
4	What is meant by Monotonicity problem?	CO2	K1
5	What is the clock skew?	CO2	K1

Part – B (5*13=65)

6	a) Explain in detail about the ideal I-V characteristics of a NMOS and PMOS device. (OR) b) Implement the following expression in static CMOS logic fashion using no more than 10 transistors. Y = (AB + ACE + DE + DCB)'	CO1 CO1	K1 K1
7	a) Explain the static and dynamic power dissipation in CMOS circuits with necessary diagrams and expressions. (OR) b) Explain various ways to minimize the static and dynamic power dissipation.	CO2 CO2	K1 K1

Part – C (1*15=15)

8	a) Explain in detail dynamic characteristics (DC Transfer) of MOS Transistor. (OR) b) Implement the following expression in static CMOS logic fashion using no more than 10 transistors. Y = (AB + ACE + DE + DCB)'	CO1 CO2	K2 K1

18.9.2023

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ANGUCHETTYPALAYAM, PANRUTI – 607 106.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – I

SUBJECT CODE / NAME: CB 3491 / CRYPTOGRAPHY AND CYBER SECURITY

Year: III **Semester: V** **Period: 2023-2024**

Date: 21 / 09 / 2023 **Time: 09.30 AM to 11.00 AM** **Max.: 50** Marks

COURSE OUTCOMES:

CO1 : Understand the fundamentals of network security, security architecture, threats and vulnerabilities .

CO2 : Apply the different cryptographic operation of symmetric cryptographic algorithm.

Part – A (05*2=10)

1	Compare Active and Passive attack.	CO1	K1
2	What are the two basic functions used in the encryption algorithm?	CO1	K1
3	What is an avalanche effect?	CO1	K1
4	Define field Ring in number theory.	CO2	K2
5	Give the five modes of operation of block cipher	CO2	K2

Part – B (2*13=26)

6	a) Explain the Substitution encryption techniques in detail. (13)		CO1	K4
	(OR)			
	b) Explain in detail about different types of attack. (13)		CO1	K3
7	a) Describe DES algorithm with neat diagram and explain the steps. (13)		CO2	K4
	(OR)			
	b) Explain the Euclids Algorithm with example. (13)		CO2	K4

Part – C (1*14=14)

8	a) Explain the security service and mechanism. (14)	CO1	K4
	(OR)		
	b) what do you mean by AES? Diagrammatically illustrate the structure of AES and describe the steps in AES encryption process with example. (14)	CO1	K3

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ANGUCHETTYPALAYAM, PANRUTI – 607 106.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – II

SUBJECT CODE / NAME: EC8701 / ANTENNA AND MICROWAVE ENGINEERING

Year: IV **Semester: VII** **Period: 2023-2024**

Date: 12 / 10 / 2023 **Time: 09.30 AM to 11.00 AM** **Max.: 50 Marks**

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Distinguish between uniform and non-uniform arrays.	CO3	K2
2	Draw the radiation pattern for a linear array of two isotropic elements spaced λ/2 apart and with equal current fed in phase.	CO3	K2
3	A uniform linear array of 4 isotropic elements with an inter element spacing of λ / 2. Find the BWFN and directivity of end fire arrays.	CO3	K3
4	State the principle of pattern multiplication	CO4	K2
5	Define adaptive array (smart antennas).	CO4	K1

Part – B (2*13=26)

6	**a)** Derive the expression for the array factor of a linear array of two element array spaced λ/2 apart fed with signals of equal amplitude and phase. Obtain the directions of maxima and minima	CO3	K3
	(OR)		
	b) Derive the expression for the array factor of a linear array of two element array spaced λ/2 apart fed with signals of equal amplitude and opposite phase. Obtain the directions of maxima and minima	CO3	K3
7	a) Derive the expression for n- element array total Electric field. Describe a broadside array. Deduce an expression for the radiation pattern of a broadside array with four-point sources and d= λ/2.	CO4	K3
	(OR)		
	b) Describe a end fire array. Deduce an expression for the radiation pattern of a broadside array with four-point sources and d= λ/4.	CO4	K3

Part – C (1*14=14)

8	**a)** Explain in detail the Binomial array and derive the expression for the array factor. Also obtain the excitation coefficients of a 10-element binomial array.	CO3	K4
	(OR)		
	b) (i) Describe in detail about smart antennas and its applications. (8) (ii) Using pattern multiplication determine the radiation pattern for 8 element arrays separated by the distance λ / 2. (6)	CO3	K2

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DEPARTMENT OF ELECRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – III

SUBJECT CODE / NAME: EC 8701 / ANTENNA AND MICROWAVE ENGINEERING

Year: IV **Semester: VII** **Period: 2023-2024**

Date: 09 / 11 / 2023 **Time: 09.20 AM to 12.20 PM** **Max.: 100 Marks**

Part – A (10*2=20)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Define Beam Width between First Null?	CO1	K2
2	What is Link Budget? Mention a simple Link Budget equation.	CO1	K3
3	Calculate the beam width between first nulls of a 2.5 m paraboloid reflector used at 6 GHz.	CO2	K3
4	State Rumsey principle on frequency independence.	CO2	K2
5	Define Grating lobes.	CO3	K2
6	What is tapering of arrays?	CO3	K2
7	What are the four different modes of operation of Gunn diode?	CO4	K2
8	A Directional coupler is having coupling factor of 20dB and directivity of 40dB. If the incident power is 900mW, what is the coupled power?	CO4	K3
9	List out the factors that may be important in the selection of a particular matching network?	CO5	K2
10	Define Available power gain	CO5	K2

Part – B (05*13=65)

11	**a)** Define and explain the significance of the following antenna parameters: (i) Antenna brightness temperature (3) (ii) Antenna noise temperature (4) (iii) Antenna Efficiency (3) (iv) Half Power Beam width (3) **(OR)** **b)** Examine the Noise Characterization of a microwave receiver	CO1 CO1	K2 K3
12	**a)** Explain in detail about Loop antenna. Derive the expression for fields at Far region **(OR)** **b)** Discuss the principle working of Parabolic reflectors. Explain the various feed techniques their relative merits and demerits. Discuss the role of f/d ratio in the	CO2 CO2	K2 K2

	parabolic reflectors (f- focal length, D – diameter of reflector).		
13	**a)** Derive the expression for the array factor of a linear array of four isotropic element spaced $\lambda/2$ apart fed with signals of equal amplitude and opposite phase. Obtain the directions of maxima and minima	**CO3**	**K3**
	(OR)		
	b) i) Derive Array factor of an Uniform linear array of n sources. Explain the significance of array factor (9)	**CO3**	**K3**
	(ii) Compare End fire and Broadside array. (4)		
14	**a)** With neat diagram explain the operation of two cavity Klystron amplifier and derive the equations for velocity modulation process.	**CO4**	**K2**
	(OR)		
	b) Explain the construction of Magic Tee and derive its S-matrix	**CO4**	**K3**
15	**a)** Explain in detail the types of mixers in microwave circuits.	**CO5**	**K2**
	(OR)		
	b) Derive the expression for L-section matching network?	**CO5**	**K3**

Part – C (1*15=15)

16	a) Design a 55 – 225 MHz log – periodic antenna to obtain a gain corresponds to scale factor 1.25 and space factor 0.15. Determine number of dipoles required to design LPDA.	**CO2**	**K4**
	(OR)		
	b) Investigate the stability regions of a transistor whose S-parameters are recorded as follows: S12=0.2 ∟-10°;S11=0.7∟ -70 °;S21=5.5 ∟85 °;S22=0.7∟ -45 °; at 750 MHz.	**CO2**	**K4**

PREPARED BY 13/11/2023

VERIFIED BY 13/11/23

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – II

SUBJECT CODE / NAME: EC 3552 / VLSI AND CHIP DESIGN

Year: III **Semester: V** **Period: 2023-2024**

Date: 09 / 11 / 2023 **Time: 09.20 AM to 12.20 PM** **Max.: 100 Marks**

Part – A (10*2=20)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Compare nMOS and pMOS devices.	CO1	K1
2	What are the drawbacks of scaling?	CO1	K1
3	What are the advantages of static CMOS circuits?	CO2	K1
4	Draw 2:1 MUX using transmission gate	CO2	K4
5	Compare synchronous and asynchronous design.	CO3	K2
6	State the uses of Schmitt trigger.	CO3	K2
7	What is CAM?	CO4	K2
8	Design a one transistor DRAM cell	CO4	K2
9	What are the Fault models?	CO5	K2
10	What is Boundary scan testing?	CO5	K2

Part – B (05*13=65)

11	a) Explain in detail about the ideal I-V characteristics of a NMOS and PMOS device.	CO1	K4
	(OR)		
	b) Explain about scaling and power consumption.	CO1	K4
12	a) Explain the components of static and dynamic power dissipation in CMOS circuits with necessary diagrams and expressions.	CO2	K2
	(OR)		
	b) Explain Pass transistor logic and Transmission gates in detail.	CO2	K1
13	a) Explain the operation of master-slave based edge triggered register.	CO3	K2
	(OR)		
	b) Explain about Monostable and Astable Sequential Circuit in VLSI	CO3	K1

14	a) Explain the design and operation of 4 bit unsigned array multiplier circuit and Wallace multiplier circuit.	CO4	K2
	(OR)		
	b) Explain about FPGA architecture in detail.	CO4	K1
15	a) Explain in detail about ASIC design flow.	CO5	K2
	(OR)		
	b) Explain Boundary Scan Testing.	CO5	K1

Part – C (1*15=15)

16	a) Explain about PAL,PLA,PROM	CO4	K4
	(OR)		
	b) Explain about test benches in VLSI.	CO5	K3

6.11.2023

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – II

SUBJECT CODE / NAME: CS 3591 / COMPUTER NETWORKS

Year: III | **Semester: V** | **Period: 2023-2024**

Date: 09 / 11 / 2023 | **Time: 09.20AM to12.20PM** | **Max.:100** Marks

Part – A (10*2=20)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Define Networks	CO1	K1
2	What are the five components in data communication system	CO1	K1
3	How congestion occurs in network	CO2	K1
4	What are the advantages of using UDP over TCP	CO2	K4
5	What is packet switching	CO3	K2
6	Explain IPV6? why IPV6 is preferred over IPV4?	CO3	K2
7	Define Routing	CO4	K2
8	Difference between DVR and LSR?	CO4	K2
9	Define Piggybacking	CO5	K2
10	Find the hamming distance between two pairs of code word A=01011,B=11110 ?	CO5	K2

Part – B (05*13=65)

11	**a)** Explain in detail about SMTP	CO1	K1
	(OR)		
	b) Discuss in detail about layer in OSI	CO1	K2
12	**a)** Discuss Congestion Avoidance Algorithm.	CO2	K2
	(OR)		
	b) Explain Connection establishment of termination in TCP	CO2	K4
13	**a)** Explain IPV4 Addressing	CO3	K4
	(OR)	CO3	K1

b) Explain Detail about i) ICMP ii) ARP iii) RARP

14	a)	Explain Distance Vector Routing	CO4	K4
		(OR)		
	b)	Explain DVMRP in detail	CO4	K4
15	a)	Explain i) Stop wait protocol, ii) Go-Back N iii) Selective Repeat	CO5	K4
		(OR)		
	b)	Describe CSMA/CD Protocol in Detail	CO5	K2

Part – C (1*15=15)

16	a)	Explain in Detail about IEEE 802.11	CO3	K4
		(OR)		
	b)	Explain CRC	CO2	K4

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – II

SUBJECT CODE / NAME: CEC 352 / SATELLITE COMMUNICATION

Year: III **Semester: V** **Period: 2023-2024**

Date: 14 / 11 / 2023 **Time: 09.20 AM to 12.20 PM** **Max.: 100 Marks**

Part – A (10*2=20)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	A satellite is in an elliptical orbit with eccentricity of 0.6 and perigee altitude 1000 Km. Determine: a) The semi major axis b) The period of revolution	CO1	K3
2	Assume a circular orbit: Using Newton's law of gravitation and Newton's second law, determine the acceleration of a satellite.	CO1	K2
3	What is the need for thermal control and propulsion?	CO2	K2
4	Write short notes on altitude control system.	CO2	K2
5	A satellite downlink at 10 GHz operates with a transmit power of 6 W and an antenna gain of 48.2dB. Calculate the EIRP (dBW)	CO3	K3
6	The range between a ground station & a satellite is 42000km. Calculate the free space loss a frequency of 6GHZ.	CO3	K4
7	What is the function of BCW in a TDMA frame?	CO4	K2
8	Give the diagrammatic representation of a SPADE system.	CO4	K2
9	Compare LEO and MEO and GEO satellites in terms of height, orbital period and propagation loss.	CO5	K2
10	List the basic principle of VSAT networks?	CO5	K2

Part – B (05*13=65)

11	a) What do you mean by orbital perturbations. Explain in detail?	CO1	K2
	(OR)		
	b). Explain how Keplers's and Newton's law are used to describe the orbit. Explain about satellite launch vehicles	CO1	K2
12	a) What are the three main systems for tracking satellites? How can tracking systems be affected? What are the main functions of TTC subsystem? Explain.	CO2	K2
	(OR)		
	b) (i) Describe the East West and North South station keeping maneuvers required in satellite station keeping. (4) (ii) Explain what is meant by satellite attitude and briefly describe two forms of attitude control. (9)	CO2	K2
	a) Derive the expression for uplink and downlink carrier to noise power spectral	CO3	K3

13 density.

(OR)

b) Briefly explain in detail the effects of rain in uplink and downlink in satellite communication. **CO3** **K2**

Write the design aspects and explain the technical features of TDMA frame structure and carrier recovery **CO4** **K2**

(OR)

14 b) (i) Draw the encoder diagram for the following digital signals- Unipolar, NRZ, Polar NRZ, Manchester, Polar RZ for the digital data 1010111. (10) **CO4** **K2**

(ii) Write down the advantages of CDMA for satellite networking (3)

a) Explain the three segments of a GPS. Also, describe how position and ranging are determined using a GPS system. **CO5** **K2**

15 **(OR)**

b) (i) Write short notes on GSM architecture. (8)

(ii) Explain the concept behind DTH. (5) **CO5** **K2**

Part – C (1*15=15)

a) (i) A geostationary satellite is located at 90 degrees W. Calculate the azimuth angle for an earth station antenna at latitude 35-degree N and longitude 100 degrees W. Also, find the range and antenna elevation angle. **(10)**

(ii) Determine the limits of visibility for an earth station situated at mean sea level, at a latitude48.42° north and longitude 89.26° west. Assume a minimum angle of elevation 5° **(5)** **CO1** **K4**

(OR)

16 b) (i)In a link budget calculation at 12GHz, the free space loss is 206dB, the antenna pointing loss is 1dB, and the atmospheric absorption is 2dB. The receiver G/T is 19.5 dB/K, and the receiver feeder losses are 1 dB. The EIRP is 48DBW. Calculate the carrier to noise spectral density ratio **(9)**

(ii)A geostationary satellite transmits 5 W of power with an antenna having a gain of 28 dB. The downlink is operated at 4 GHz and the receive antenna is a dish with diameter of 3.6 m. Compute the EIRP transmitted, and the power received by the receiving antenna. Assume the receiver antenna efficiency to be 0.7 and all the other losses to be 2 dB. **(6)** **CO3** **K4**

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – I

SUBJECT CODE / NAME: EE 3301 / ELECTROMAGNETIC FIELDS

Year: II **Semester: III** **Period: 2023-2024**

Date: 02 / 12 / 2023 **Time: 01.30 PM to 03.00 PM** **Max.: 50 Marks**

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	What is the divergence of curl of a vector?	CO1	K2
2	State Gauss law. What are the limitations of Gauss law?	CO1	K1
3	Write Coulomb's law. What are the applications of Coulomb's law?	CO1	K2
4	How is electric energy stored in a capacitor?	CO2	K1
5	What is a point charge?	CO2	K1

Part – B (2*13=26)

6	a) Write the infinite simal displacement, surface and volume elements is spherical and cylindrical coordinates. (13)	CO1	K3
	(OR)		
	b) i) State and prove Divergence theorem. (07) ii) State and prove Stokes theorem. (06)	CO1	K3
7	a) Derive an expression for capacitance of coaxial cable and spherical capacitor. (13)	CO2	K3
	(OR)		
	b) i) Write down the general procedure for solving poisson's and Laplace's equation (06) ii) Derive the expression for energy and energy density in static electric fields. (07)	CO2	K4

Part – C (1*14=14)

8	a) State and explain the electric boundary conditions between two dielectrics materials. (14)	CO2	K4
	(OR)		
	b) Find the electric field due to infinite long conductor and infinite sheet of charge using Gauss law. (14)	CO1	K4

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – I

SUBJECT CODE / NAME: GE8076/PROFESSIONAL ETHICS IN ENGINEERING

Year: IV **Semester: VIII** **Period: 2023-2024**

Date: 11.03.2024 **Time: 09.30 AM to11.00AM** **Max.:50** Marks

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	Students Should Understand the concept and importance of engineering ethics.	K2
CO2	The student should be able to apply ethics in society	K3
CO3	The student discuss the ethical issues related to engineering	K4
CO4	The student should realize the responsibilities and rights in the society.	K5
CO5	The student should understand the global issues in Engineering	K4

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	**Define** Moral, values and Ethics.	CO1	K2
2	**List the** steps used to resolve the Moral Dilemmas?	CO1	K1
3	**State** the important of ethical theories	CO1	K2
4	**What is** Engineering Ethics?	CO2	K2
5	**Differentiate** Micro-ethics and Macro-ethics.	CO2	K3

Part – B (2*13=26)

6	a) **Explain** the scope and importance of professional ethics in engineering.**(OR)** (b) (i) **Justify** the importance of civic virtues **(6)** (ii) **What** is service learning? Why service learning is important? Explain characteristics of service Learning. **(7)**	CO1 CO1	K3 K2
7	a)**How** the moral dilemma can be resolved using Kohlberg's and Gilligan's theory **(OR)** b) **With** example and necessary illustration discuss the models of professional roles.	CO2 CO2	K2 K2

Part – C (1*14=14)

8	a) **Discuss** the role of yoga in professional excellence and stress management **(OR)** b) **Elaborate** the benefits of Empathy and compare Empathy with Sympathy.	CO1 CO1	K3 K2

PREPARED BY 8/3/24

VERIFIED BY 8/3/24

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – I

SUBJECT CODE / NAME: EC8094/SATELLITE COMMUNICATION

Year: IV **Semester: VIII** **Period: 2023-2024**

Date: 12.03.2024 **Time: 09.30 AM to 11.00 AM** **Max.: 50 Marks**

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	Identify the Satellite Orbits	K3
CO2	Analyze the Satellite Subsystems	K4
CO3	Evaluate the satellite Link Power Budget	K5
CO4	Identify Access Technology for Satellite	K3
CO5	Design Various Satellite Applications	K2

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	State Kepler's third law.	CO1	K1
2	Define Apogee and Perigee	CO1	K1
3	How the satellite position is affected? List a few factors?	CO1	K2
4	Draw the block diagram of antenna subsystem.	CO2	K2
5	What is meant by transponder?	CO2	K1

Part – B (2*13=26)

6	a) Derive the complete expression for Look Angles, along with intermediate angle in satellite communication. **(OR)** (b) i) Explain and illustrate the limits of visibility in satellite orbits. **(6)** ii) Write a brief notes about satellite launch vehicles. **(7)**	CO1 CO1	K3 K2
7	a) Examine how the attitude and orbit control system (AOCS) is achieved through spin stabilization system? Give necessary diagrams **(OR)** b) What are the three main systems for tracking satellites? How can tracking systems be affected? What are the main functions of TTC subsystem? Explain.	CO2 CO2	K2 K2

Part – C (1*14=14)

8	a) A ground station lies at latitude = 39.2906 degrees N and longitude = 280.2629 degrees E. A Geostationary satellite at radius r = 42164 km has a longitude of 280.2629 degrees E. Calculate the range and look angles (azimuth and elevation angles) to the satellite? **(OR)** b) Explain in detail about orbital elements and orbital perturbations with suitable example.	CO1 CO1	K3 K2

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
CONTINUOUS INTERNAL ASSESSMENT – I

SUBJECT CODE / NAME: EE3033 / HYBRID ENERGY TECHNOLOGY

Year: III **Semester: V** **Period: 2023-2024**

Date: 13.03.2024 **Time: 09.30 AM to 11.00 AM** **Max.: 50 Marks**

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	Analyze the impacts of hybrid energy technologies on the environment and demonstrate them to harness electrical power.	K4
CO2	Select a suitable Electrical machine for Wind Energy Conversion Systems and simulate wind energy conversion system	K2
CO3	Design the power converters such as AC-DC, DC-DC, and AC-AC converters for SPV systems.	K6
CO4	Analyze the power converters such as AC-DC, DC-DC, and AC-AC converters for Hybrid energy systems	K4
CO5	Interpret the hybrid renewable energy systems	K2

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Define Hybrid Energy?	CO1	K1
2	Differentiate between Renewable and non-Renewable energy?	CO1	K2
3	List the different hybrid energy technology used in India.	CO1	K1
4	Why Doubly Fed Induction Generator is used in hybrid system	CO2	K2
5	What are the advantage and Disadvantage of Hybrid Energy Technology	CO1	K2

Part – B (2*13=26)

6 1.	a) Explain the Working and Operating characteristics of PV cell in generation of energy. (OR) b) Describe in detail about the working and Operating characteristics of Fuel cell .	CO1 CO1	K2 K2
7	a) Briefly explain with neat diagram the Construction, working principle of Squirrel cage Induction Generator? (OR) b) How does the Dobuly Fed Induction Generator is used in Hybrid Enegy System.	CO2 CO2	K2 K2

Part – C (1*15=15)

8	a) Explain in detail about the need for Hybel-Wind Energy system (OR) b) Discuss the Impacts of Renewable Energy on the Environment & Importance of Hybrid Energy?	CO1 CO2	K2 K2

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – II

SUBJECT CODE / NAME: GE8076/PROFESSIONAL ETHICS IN ENGINEERING

Year: IV **Semester: VIII** **Period: 2023-2024**

Date: 04.04.2024 **Time: 09.30 AM to11.00AM** **Max.:50** Marks

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	Students Should Understand the concept and importance of engineering ethics.	K2
CO2	The student should be able to apply ethics in society	K3
CO3	The student discuss the ethical issues related to engineering	K4
CO4	The student should realize the responsibilities and rights in the society.	K5
CO5	The student should understand the global issues in Engineering	K4

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	**Differentiate** scientific experiment and Engineering project	CO3	K4
2	**Justify** the term informed consent?	CO3	K5
3	**List** any two resonsibilities of Engineers to the society.	CO3	K1
4	**Define** the term Collective Bargaining and list its types.	CO4	K2
5	**What** is mean by whistle blowing?	CO4	K2

Part – B (2*13=26)

6	a) **How** can an engineer become a responsible experimenter? Explain in detail.**(OR)** b) **Explain** how codes of ethics guides an engineer in the professional behavior	CO3 CO3	K2 K4
7	a) The Elements of intellectual property rights benefits people. Explain? **(OR)** b) **With** suitable examples, explain the procedure in risk benefit analysis and discuss its role in reducing risk.	CO4 CO4	K2 K4

Part – C (1*14=14)

8	a) **Discuss** the safety lesson with a case study of Chernobyl, Near Kiev, Russia in April 1986. **(OR)** b) **Elaborate** the sequence of issues that lead to failure in Challenger case.	CO3 CO4	K4 K5

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DEPARTMENT OF ELECTRONICS AND COMMUNIOCATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – II

SUBJECT CODE / NAME: EC8094/SATELLITE COMMUNICATION

Year: IV **Semester: VIII** **Period: 2023-2024**

Date: 05.04.2024 **Time: 09.30 AM to 11.00 AM** **Max.: 50** Marks

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	Identify the Satellite Orbits	K3
CO2	Analyze the Satellite Subsystems	K4
CO3	Evaluate the satellite Link Power Budget	K5
CO4	Identify Access Technology for Satellite	K3
CO5	Design Various Satellite Applications	K2

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Define noise factor.	CO3	K1
2	What do you mean by intermodulation noise? How it occurs in a link?	CO3	K2
3	The range between a ground station & a satellite is 42000km. Calculate the free space loss a frequency of 6GHZ.	CO3	K2
4	What are the methods of multiple access techniques?	CO4	K1
5	Differentiate multiple access from single access.	CO4	K1

Part – B (2*13=26)

6	**a)** Briefly explain in detail the effects of rain in uplink and downlink in satellite communication.	CO3	K2
	(OR)		
	(b How the Performance of the system affects due to system noise? Derive the expression for system noise at the receiving earth station.	CO3	K3
7	**a)** State the necessity of Digital Modulation in satellite links. With the help of block schematics. illustrate the principles of the modulation and demodulation of BPSK and QPSK and compare their spectral characteristics and performance in performance of Noise	CO4	K2
	(OR)		
	b) Explain in detail about compression and encryption techniques used in satellite communication.	CO4	K2

Part – C (1*14=14)

8	a) List and explain the steps of Link power Budget analysis for uplink and Downlink equation.	CO3	K3
	(OR)		
	b) (i)In a link budget calculation at 12GHz, the free space loss is 206dB, the antenna pointing loss is 1dB, and the atmospheric absorption is 2dB. The receiver G/T is 19.5 dB/K, and the receiver feeder losses are 1 dB. The EIRP is 48DBW. Calculate the carrier to noise spectral density ratio. (8)	CO3	K5

	(ii)Explain what is meant by saturation flux density. The power received by a 1.8 m parabolic antenna at 14 GHz is 250 pW. Calculate the power flux density (a) in W/m2 and (b) in dBW/m2 at the antenna. (6)		

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DEPARTMENT OF MECHANICAL ENGINEERING
CONTINUOUS INTERNAL ASSESSMENT – I

SUBJECT CODE / NAME: ME 3492 / HYDRAULICS AND PNEUMATICS

Year: II | **Semester: IV** | **Period: 2023-2024**

Date: 23.04.2024 | **Time: 9.30 AM to 11.00 AM** | **Max.: 50 Marks**

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	To provide the knowledge on the working principles of fluid power systems.	K2
CO2	To study the fluids and components used in modern industrial fluid power system.	K2
CO3	To develop the design, construction and operation of fluid power circuits.	K2
CO4	To learn the working principles of pneumatic power system and its components.	K2
CO5	To provide the knowledge of trouble shooting methods in fluid power systems.	K2

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Define Pascal's law	CO1	K2
2	What are various methods for transmitting fluid power?	CO1	K2
3	Explain the devices which convert hydraulic energy into mechanical energy.	CO1	K2
4	Differentiate between pressure relief valve and pressure reducing valve	CO2	K2
5	Draw symbols representation of single acting and double acting.	CO2	K2

Part – B (2*13=26)

6	a) With neat sketch explain internal and external gear pumps.	CO1	K2
	(OR)		
	b) Discuss in detail about vane pump and unbalanced vane pump with suitable sketch	CO1	K2
7	a) Explain the types of cylinders used in hydraulics with neat sketch.	CO2	K2
	(OR)		
	b) Classify the pressure control valve with examples and diagrams.	CO2	K2

Part – C (1*14=14)

8	a) Elaborate in detail about the bent axis piston pump and swash plate axial piston pump	CO1	K2
	(OR)		
	b) Illustrate the gerotor pump and screw pump with suitable diagrams.	CO1	K2

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DEPARTMENT OF ELECTRONICS AND COMMUNIOCATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – III

SUBJECT CODE / NAME: GE8076/PROFESSIONAL ETHICS IN ENGINEERING

Year: IV **Semester: VIII** **Period: 2023-2024**

Date: 29.04.2024 **Time: 09.30 AM to12.30AM** **Max.:100** Marks

Course Outcomes:

CO No.	Course Outcome	Knowledge Level
CO1	Students Should Understand the concept and importance of engineering ethics.	K3
CO2	The student should be able to apply ethics in society	K4
CO3	The student discuss the ethical issues related to engineering	K5
CO4	The student should realize the responsibilities and rights in the society.	K3
CO5	The student should understand the global issues in Engineering	K2

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	What are the significances of Engineering Ethics?	CO1	K1
2	Differentiate value from cost.	CO1	K1
3	List the merits of moral autonomy?	CO2	K2
4	Do engineers need virtues? Justify.	CO2	K1
5	Brief the responsibilities of Engineers to the society.	CO3	K2
6	The moral responsibility of engineers should go beyond merely following the laws"- Discuss.	CO3	K2
7	What is meant by conflict of interest?	CO4	K2
8	Compare copy right , trade mark and patent.	CO4	K2
9	Write in brief about Technology Transfer and Appropriate Technology.	CO5	K2
10	State the role of Corporate Social Responsibility	CO5	K2

Part – B (2*13=26)

11	a) List and explain the ethics in relation to other studies. **(OR)** b) What is meant by work ethics? List and explain elements of work ethics.	CO1 CO1	K3 K2
12	a) Discuss any two theories of Moral Autonomy. **(OR)** b) Explain in detail about the various types of Moral issues	CO2 CO2	K2 K2
13	a) Discuss the different roles played by codes of ethics set by professional societies.**(OR)**	CO3	K3
13	b) Write about the role of law in engineering and what are the problems with law in engineering.	CO3	K4

14	a) Assessment of safety and risk is helpful in improving the workers morality, work culture and work atmosphere **(OR)** b) Explain how elements of intellectual property rights benefits people.	CO4 CO4	K2 K2
15	a) Discuss various approaches to resolve environmental problems. Mention any four professional code of ethics concerning to environment. **(OR)** b) Enumerate on the moral and ethical issues involved in use of computers.	CO5 CO5	K2 K2

Part – C (1*15=15)

16	a) Explain the Bhopal Gas Tragedy. Discuss the violation of moral, ethical and professional codes of standard in it. Write a conclusion to avoid such strategy in future **(OR)** b) Explain the Challenger space shuttle disaster. Discuss the violation of moral, ethical and professional codes of standard in it. Write a conclusion to avoid such strategy in future.	CO5 CO5	K3 K3

26/4/24

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – 1

SUBJECT CODE / NAME: CS3401/ ALGORITHMS

Year: II **Semester: IV** **Period: FEB 2024-2024-MAY 2024**

Date: 29.04.2024 **Time: 9.30 AM to 11.00 AM** **Max.:50** Marks

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	Analyze the efficiency of algorithms using various frameworks	K2
CO2	Apply graph algorithms to solve problems and analyze their efficiency.	K2
CO3	Make use of algorithm design techniques like divide and conquer, dynamic programming and greedy techniques to solve problems	K2
CO4	Use the state space tree method for solving problems.	K2
CO5	Solve problems using approximation algorithms and randomized algorithms	K2

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

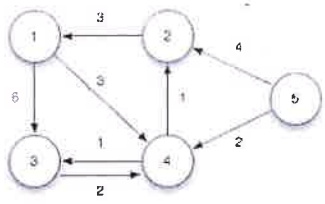
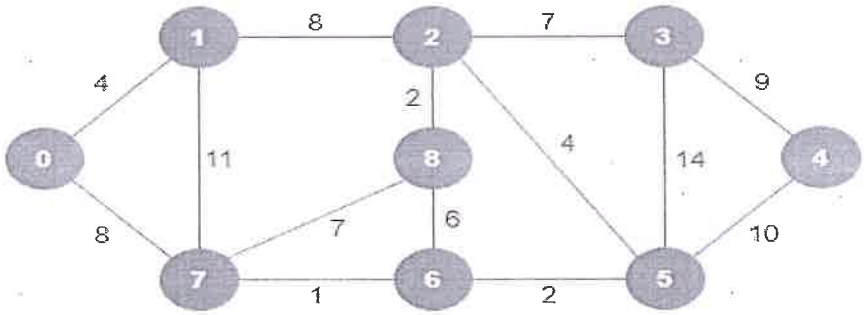
Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Define time complexity of an algorithm.	CO1	K1
2	List the types of asymptotic notations in analysing complexity of algorithms.	CO1	K1
3	Difference between prefix and suffix.	CO1	K1
4	State the bipartite graph.	CO2	K2
5	What is minimum spanning tree?	CO2	K1

Part – B (2*13=26)

6	a) What is pattern searching? Outline the steps in the knuth- morris – pratt algorithm for pattern searching with an example. T: b a c b a b a b a b a c a c a P: a b a b a c a **(OR)** b)Write andexplain rabinkarp string matching algorithm with an example. Text : A A B A A C A A D A A B A A B A Pattern : A A B A	CO1 CO1	K2 K2

	apply the asymptotic notations used for best case, worst case & average case analysis for sequential search algorithm.	CO1	K2
7	(OR)		
	b)Apply the max and min heap sort algorithm to sort the following sequence of n numbers stored in an array. 82,90,10,12,15,77,55,23	CO1	K3

Part – C (1*14=14)

	a) Write and explain the pseudo code for Floyd warshall algorithm and write its time complexity. 		
	(OR)		
8	b) Write and explain the Dijikstra's algorithm. Find the shortest path the following graph using Dijikstra's algorithm. 	CO2	K2
		CO2	K3

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ST. ANNE'S COLLEGE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF ELECTRONICS AND COMMUNIOCATION ENGINEERING

CONTINUOUS INTERNAL ASSESSMENT – III

SUBJECT CODE / NAME: EC8094/SATELLITE COMMUNICATION

Year: IV **Semester: VIII** **Period: 2023-2024**

Date: 30. 04. 2024 **Time: 09.30 AM to 12.30 AM** **Max.: 100** Marks

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	Identify the Satellite Orbits	K3
CO2	Analyze the Satellite Subsystems	K4
CO3	Evaluate the satellite Link Power Budget	K5
CO4	Identify Access Technology for Satellite	K3
CO5	Design Various Satellite Applications	K2

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Name the Keplerian element set.	CO1	K1
2	What is meant by sun transit outage?	CO1	K1
3	How stabilization by momentum wheel is achieved? Demonstrate.	CO2	K2
4	Estimate 3-dB beamwidth of a parabolic reflector antenna having 30m diameter at 6 GHz.	CO2	K1
5	List the ionospheric effects on space link.	CO3	K2
6	Write the relationship between EIRP and antenna gain?	CO3	K2
7	Is Compression and encryption are essential in satellite communication? Justify with examples?	CO4	K2
8	Give the diagrammatic representation of a SPADE system.	CO4	K2
9	List the types of satellite services.	CO5	K2
10	List the basic principle of VSAT networks.	CO5	K2

Part – B (2*13=26)

11	a) What do you mean by look angles? How they are determined for a geostationary orbit? Give Details. **(OR)** b) Give a detailed note on launching vehicles and the procedures employed for launching spacecraft in GEO orbits.	CO1 CO1	K3 K2
12	a) What are the various subsystems in the space segment of a satellite communication system? Explain the need and function of each subsystem **(OR)** b) Explain the applications of thermal control in space craft design.	CO2 CO2	K2 K2
13	a) Briefly explain in detail the effects of rain in uplink and downlink in satellite communication. **(OR)**	CO3	K3

13	b) (i) Derive the [C/No] ratio for satellite uplink in terms of input back off. **(8)** (ii) The range between a ground station and a satellite is 42,000 km. Calculate the free space loss at a frequency of 10GHz. **(5)**	CO3	K4
14	a) Illustrate the basic equipment blocks in a TDMA system. Sketch the TDMA frame and burst formats and enumerate the functions of each burst. **(OR)** b) Distinguish CDMA and FDMA techniques and explain the CMDA technique in detail.	CO4 CO4	K2 K2
15	a) Describe the operation of typical VSAT system. State briefly where VSAT system find widest application. **(OR)** b) (i)Explain the three segments of a GPS. Also, describe how position and ranging are determined using a GPS system. **(7 Marks)** (ii)Write short notes on GSM architecture. **(6 Marks)**	CO5 CO5	K2 K2

Part – C (1*15=15)

8	(a) (i) The state of Virginia may be represented roughly as a rectangle bounded by 39.5° N latitude on the north, 36.5° N latitude on the south, 76.0° W longitude on the east and 86.3° W longitude on the west. If a geostationary satellite must be visible throughout virginia at an elevation angle no lower than 20°, what is the range of longitudes within which the subsatellite point of the satellite must lie? **(10)** a) (ii) Differentiate geostationary and geosynchronous satellite **(3)** **(OR)** (i)State and Explain Keplers three laws of motion with suitable diagrams. **(4)** (ii) A satellite is orbiting in the equatorial plane with a period from perigee to perigee of 12 h. Given that the Eccentricity is 0.002. Calculate the semi major axis. The earth's equatorial radius is 6378.1414km. **(7)** (iii) Write a brief note on Atmospheric drag. **(4)**	CO1 CO1	K3 K3

S.Dur 9/25/4/2024
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20/4/24
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DEPARTMENT OF MECHANICAL ENGINEERING
CONTINUOUS INTERNAL ASSESSMENT – I

SUBJECT CODE / NAME: ME 3491 / STRENGTH OF MATERIALS

Year: II **Semester: IV** **Period: 2023-2024**

Date: 30.04.2024 **Time: 9.30 AM to 11.00 AM** **Max.: 50 Marks**

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	To Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.	K2, K3
CO2	To Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.	K2, K3
CO3	To Apply basic equation of torsion in designing of shafts and helical springs.	K2, K3
CO4	To Calculate slope and deflection in beams using different methods.	K2, K3
CO5	To Analyze thin and thick shells for applied pressures.	K2, K3

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Why is a hollow shaft preferred over a solid shaft for transmitting power?	CO3	K2
2	Draw the diagram showing the shear stress distribution along the thickness of a hollow shaft subjected to torsion.	CO3	K2
3	Explain the types of helical springs	CO3	K2
4	List out the modes of failure in thin cylindrical shell due to an internal pressure.	CO5	K2
5	Distinguish between thin and thick shell	CO5	K2

Part – B (2*13=26)

6	a) A closely coiled helical spring of mean diameter 20 cm is made up of 3 cm diameter rod and has 16 turns. A weight of 3 kN is dropped on this spring. Find the height by which the weight should be dropped before striking the spring so that the spring may be compressed by 18 cm. Take 8×10^4 N/mm^2	CO3	K3
	(OR)		
	b) Determine the maximum shear stress and elongation in a helical steel spring composed of 15 turns of 16 mm diameter wire on a mean radius of 80 mm, when the spring is supporting a load of 1.4 kN. Take rigidity modulus as 80 GPa.	CO3	K3
7	a) A cylindrical thin drum 80 cm in diameter and 3 m long has a shell thickness of 1 cm. If the drum is subjected to an internal pressure of 2.5 N/mm^2, determine (i) circumferential stress (ii) longitudinal stress (iii) maximum shear stress (iv) change in diameter (v) change in length (vi) change in volume. Take $E=2 \times 10^5$ N/mm^2, Poisson's ratio = 0.25.	CO5	K3
	(OR)		
	b) A thin spherical shell 1 m in diameter with its wall of 1.2 cm thickness is filled with a fluid at atmospheric pressure. What intensity of pressure will be developed in	CO5	K3

	it if 175 cm^3 more of fluid is pumped into it? Also Calculate the circumferential stress at that pressure and increase in diameter. Take E=200 GN/m^2, 1/m=0.3.		
	Part – C (1*14=14)		
8	a) Two shafts of the same material and of same lengths are subjected to the same torque, if the shaft is of a solid circular section and the second shaft is of hollow circular section, whose internal diameter is 2/3 of the outside diameter and the maximum shear stress developed in each shaft is the same, compare the weights of the shafts.	CO3	K3
	(OR)		
	b) A brass tube of external diameter 40 mm and internal diameter 25 mm closely surrounds a steel rod of 25 mm diameter to form a composite shaft. If a torque of 10 kNm is to be resisted by this shaft, find the maximum shear stresses developed in each material and the angle of twist in1 m length. Assume modulus of rigidity of brass and steel as 40 GPa and 80 GPa respectively.	CO3	K3

PREPARED BY
FILENO: SACET/EXAM/FIL/32

VERIFIED BY
REV NO:00

APPROVED BY
EFFECTIVE DATE:06.10.2017

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DEPARTMENT OF MECHANICAL ENGINEERING
CONTINUOUS INTERNAL ASSESSMENT – II

SUBJECT CODE / NAME: ME 3491 / STRENGTH OF MATERIALS

Year: II **Semester: IV** **Period: 2023-2024**

Date: 07.06.2024 **Time: 9.30 AM to 11.00 AM** **Max.: 50 Marks**

Course Outcomes:

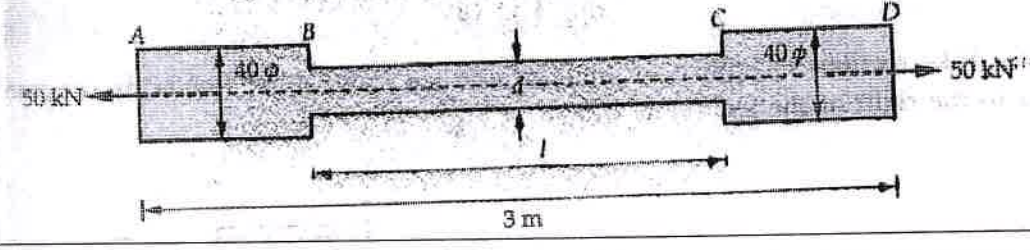
CO No	Course Outcome	Knowledge Level
CO1	To Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.	K2, K3
CO2	To Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.	K2, K3
CO3	To Apply basic equation of torsion in designing of shafts and helical springs.	K2, K3
CO4	To Calculate slope and deflection in beams using different methods.	K2, K3
CO5	To Analyze thin and thick shells for applied pressures.	K2, K3

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	What do you meant by thermal stress and thermal strain?	CO1	K2
2	Define principal planes and principal stress	CO1	K2
3	Define flitched beam	CO2	K2
4	What are the assumptions made in theory of simple bending?	CO2	K2
5	Write about the maximum deflection in a simply supported beam carrying udl on full span?	CO4	K2

Part – B (2*13=26)

6	a) When a certain member 40 mm square is subjected to an axial pull of 1, 60,000 N, the extension on a gauge length of 200 mm is 0.10 mm and decrease in the sides is0.005 mm. Find the Poisson's ratio and elastic constants and change in volume. (OR) b) An alloy circular bar ABCD 3 m long is subjected to a tensile force of 50 KN. If the stress in the middle portion BC is not exceed 150 MPa, then what should be its diameter? Also find the length of the middle portion. If the total extension of the bar should not exceed by 3 mm. Take E=100 GPa. 	CO1 CO1	K3 K3
7	a) A beam of length 12 m simply supported at its ends carries three concentrated		

	loads of 6 KN, 5 KN and 7KN at the distance of 4m, 7m and 10 m respectively from the left support. Also an uniformly distributed load of 2 KN/m acts for 2 m length from left support and 3 KN/m uniformly distributed load acts for 3 m length from right support. Draw the shear force and bending moment diagrams.	CO2	K3
	(OR)		
	b) A cantilever 1.5 m long is loaded with an udl of 2 KN/m run over a length of 1.25 m from the free end. It also carries a point load of 3 KN at a distance of 0.25 m from the free end. Draw the shear force and bending moment diagrams of the cantilever.	CO2	K3

Part – C (1*14=14)

8	a) A beam 6m long, simply supported at its ends, is carrying a point load of 50 kN at its centre. The moment of inertia of the beam is given as equal to 78 x 10^6 mm^4.If E for the material of the beam = 2.1 x 10^5 N/mm^2. Calculate: (i) deflection at the centre of the beam and (ii) slope at the supports.	CO4	K3
	(OR)		
	b) A simply supported wooden beam 150 mm wide and 250 mm deep has a span of 4 m. Determine the load, that can be placed at its centre to cause the beam a deflection of 12 mm. Take E= 6 x 10^6 KN/m^2. And find the maximum slope.	CO4	K3

3/6/24

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FILENO: SACET/EXAM/FIL/32

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DEPARTMENT OF MECHANICAL ENGINEERING
CONTINUOUS INTERNAL ASSESSMENT – II

SUBJECT CODE / NAME: ME 3492 / HYDRAULICS AND PNEUMATICS

Year: II **Semester: IV** **Period: 2023-2024**

Date: 06.06.2024 **Time: 9.30 AM to 11.00 AM** **Max.: 50 Marks**

Course Outcomes:

CO No	Course Outcome	Knowledge Level
CO1	To provide the knowledge on the working principles of fluid power systems.	K2
CO2	To study the fluids and components used in modern industrial fluid power system.	K2
CO3	To develop the design, construction and operation of fluid power circuits.	K2
CO4	To learn the working principles of pneumatic power system and its components.	K2
CO5	To provide the knowledge of trouble shooting methods in fluid power systems.	K2

BLOOM'S TAXONOMY: K-Level [K1-Remember, K2-Understand, K3-Apply, K4- Analyze, K5-Evaluate, K6-Create]

Part – A (5*2=10)

Qn. No	Questions	Course Outcome	Blooms Taxonomy
1	Explain the function of relief valve in a hydraulic system	CO3	K2
2	Discuss the functions of accumulators	CO3	K2
3	Define fluidics	CO4	K2
4	How is the speed of a cylinder controlled in pneumatic system?	CO4	K2
5	List any two selection criteria of hydraulic systems and pneumatic system	CO5	K2

Part – B (2*13=26)

6	a) Explain the fail-safe circuit with suitable sketches.	CO3	K2
	(OR)		
	b) With the aid of neat sketches, describe meter-in and meter-out hydraulic circuits.	CO3	K2
7	a) Explain the construction and working principle of FRL Unit with neat sketch	CO4	K2
	(OR)		
	b) Citing an industrial example, illustrate the working of a quick exhaust valve.	CO4	K2

Part – C (1*14=14)

8	a) Sketch a hydraulic circuit used for the operation of a surface grinder and explain the same	CO5	K2
	(OR)		
	b) Discuss the possible causes and remedies of hydraulic cylinders and actuators	CO5	K2

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