

Preparedness and Status of Implementation of NEP 2020 (As on 2022 – 2023)

In the recent third anniversary of the celebration of National Education Policy 2020 held at New Delhi during July 26 – 30, 2023, NSRIT bagged one among the top 25 institutions in the country in the implementation of NEP 2020.





Nadimpalli Satyanarayana Raju Institute of Technology (Autonomous), Visakhapatnam, Andhra Pradesh

Affiliated to JNTU-GV | Accredited by NAAC with 'A' grade | Accredited by NBA (CSE, ECE & Mechanical Engg.)



Initiatives towards the implementation of NEP 2020

Trans-disciplinary curriculum – Minor Degree in Liberal Arts, Statistics, General Management and Personal Management | Streaming out single phased education | Academic Bank of Credits | Blended Learning – Implementation of LMS | Experiential Learning thro' internship & OJT | Multi-disciplinary curriculum | Minors Degree in AIML | Academic digitization | International Collaboration

NSRIT

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Initiatives towards the implementation of NEP 2020



NSRIT
EXPERIENTIAL
LEARNING &
ON-JOB TRAINING
(OJT)

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Initiatives towards the implementation of NEP 2020



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राष्ट्रीय प्रत्यायन बोर्ड

घोंया तल, ईस्ट टावर, एन. बी. सी. प्लेस, भीष्म पितामह मार्ग, प्रगति विहार, लोधी रोड, नई दिल्ली - 110003

NATIONAL BOARD OF ACCREDITATION

4th Floor, East Tower, NBCC Place, Bhisam Pitamah Marg, Pragati Vihar, Lodhi Road, New Delhi 110003



F. No- 11-314-2018-NBA

Date: 10-06-2022

To
The Principal
Nadimpalli Satyanarayana Raju Institute of Technology,
Sontyam, Pendurthi- Anandapuram Highway,
Visakhapatnam - 531173,
Andhra Pradesh

Subject: Accreditation status of UG Engineering program applied by Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh.

Sir,

This has reference to your application I.D. No. 6164-10/12/2021 seeking accreditation by National Board of Accreditation to UG Engineering program offered by Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh.

2. An Expert Team conducted onsite evaluation of the programs from 06th-08th May, 2022. The report submitted by the Expert Team was considered by the concerned Committees constituted for the purpose in NBA. The Competent Authority in NBA has approved the following accreditation status to the programs as given in the table below:

Sl. No.	Name of the Program(s) (UG)	Basis of Evaluation	Accreditation Status	Period of validity	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1.	Computer Science & Engineering	Tier II June 2015 Document	Accredited	Academic Years 2022-2023 to 2024-2025 i.e. Up to 30-06-2025	Accreditation status granted is valid for the period indicated in Col. 5 or till the program has the approval of the Competent Authority, whichever is earlier

3. It may be noted that only students who graduate during the validity period of accreditation, will be deemed to have graduated with an NBA accredited degree.

4. The program has been granted accreditation for 3 years. Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh should submit the Compliance Report at least six months before the expiry of validity of accreditation mentioned above so as to be eligible for consideration by the concerned Committee in NBA for further processing of the accreditation status.

5. The accreditation status awarded to the program as indicated in the above table does not imply that the accreditation has been granted to Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh as a whole. As such the Institution should nowhere along with its name including on its letter head etc. write that it is accredited by NBA because it is program accreditation and not Institution accreditation. If such an instance comes to NBA's notice, this will be viewed seriously. Complete name of the program(s) accredited, level of program(s) and the period of validity of accreditation, as well as the Academic Year from which the accreditation is effective should be mentioned unambiguously whenever and wherever it is required to indicate the status of accreditation by NBA.

6. The accreditation status of the above program is subject to change on periodic review, if needed by the NBA. It is desired that the relevant information in respect of accredited programs as indicated in the table in paragraph 2, appears on the website and information bulletin of the Institute.

7. The accreditation status awarded to the program as indicated in table in paragraph 2 above is subject to maintenance of the current standards during the period of accreditation. If there are any changes in the status (major changes of faculty strength, organizational structure etc.), the same are required to be communicated to the NBA, with an appropriate explanatory note.

8. A copy each of the Report of Chairman of the Visiting Team and Evaluators' Reports in respect of the above program is enclosed.

9. If the Institute is not satisfied with the decision of NBA, it may appeal within thirty days of receipt of this communication giving reasons for the same and by paying the requisite fee.

Yours faithfully,



(Dr. Anil Kumar Nassa)
Member Secretary

Encls.: 1. Copy of Report of Chairman of the Visiting Team.
2. Copy each of Expert Reports of the Visiting Team.

Copy to:

1. The Registrar,
Jawaharlal Nehru Technological University,
Kakinada, Andhra Pradesh 533003
2. The Commissioner,
Department of Technical Education
ANS Towers, Jammi Chettu Rd,
Prasadampadu, Currency Nagar,
Vijayawada, Andhra Pradesh - 521108
3. Accreditation File
4. Master Accreditation file of the State

राष्ट्रीय प्रत्यायन बोर्ड

चीया तल, ईस्ट टावर, एन. बी. सी. सी. प्लेस, भीष्म पितामह मार्ग, प्रगति विहार, लोधी रोड, नई दिल्ली -110003
NATIONAL BOARD OF ACCREDITATION
4th Floor, East Tower, NBCC Place, Bhisham Pitamah Marg, Pragati Vihar, Lodhi Road, New Delhi 110003



F. No- 11-314-2018-NBA

Date: 28-06-2023

To
The Principal
Nadimpalli Satyanarayana Raju Institute of Technology,
Sontyam, Pendurthi- Anandapuram Highway,
Visakhapatnam - 531173,
Andhra Pradesh

Subject: Accreditation status of UG Engineering programs applied by Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh.

Sir,

This has reference to Appeal dated 18-08-2022 filed by Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh against the decision of NBA not to grant accreditation of their UG- Electronics & Communication Engineering and Mechanical Engineering programs by NBA for a period of 3 years, communicated vide NBA's letter of even number dated 10-02-2022.

2. The Appeal was considered by the Appellate Committee of NBA in its meeting held on 01-03-2023. The Appellate Committee recommended re-evaluation of UG- Electronics & Communication Engineering and Mechanical Engineering programs by conducting re-visit to Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh. An Expert Team conducted onsite evaluation of the programs from 28th- 30th April, 2023. The report submitted by the Expert Team was considered by the concerned Committees constituted for the purpose in NBA. The Competent Authority in NBA has approved the following accreditation status to the programs as given in the table below:

Sl. No.	Name of the Program(s) (UG)	Basis of Evaluation	Accreditation Status	Period of validity	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1✓	Electronics & Communication Engineering	Tier II June 2015 Document	Accredited	Academic Years 2022-2023 to 2024-2025 i.e. Up to 30-06-2025	Accreditation status granted is valid for the period indicated in Col.5 or till the program has the approval of the Competent Authority, whichever is earlier
2✓	Mechanical Engineering		Accredited		

3. It may be noted that only students who graduate during the validity period of accreditation, will be deemed to have graduated with an NBA accredited degree.

4. The programs have been granted accreditation for 3 years. Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh should submit the Compliance Report at least six months before the expiry of validity of accreditation mentioned above so as to be eligible for consideration by the concerned Committee in NBA for further processing of the accreditation status.

5. The accreditation status awarded to the programs as indicated in the above table does not imply that the accreditation has been granted to Nadimpalli Satyanarayana Raju Institute of Technology, Sontyam, Pendurthi- Anandapuram Highway, Visakhapatnam - 531173, Andhra Pradesh as a whole. As such the Institution should nowhere along with its name including on its letter head etc. write that it is accredited by NBA because it is program accreditation and not Institution accreditation. If such an instance comes to NBA's notice, this will be viewed seriously. Complete name of the program(s) accredited, level of program(s) and the period of validity of accreditation, as well as the Academic Year from which the accreditation is effective should be mentioned unambiguously whenever and wherever it is required to indicate the status of accreditation by NBA.

Contd./-

6. The accreditation status of the above programs is subject to change on periodic review, if needed by the NBA. It is desired that the relevant information in respect of accredited programs as indicated in the table in paragraph 2, appears on the website and information bulletin of the Institute.
7. The accreditation status awarded to the programs as indicated in table in paragraph 2 above is subject to maintenance of the current standards during the period of accreditation. If there are any changes in the status (major changes of faculty strength, organizational structure etc.), the same are required to be communicated to the NBA, with an appropriate explanatory note.
8. A copy each of the Report of Chairman of the Visiting Team and Evaluators' Reports in respect of the above programs is enclosed.
9. If the Institute is not satisfied with the decision of NBA, it may appeal within thirty days of receipt of this communication giving reasons for the same and by paying the requisite fee.

Yours faithfully,



(Dr. Anil Kumar Nassa)
Member Secretary

- Encls.: 1. Copy of Report of Chairman of the Visiting Team.
2. Copy each of Expert Reports of the Visiting Team.

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3. Accreditation File
4. Master Accreditation file of the State



I-GAUGE

QS-ERA India Pvt Ltd is pleased to award

Nadimpalli Satyanarayana Raju Institute of Technology Andhra Pradesh

with **QS I-GAUGE E-Learning Excellence for Academic Digitisation (E-LEAD) Certificate.**

This certificate is awarded after a rigorous audit process to validate the institution's effective implementation of digital technology for teaching & learning with well established IT processes.

The certification process involved rigorous data collection, evaluation and assessment of performance metrics as set out in the methodology.



LICENSE START DATE : 31 March 2022

LICENSE END DATE : 31 March 2023

Dr Ashwin Fernandes
CEO, QS-ERA India Pvt Ltd

INSTITUTIONAL SCORECARD



**Nadimpalli Satyanarayana Raju
Institute of Technology (NSRIT)
Visakhapatnam**





EVALUATION SUMMARY

E-LEAD CERTIFIED

E-Learning Excellence
For Academic Institutions

QS I-GAUGE

INDIAN COLLEGE & UNIVERSITY NETWORK

INDICATOR	TOTAL POINTS	POINTS AWARDED
STUDENT FACULTY ENGAGEMENT		
<ul style="list-style-type: none">• Live tutorial sessions (A) ✓• Live streaming seminars/lectures (B) ✓• Pre recorded lectures/tutorial sessions (C) ✓• Virtual one-to-one student faculty meetings ✓• Online teaching and learning feedback exercise ✓	50	50
<p>Highlights: NSRIT is successfully conducting online tutorials, lectures etc. The integration of pre-recorded lectures and the student-faculty interaction is noteworthy.</p>		
LEARNING MANAGEMENT SYSTEM		
Institution subscribing to a Learning Management System (LMS) to create, deliver, assess, and grade courses and programmes (Blackboard, MOODLE, Canvas etc.) ✓	40	40
<p>Highlights: NSRIT has an active subscription to CANVAS LMS platform with inbuilt features of announcements, assignments, discussion forum, grading, file sharing, and conducting quizzes. The institution is using a web platform named ECAP to capture student's attendance, feedback, and sharing grades and timetable with students.</p>		



EVALUATION SUMMARY

E-LEAD CERTIFIED

E-Learning Excellence
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QS I-GAUGE

INDIAN COLLEGE & UNIVERSITY NETWORK

INDICATOR	TOTAL POINTS	POINTS AWARDED
INFORMATION TECHNOLOGY SUPPORT		
<ul style="list-style-type: none">• Availability of on-call IT support/helpdesk ✓• Disaster recovery site ✓• Availability of IT accessories for immediate replacement ✓	30	30
<p>Highlights: NSRIT has adequate human resources, IT support systems, and disaster recovery mechanisms in place to continue functioning remotely. The institution is using the cloud functionalities of CANVAS and Google Classroom to store its course materials, with a replica maintained in institute's local servers.</p>		
BEST PRACTICES IN INFORMATION TECHNOLOGY		
<ul style="list-style-type: none">• Non usage of pirated software ✓• Cyber security/data privacy ✗• IT Service Level Agreement (SLA) ✓• Effective backup for standalone systems ✓• Power backup for IT and IT enabled systems ✓	30	24
<p>Highlights: NSRIT is addressing most of the aspects of IT best practices. It is recommended to extend the scope of cyber security to further strengthen the IT policy. The institution is also highly recommended to focus on implementing a comprehensive IT Policy.</p>		
CONCLUSION		
<p>Total Points Available: 150 Qualifying Points for Certification: 120 Total Points Awarded: 144</p>		
<p>Nadimpalli Satyanarayana Raju Institute of Technology (NSRIT), Visakhapatnam is granted E-LEAD certification. The institution is successfully engaging students and teachers through virtual medium and has adequate IT support systems.</p>		
<p>Analyst: MV Girinath Reddy E-mail: support@igauge.in</p>		
<p>Date of Certification: 31.03.2022</p>		
<p>License Validity: 31.03.2023</p>		



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QS-ERA India Pvt Ltd, #132, 3rd Floor, 17th Cross, 11th Main,
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Bengaluru - 560 055, Karnataka, India



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This report is a confidential document with performance details and recommendations based on the audit, hence strictly for the institution's internal use only.

The report cannot be fragmented and reproduced in any form.

A Report on
Month Long Hybrid Faculty Development Program
Open Book Examinations
In association with
National Institute of Teachers Technical Training and Research (NITTTR), Chennai

Title: Open Book Examinations

Date: Phase-I: 04-01-2023 to 06-01-2023 (3 days; Offline Mode).

Phase-II: online guidance & handholding - 1 day / week (2 hours) starting from 27-01-2023.

Phase-III: 17-05-2023 to 19-05-2023 (3 days; Offline Mode).

No. of Resource Persons: 02

1. Dr.K.S.Girdharan, NITTTR, Chennai.
2. Mr.V.SivaKumar, NITTTR, Chennai.

No. of Participants: 18 (from all departments including S & H).

Objective:

This FDP provides a platform to enhance the faculty competency and depend on the subject knowledge to develop their own assessment instrument on Open Book Examination.

About FDP:

The FDP was inaugurated by Chief-Guest Dr. G. Swami Naidu, Registrar i/c, JNTU – GV on 04-01-2023, the other dignitaries present in the inauguration ceremony are Dr. J. Raja Murugadoss, Director, NSRIT, Dr.K.S.Girdharan, NITTTR, Chennai, Mr.V.SivaKumar, NITTTR, Chennai and Heads of various department(s) , NSRIT.

The FDP was conducted in three phases in blended approach and the details are as follows.

Phase I: Three days - offline @ NSRIT - Open Book Examination Basics, how to prepare higher orders questions for Open Book Examination, Assigning marks and time to every question w.r.t PO & CO Mapping, assessment of questions, Preparation of Rubrics for assessment.

Phase II: One month online guidance & handholding - 1 day / week (2 hours) on preparation of Question bank on Subject of Interest and Preparations of Rubrics by every trainee (Faculty).

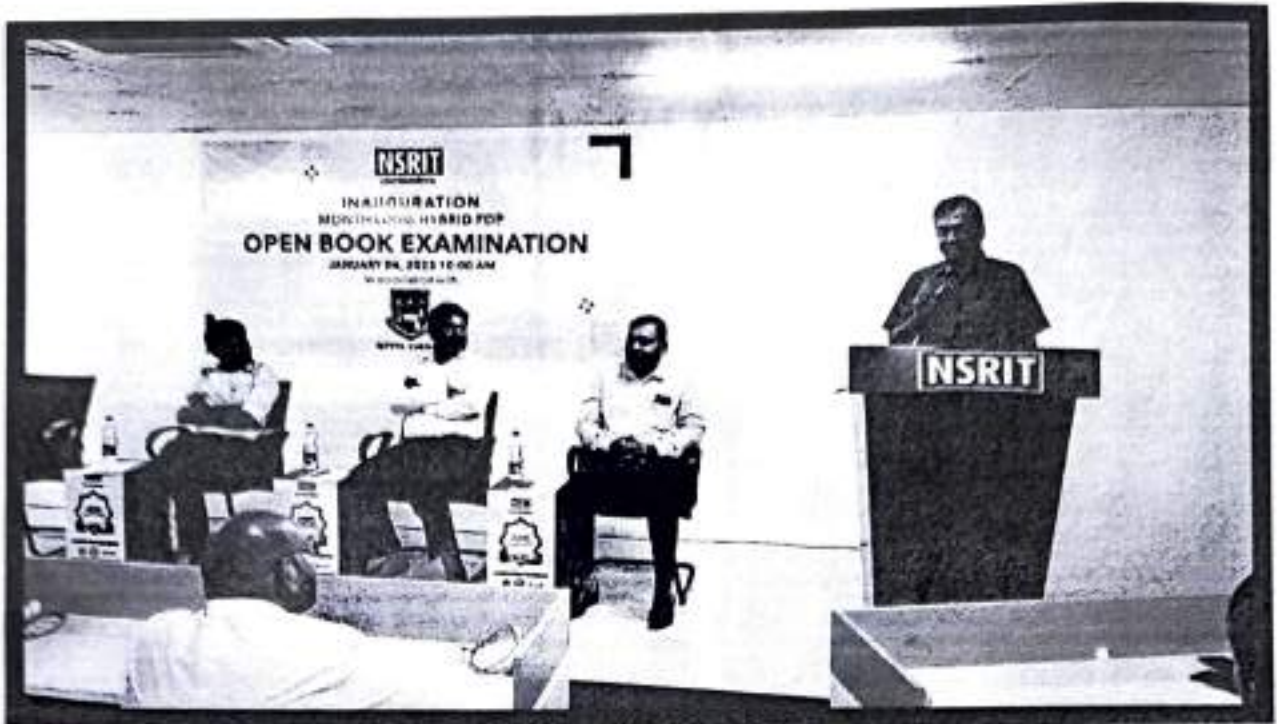
Phase III: Three days - offline @ NSRIT - Assessment of the trainees on prepared Question Bank and Rubrics and fine tuning the prepared Question Bank and Rubrics.

The FDP was concluded on 19.05.2023, valedictory session was organized, dignitaries present are Dr. J. Raja Murugadoss, Director, NSRIT, Dr.K.S.Girdharan, NITTTR, Chennai, Mr.V.SivaKumar, NITTTR, Chennai and Heads of various department(s), NSRIT. The FDP helped participants improve their knowledge base for open-book exams and they ready to train other faculty.


Prepared by: B.Ravichandra,

Assoc.Professor, (Coordinator of open-book exams FDP).





(Handwritten signature and date)
19/5/23
Director



NSRIT
AUTONOMOUS



**Month long Faculty Development Program on
Open Book Examinations in association with
NITTTR, Chennai**

Visakhapatnam | www.nsr.it.edu.in    

Open Ended Assessment Instrument
Rubrics for the course Control Systems (20EE403)

ROLL NO

Criteria	Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
					CO 1	2	3	4	5	6
A Analyse / Identify problem related to Control Systems course. CO: 20EE403.1 – 20EE403.5	Unable to identify the problem statement related to Control Systems course	Able to identify the problem statement related to Control Systems course, but unable to analyse or plot the data in the required manner.	Able to identify the problem statement related to Control Systems course and analyse the data up to a certain extent and comprehend the types of methodologies to be used to solve the problem statement	Identified the problem statement related to Control Systems course and able to analyse the data completely by suggesting a suitable method to solve the problem statement						
B Application/Derivation of mathematical functions related to Control Systems course CO: 20EE403.1, 20EE403.2, 20EE403.5	Lacking the ability to apply/derive the necessary mathematical functions to solve the problem viz. Mechanical Translational systems, Mechanical Rotational systems, Block diagram reduction, signal flow graph, Time response and state space	Able to apply but incapable of deriving mathematical model due to lack of knowledge and problem solving skills.	Able to derive the mathematical function but failed to determine the exact solution to the problem related to control systems	Derived the required mathematical function with complete analysis and understanding on the problem statement						
C Identify the procedure/ process / technique / and synthesize the data to solve the problem & attain final solutions CO: 20EE403.2, 20EE403.3, 20EE403.4	Unable to identify the method / procedure viz. root locus, bode plot and controllers and synthesize the data related to control systems	Able to attempt but adopted incorrect method and unable to solve the problem	Able to identify the correct approach / procedure to the problem statement, but failed due to lack of proper knowledge on rules to solve the problem.	Determined appropriate method to solve the problem and attained final solution.						
Signature of Faculty:		Total Score								

Open Ended Assessment Instrument
Rubrics for the course Electro Magnetic Field Theory (20EE405)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Analyse / Identification of problem related to the course electromagnetic field theory. CO: 20EE405.1 – 20EE405.5	Unable to identify the problem statement related to the course electromagnetic field theory	Able to identify the problem statement related to the course electromagnetic field theory, but unable to analyse or plot the data in the required manner.	Able to identify the problem statement related to the course electromagnetic field theory and analyse the data up to a certain extent and comprehend the types of methodologies to be used to solve the problem statement	Identified the problem statement related to the course electromagnetic field theory and able to analyse the data completely by suggesting a suitable method to solve the problem statement						
B	Identify the procedure/process / technique / and substitute the data to solve the problem related to the course electromagnetic field theory CO: 20EE405.1, 20EE405.2, 20EE405.4	Unable to identify the method / procedure viz. infinite line of method, Maxwells method, Gauss Law to solve the problem related to the course electromagnetic field theory	Discovered an incorrect approach and unable to appropriately substitute the data.	Identified the near right approach / method to the problem statement to solve the problem, but occasionally failed to substitute the data without having proper understanding on the limitations of the method leading to a wrong solution	Identified an appropriate method to solve the problem and substituted the data accordingly.						
C	Application/Derivation of mathematical functions & attaining final solutions CO: 20EE405.1 – 20EE405.5	Couldn't apply/derive the necessary mathematical functions to solve the problem related to the course electromagnetic field theory	Often fail to derive the mathematical function due to wrong substitution of data and further analysis	Able to derive the required mathematical function but failed to analyse	Able to arrive the required mathematical function and analyse with complete understanding on the problem statement						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Applied Physics (20BSX33)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Understand the concept of physical phenomenon related to the course Applied Physics CO: 20BSX33.1 – 20BSX33.5	Unable to understand the concept of the physical problem related to the course Applied Physics.	Able to understand the concept of the physical problem related to the course Applied Physics, but unable to analyse the physical problem.	Able to understand the concept of the physical problem related to the course Applied Physics and analyse the physical problem up to a certain extent and failed to identify the methodologies to be used to solve the physical problem	Able to understand the concept of the physical problem related to the course Applied Physics and completely analyse the physical problem by suggesting a suitable method to solve the physical problem						
B	Identify the mathematical procedure/ process / technique / and solve the physical problem to attain final solutions related to the course Applied Physics CO: 20BSX33.1-20BSX33.5	Unable to identify the method / procedure viz. Wave mechanical approach to solve the problem related to the course Applied Physics	Identified an incorrect mathematical approach and unable to substitute the data appropriately to get solution.	Identified the near correct approach / method to the problem statement to solve the problem, but failed to get appropriate results due to the limitations of the method leading to a wrong solution	Identified correct method to solve the physical problem and substituted the data accordingly.						
C	Application of obtained solutions and conclusions CO: 20BSX33.1-20BSX33.5	Couldn't apply the solutions and failed to draw conclusions of the problem related to the Applied Physics	Often fail to apply the solution to the desired application due to wrong substitution of data and further analysis	Able to draw the correct conclusions to the required application but failed to analyse	Able to arrive at the correct conclusions required and analyse with complete understanding on the physical problem						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Computer Organization (20CS305)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Understanding of fundamental concepts and theories in computer organization CO: 20CS305.1 – 20CS305.5	Demonstrates knowledge of basic concepts and terminology related to computer organization	Explains the fundamental principles of computer organization and architecture	Analyzes the design and performance of different computer systems	Analyzes computer organization concepts and applies them to more complex examples						
B	Understanding of memory hierarchy and cache organization CO : 20CS305.5	Demonstrates basic knowledge of memory hierarchy and cache organization	Describes memory hierarchy and cache organization in their own words	Applies memory hierarchy and cache organization concepts to simple examples	Analyzes memory hierarchy and cache organization and applies them to more complex examples						
C	Analytical and problem-solving skills in computer organization CO: 20CS305.1 – 20CS305.5	Identifies and recognizes simple problems in computer organization	Applies analytical and problem-solving skills to solve complex problems related to computer organization	Analyzes and evaluates the performance of computer systems and identifies potential problems and solutions	Conducts original research to advance the field of computer organization and architecture						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Heat Transfer (20ME603)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Analyse / Identification of concept and problem related to the course Heat Transfer CO: 20ME603.1 – 20ME603.5	Unable to understand and identify the problem statement related to the course heat transfer	Able to identify the problem statement related to the modes of heat transfer, but unable to analyse	Able to identify the problem statement related to the course heat transfer and analyse the data up to a certain extent and comprehend the types of methodologies to be used to solve the problem statement	Identified the problem statement related to the course heat transfer and able to analyse the data completely by suggesting a suitable method to solve the problem statement						
B	Identify the procedure/ process / technique / and substitute the data to solve the problem related to the course Heat Transfer CO: 20ME603.1 – 20ME603.5	Unable to identify the method / procedure viz. Modes of heat transfer to solve the problem related to the course heat transfer	Discovered an incorrect approach and unable to appropriately substitute the data.	Identified the near right approach / method to the problem statement to solve the problem, but occasionally failed to substitute the data without having proper understanding on the limitations of the method leading to a wrong solution	Identified an appropriate method to solve the problem and substituted the data accordingly.						
C	Implement/ solve of mathematical functions in order to arrive at ultimate solutions. CO: 20ME603.1 – 20ME603.5	Unable to apply / derive the necessary mathematical functions to solve the problem related to the course heat transfer	Often fail to derive the mathematical function due to wrong substitution of data and further analysis	Able to solve the required mathematical function but failed to attain the solution	Capable of comprehensively analyzing the problem statement and achieving the necessary solution with a thorough understanding						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Applied Chemistry (20BSX23)

ROLL NO

Criteria	Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
					CO 1	2	3	4	5	6
A Identification of type of polymer related to problem statement with required characteristics CO: 20BSX23.1	Unable to identify the problem statement related to type of polymers	Able to Identify the type of polymer related to problem statement but not with even one required characteristics	Able to Identify the type of polymer related to problem statement with some of the required characteristics	Identified the type of polymer & able to give proper reason related to problem statement with all required characteristics and list out examples						
B Selection & Suggestion of suitable synthesis method of polymers based on required characteristics & applications related to problem statement CO: 20BSX23.1	Unable to select suitable synthesis method of polymers based on required characteristics & applications related to problem statement	Selected & suggested suitable synthesis method of polymer based on required characteristics but not on applications	Selected & suggested suitable synthesis method of polymer based on applications related to problem statement but not related to required characteristics.	Selected & suggested suitable synthesis method of polymer based on required characteristics & applications related to problem statement						
C Apply the provided data from problem statement to get conclusion with valid reasons. CO: 20BSX23.1	Unable to identify & apply the data to get conclusion	Able to apply the provided data from problem statement but unable to get proper conclusion	Applied the provided data from problem statement to get nearest conclusion with some reasons	Applied the provided data from problem statement to get conclusion with valid reasons						
Signature of Faculty:		Total Score								

Open Ended Assessment Instrument
Rubrics for the course Digital System Design (20EC305)

ROLL NO

Criteria	Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
					CO 1	2	3	4	5	6
A Identification of problem related to the course Digital System design CO: 20EC305.1 – 20EC305.5	Unable to attempt at constructing an electronic circuit that provides expected results.	Able to construct an electronic circuit that provides expected results in an un simplified manner.	constructed an electronic circuit that provides expected results in a simplified manner. The circuit could be further simplified.	constructed an electronic circuit that provides expected results in a most efficient and simplified manner.						
B Analyse the data to solve the problem related to the course Digital System design CO: 20EC305.1– 20EC305.5	Diagram provides little or no information on the construction of a electronic circuit with no diagram or materials listed.	Diagram provides the basics of the construction and is accompanied with a complete list of materials.	Diagram provides a complete breakdown of the construction and the materials used with informative descriptors to aid in the understanding of the construction	Diagram is a comprehensive view of the construction and describes the materials used and why they were chosen. It also provides clear instruction on its use.						
C Ability to choose the desired components to attaining final solutions CO: 20EC305.1– 20EC305.5	Materials chosen are poor for the construction of an electronic circuit.	Some of the materials chosen were inappropriate for the successful construction of an electronic circuit.	The materials chosen are appropriate for the construction of an electronic circuit.	The choice of materials is such that they have improved the original design.						
Signature of Faculty:		Total Score								

**Open Ended Assessment Instrument
Rubrics for the course Chemistry**

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Analyse / Identification of problem related to the polymer materials CO:1, CO:6	Unable to identify the problem statement related to the course polymeric materials	Able to identify the problem statement related to the course polymeric materials, but unable to analyse or plot the data in the required manner.	Able to identify the problem statement related to the course polymeric materials and analyse the data up to a certain extent and comprehend the types of methodologies to be used to solve the problem statement	Identified the problem statement related to the course polymeric materials and able to analyse the data completely by suggesting a suitable method to solve the problem statement						
B	Identify the procedure/ process / technique / and substitute the data to solve the problem related to the course polymeric materials CO: 1,2	Unable to identify the method / procedure viz. to solve the problem related to the course polymeric materials	Discovered an incorrect approach and unable to appropriately substitute the data.	Identified the near right approach / method to the problem statement to solve the problem, but occasionally failed to substitute the data without having proper understanding on the limitations of the method leading to a wrong solution	Identified an appropriate method to solve the problem and substituted the data accordingly.						
C	Application/Derivation of mathematical functions & attaining final solutions CO:1,6	Couldn't apply/derive the necessary mathematical functions to solve the problem related to the course polymeric materials	Often fail to derive the mathematical function due to wrong substitution of data and further analysis	Able to derive the required mathematical function but failed to analyse	Able to arrive the required mathematical function and analyse with complete understanding on the problem statement						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Linear Algebra & Differential equations (20BSX11)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Analyse / Identification of problem related to the course LADE. CO: 20BSX11.3 – 20BSX11.4	Unable to identify the problem statement related to the course LADE	Able to identify the problem statement related to the course LADE but unable to analyse	Able to identify the problem statement related to the course LADE and analyse the data up to a certain extent	Identified the problem statement related to the course LADE and able to analyse the data completely by suggesting a suitable method to solve the problem statement						
B	Identify the procedure/ process / technique / and substitute the data to solve the problem related to the course LADE CO: 20BSX11.3 – 20BSX11.4	Unable to identify the method / procedure viz. Linear, Exact, Variable-Separable, Inspection Method, Higher order D.E to solve the problem related to the course LADE	Discovered an incorrect approach and unable to appropriately substitute the data.	Identified the near right approach / method to the problem statement to solve the problem, but occasionally failed to substitute the data without having proper understanding on the limitations of the method leading to a wrong solution	Identified an appropriate method to solve the problem and substituted the data accordingly.						
C	Application/Derivation of mathematical functions & attaining final solutions CO: 20BSX11.3 – 20BSX11.4	Couldn't apply/derive the necessary mathematical functions to solve the problem related to the course LADE	Often fail to derive the mathematical function due to wrong substitution of data and further analysis	Able to derive the required mathematical function but failed to analyse	Able to arrive the required mathematical function and analyse with complete understanding on the problem statement						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Design of steel structures (20CE602)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Analyse / Identification of problem related to the course design of steel structures CO: 20CE602.1 – 20CE602.5	Unable to identify the problem statement related to the course design of steel structures	Able to identify the problem statement related to the course design of steel structures but unable to analyse or identify the loads acting on the structure	Able to identify the problem statement related to the course design of steel structures and analyse the loads acting on the member like dead loads, live loads and wind loads	Identified the problem statement related to the course design of steel structures and able to analyse the load calculations and design forces						
B	Identify the procedure/ process / technique / and substitute the data to solve the problem related to the course design of steel structures CO: 20CE602.1 – 20CE602.5	Unable to identify the design method / procedure viz. work stress method, limit state method and factored load solve the problem related to the course design of steel structures	Able to identify the materials are to be used to the design	Identified the near right approach / method to the problem statement to solve the problem, by using code provisions and choose the component design like beam , column etc...	Identified an appropriate method to solve the problem and substituted the data accordingly.						
C	Identify the design and problem analysis CO: 20CE602.1 – 20CE602.5	Couldn't apply/derive the necessary mathematical functions to solve the problem related to the course design of steel structures	Able understand to take the data from codes and tables for the specified design member	The design of individual member like beams and columns should be appropriate and safe for the loads and conditions taking into such factors area , moment, shear	The overall design of the structure should be appropriate ,safe and efficient taking in to factors such as spans, heights and bracing, serviceability and economy						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Antennas and Wave Propagation (20EC 503)

ROLL NO

	Criteria	Unsatisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						C01	C02	C03	C04	C05	T
A. Design Entry	<p style="text-align: center;">Criterion # 1 Identify type of antenna by analyzing the given specifications. CO 20EC503.1</p>	Unable to identify the type of antenna for the given specifications and unable to map to the specified operating frequency range and given directivity parameters.	Able to identify the type of antenna for the given specifications and unable to develop design equations for the given operating frequency range and given dimensions requirements and conditions.	Able to develop design equations and Procedures to design antenna according to the given operating frequency range and given directivity parameters.	Able to create Procedures to design and identify practical solutions in antenna design solutions physically in accordance with the given requirements and specifications						
B. Implementation	<p style="text-align: center;">Criterion # 2 Identify the required components to design Antenna for the given Specifications. CO 20EC503.1 - 20EC503.5</p>	Unable to identify the required antenna elements and materials related to design of specific Antenna at the given operating frequency range and given directivity parameters.	Able to identify the required antenna elements and materials related to design of specific Antenna at the given operating frequency range and given directivity parameters.	Able to identify the required antenna elements and materials to design Antenna and able to realize the antenna by using identified components.	Able to identify the required components and materials to design Antenna and able to realize the antenna by using components with optimum radiation pattern and directivity by using Engineering Phenomenon.						
C. Result	<p style="text-align: center;">Criterion # 3 Describe the practical methods in realize the antenna physically. CO 20EC503.1 - 20EC503.5</p>	Unable to identify practical methods / techniques for physical realization of antenna for given operating frequency range and given directivity parameters.	Able to identify Design flow of practical methods / techniques for physical realization for given operating frequency range and given directivity parameters.	Able to identify practical methods / techniques for physical realization to obtain the required radiation pattern and directivity	Able to identify practical methods / techniques for physical realization to obtain the required radiation pattern and directivity and suggesting alternative optimum solutions for the design.						
Signature of the Course Instructor				Total score secured by student :							

Open Ended Assessment Instrument
Rubrics for the course Artificial Neural Networks (20AI302)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Analyse / Identification of problem related to the course artificial neural networks CO: 20AI302.1 – 20AI302.5	Unable to identify the problem statement and fails to provide accurate explanations	Able to identify the problem but unable to analyse the given problem or lacks accurate explanations.	Able to identify the problem and analyse the given problem up to a certain extent and comprehend the types of methodologies to be used to solve the problem statement	Identified the problem statement and able to analyse the given problem completely by suggesting a suitable method to solve the problem statement with comprehensive and nuanced explanations						
B	Ability to identify the procedure / apply / train / evaluate the problem related to the course artificial neural networks CO: 20AI302.2 – 20AI302.5	Unable to identify the method / lack of understanding of how to design, train neural networks and fails to produce meaningful evaluations	Identified the near right method to solve the problem but failed to apply appropriately	Identified the right approach to solve the problem with good level of understanding in designing, training the networks but have significant limitations in evaluations	Identified an appropriate method to solve the problem, substituted the data accordingly with impactful evaluations						
C	Problem solving / optimizing for attaining the final solution CO: 20AI302.2 – 20AI302.5	Lack of knowledge on adjusting the parameters / couldn't apply the necessary method to reduce the errors to get the optimal solution	Able to identify near right method for optimization but fails to identify the parameters to adjust to get optimized solution	Able to identify appropriate method for optimization but failed to get optimized solution as adjustment of parameters were done up to a certain extent only	Able to get the optimal solution and analyse it with complete understanding on the problem statement						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Python Programming (20CS403)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Analyse / Identification of problem statement related to the course python programming CO: 20CS403.1 – 20CS403.5	Unable to identify the problem statement related to the course python programming	Able to identify the problem statement related to the course python programming but unable to analyse the data in the required manner.	Able to identify the problem statement related to the course python programming and analyse the data up to a certain extent.	Identified the problem statement related to the course python programming and able to analyse the data completely by suggesting a suitable method to solve the problem statement						
B	Identify the procedure/ process / technique / and apply the concept to solve the problem related to the course python programming CO: 20CS403.1 – 20CS403.5	Unable to identify appropriate data structures , functions and conditionals to solve the problem related to the course python programming	Able to identify appropriate data structures , functions, modules and conditionals to the problem statement to solve the problem and difficult to read and may contain syntax error	Identified appropriate data structures , functions, modules and conditionals to solve the problem, but occasionally failed to apply, easy to read and free of syntax errors.	Identified an appropriate use of data structures, functions, modules and conditionals to solve the problem and applied the concept accordingly, easy to read, and free of syntax errors						
C	Correctness and Documentation of problem statement and attaining final output CO: 20CS403.1 – 20CS403.5	Unable to execute the Program with lots of errors and produces incorrect output and code has no comments	Able to runs the program with some errors and produces partially correct output and code is poorly documented and difficult to understand	Able to runs the program without errors and produces mostly correct output and code contains some comments but could be better documented	Able to runs the program without errors and produces correct output and code is well-documented with clear comments explaining the purpose of each section						
Signature of Faculty:			Total Score								

Open Ended Assessment Instrument
Rubrics for the course Theory of Computation (20CS005)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Analysis/ Identify the Procedure/technique CO: 20CS005.1 – 20CS005.5	Demonstrates little to no ability to break down complex problems or analyze the behaviour of formal languages and automata systems	Demonstrates some ability to analyze the behaviour of formal languages and automata systems, but struggles with more complex problems and may miss important details or assumptions.	Demonstrates a strong ability to break down complex problems and analyze the behaviour of formal languages and automata systems, identifying key details and assumptions and using formal methods to evaluate them	Demonstrates exceptional ability to analyze the behaviour of complex formal languages and automata systems, using formal methods to identify subtle details and assumptions and proposing novel approaches to address complex problems						
B	Identify the procedure/process / technique / and substitute the data to solve the problem related to the strings/grammar in formal languages CO: 20CS005.1-20CS005.5	Ability to integrate ideas from different areas of formal languages and automata theory or design and implement algorithms and data structures.	Demonstrates some ability to integrate ideas from different areas of formal languages and automata theory and design and implement algorithms and data structures, but may struggle with more complex problems or require guidance	strong ability to integrate ideas from different areas of formal languages and automata theory and design and implement algorithms and data structures, and evaluates their performance and complexity using formal methods	Demonstrates exceptional ability to synthesize formal models that capture complex behaviours in different settings, proposing novel solutions to emerging challenges and opportunities and evaluating their impact and feasibility.						
C	Application/compare and contrast different approaches novel solutions and research directions based on critical evaluation. CO: 20CS005.1-20CS005.5	little to no ability to develop innovative solutions or generate new ideas and insights.	Demonstrates some ability to develop innovative solutions or generate new ideas and insights, but may require guidance or struggle with more complex problems	Demonstrates a strong ability to develop innovative solutions or generate new ideas and insights, proposing novel approaches and research directions based on creative thinking.	Demonstrates exceptional ability to develop innovative solutions or generate new ideas and insights, proposing groundbreaking research and advancing the state of the art in formal languages and automata theory.						
Signature of Faculty:			Total Score								



Open Ended Assessment Instrument
Rubrics for the course Design of Concrete Elements (20CE502)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Identify and mentioning the components clearly CO: 20CE502.1 – 20CE502.5	Unable to identify the problem statement related to the design aspect	Able to identify the problem statement related to the design, but unable to analyse or plot the data in the required manner.	Able to identify the problem statement related to the design and analyse the data up to a certain extent and comprehend the types of methodologies to be used to solve the problem statement	Identified the problem statement related to the design and able to analyse the data completely by suggesting a suitable method to solve the problem statement						
B	Ability to analyse the components with respect to the IS specifications & Show in count of materials 20CE502.1 – 20CE502.5	Unable to identify the method / procedure to design the component by using appropriate clause from the BIS codes and analyse the components and give their quantity	Able to identify the method / procedure to design the component by using appropriate clause from the BIS codes and analyse the components and give their quantity in an incorrect approach and unable to appropriately substitute the data.	Identified the near right approach / method to the problem statement to solve the problem, but occasionally failed to substitute the data without having proper understanding on the limitations of the method leading to a wrong solution	Identified the method / procedure to design the component by using appropriate clause from the BIS codes and analyse the components and give their quantity						
C	Ability to perform the necessary checks in various aspects related to Limit state method 20CE502.1 – 20CE502.5	Couldn't apply/derive the necessary checks in various aspects related to Limit state method	Often fail to perform the checks in various aspects related to Limit state method due to wrong substitution of data and further analysis	Able to perform the checks in various aspects related to Limit state method but failed to analyse	Able to perform the checks in various aspects related to Limit state method analyse with complete understanding on the problem statement						
D	Ability to present the outcome as per dimensions in detail 20CE502.1 – 20CE502.5	Unable to communicate or plot the data in the required manner as per the design aspect	Able to identify the problem statement related to the design, unable to communicate or plot the data in the required manner as per the design aspect	Able to identify the problem statement related to the design, unable to communicate or plot the data in the required manner as per the design aspect up to a certain extent	Able to communicate or plot the data in the required manner as per the design aspect						
Signature of Faculty:			Total Score								



Open Ended Assessment Instrument
Rubrics for the course Probability & Statistics (20BSX15)

ROLL NO

Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Understanding and applying an appropriate strategy 20BSX15CO#1,2	No response or response is incorrect	The response is partially correct but lacks clarity	The response is generally correct	The response is exemplary, detailed, and clear						
B	Planning a solution 20BSX15CO#1,2,3	Totally inappropriate plan	Partially correct procedure but with a major fault	Mostly correct procedure with minor omission or procedural error	A plan that could lead to a correct solution with no arithmetic and sequential errors						
C	Computational procedures 20BSX15CO#2,4,5	Some work or explanation beyond re-copying data, but work would not lead to a correct solution. One or more irrelevant approaches were attempted or explained.	Some parts of an appropriate strategy are explained, but some key elements are missing. shown or explained, but implemented incorrectly.	A complete, appropriate strategy is shown or explained but an incorrect solution is given due to a simple computational or other error	A correct solution and an appropriate strategy are shown or explained and the solution is shown with the correct label or description if necessary.						
Signature of Faculty:			Total Score								

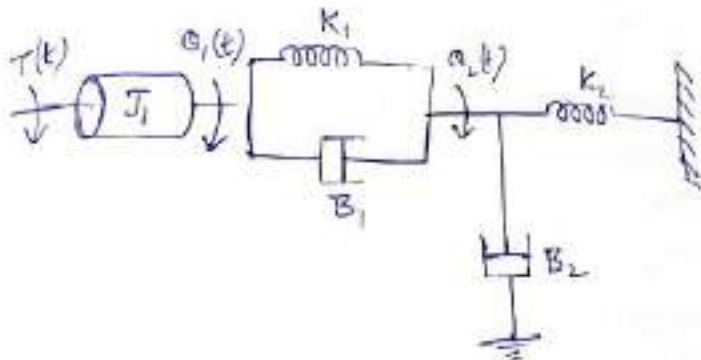
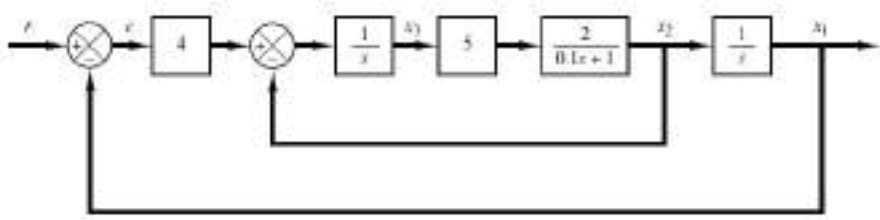
Open Ended Assessment Instrument
Rubrics for the course Mechanical Engineering (20ME304)

ROLL NO

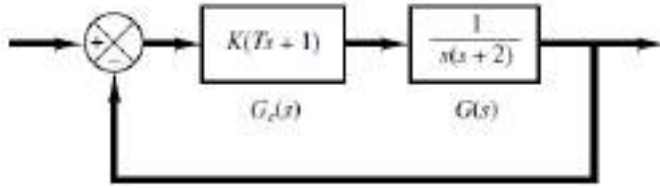
Criteria		Un-Satisfactory (1)	Developing (2)	Good (3)	Exemplary (4)	Score					
						CO 1	2	3	4	5	6
A	Understanding of basic concepts CO:20ME304.1 – 20ME304.5	Student demonstrates some understanding of basic concepts in thermal engineering, but lacks a deep understanding	Student demonstrates an average level of understanding of basic concepts in thermal engineering	Student demonstrates a good understanding of basic concepts in thermal engineering	Student demonstrates an excellent understanding of basic concepts in thermal engineering						
B	Ability to apply concepts to solve problems CO:20ME304.1 – 20ME304.5	Student is able to apply some basic concepts to solve simple problems in thermal engineering, but struggles with more complex problems	Student is able to apply basic concepts to solve average level problems in thermal engineering	Student is able to apply basic concepts to solve complex problems in thermal engineering	Student is able to apply advanced concepts to solve complex problems in thermal engineering						
C	Analytical and computational skills CO:20ME304.1 – 20ME304.5	Student is able to perform some basic analytical and computational tasks in thermal engineering, but struggles with more complex tasks	Student is able to perform average level analytical and computational tasks in thermal engineering	Student is able to perform complex analytical and computational tasks in thermal engineering	Student is able to perform advanced analytical and computational tasks in thermal engineering						
	Quality of written and oral communication CO:20ME304.1 – 20ME304.5	Student has below-average written and oral communication skills, with some errors in grammar, spelling, and punctuation	Student has average written and oral communication skills, with occasional errors in grammar, spelling, and punctuation	Student has good written and oral communication skills, with few errors in grammar, spelling, and punctuation	Student has excellent written and oral communication skills, with no errors in grammar, spelling, and punctuation						
Signature of Faculty:											

Questions pertaining to Open Ended Assessment Instrument

Course: Control Systems

1	 <p>For the system shown in fig, find the transfer function. Consider $J_1=1$ to 10 kgm^2, $K_1=K_2=1$ to 5 Nm/rad, $B_1= B_2=1$ to 5 Nm/rad/sec.</p> <p>POs Mapped: PO # 1,2,3</p>
2	<p>Let V_{in} and V_o are input and output voltages of the circuit. The wiring of the circuit is in such away that light and fan are connected in series. To this heater and washing machine are connected in parallel.</p> <ol style="list-style-type: none"> Draw the electrical equivalent of the circuit Derive the transfer function of electrical network. Obtain the time response for any of the standard input test signals. <p>POs Mapped: PO # 1,2,3</p>
3	<p>Consider the position control system shown in Figure.</p>  <ol style="list-style-type: none"> Obtain transfer function by reducing the block diagram Obtain response to standard test input signals Write MATLAB program for the obtained transfer function. <p>POs Mapped: PO # 1,2,3,5</p>

4 Consider the control system shown in Figure. Determine the gain K and time constant T of the controller $G_c(s)$ such that the closed-loop poles are located at $s = -2 + j2$.



POs Mapped: PO # 1,2,3

5 The transfer function of micro wave oven is given by $G(s) = \frac{104e^{-2.6s}}{1 + 15.783s}$. Design a suitable controller to improve its step response characteristics.

- i) Obtain setting time, Rise time and overshoot for closed loop system
- ii) Write MATLAB code for the closed loop transfer function.
- iii) Develop SIMULINK block diagram for the entire system.

POs Mapped: PO # 1,2,3,5

Questions Pertaining to Open Ended Assessment Instrument

Course: Electro Magnetic Field Theory

1. Identify the position along with the magnitudes, where vector A is placed at a depth 3 times in the axis when another vector B, is placed at $-2a_x - a_y + 8a_z$ at an angle of 45° , such that the sum of its magnitudes does not exceed the magnitude sum of vector B.

POs Mapped: PO # 1,2,3

2. 2 elements are placed on either side of the boundary and when verified the Electric field equation turns out to be $3f(n)$. So, find types of fields placed and the depth at which the elements are placed and at no point these elements will make a straight line with origin.

POs Mapped: PO # 1,2,3

3. Consider 2 plates and assume length of plate 1 be L and length of plate 2 be-half of it. And distance between them is trice the length of plate 1. Explain the various factors which influence the equation of capacitance assuming

- i) when both plates are of same material
- ii) when both plates are of different material

POs Mapped: PO # 1,2,3

4. 4-point charges are placed in free space with the following co-ordinates (1,0,0), (-1,0,0), (0,1,0), (0, -1,0). Now rearrange these co-ordinates so that it will create a strong electric field either in form of square or rectangle. And determine the force on a point if another co-ordinate (0,0,1) with a force of 30×10^{-6} . Consider the force of each point to be 10×10^{-6} .

POs Mapped: PO # 1,2,3

5. An electrostatic field is given by $E = -8xya_x - 4x^2a_y + a_z$ V/m. The charge of 6C is to be moved from B (1,8,5) to A (2,18,6) solve the following cases

- i) If path selected is $y = 3x^2 + z$ and $z = x + 4$
- ii) Rewrite the equation E, by fixing any one co-ordinate and moving the other in such a way that they both form 90° with each other having the same charge

POs Mapped: PO # 1,2,3

6. Determine the relaxation time for silver, having $\sigma = 6.1 \times 10^7$ mho/m. if the charge density is placed within the silver block, find the charge density after one time and five-time flux constant. Now by doubling the value of σ , identify the material which will have same value for both one time and five time constant

POs Mapped: PO # 1,2,3



Questions pertaining to Open Ended Assessment Instrument

Course: Applied Physics (20BSX33)

1. Explain the methods to determine wavelength(s) of monochromatic and polychromatic sources using interference and diffraction. Which method is better for which source? Justify your answer.

POs Mapped: PO # 1,2,5

2. Suggest a dielectric material with high dielectric constant, high operating voltage range and also which can be eco friendly for the preparation of a capacitor. Justify your answer.

POs Mapped: PO # 1,2,7

3. Suggest a soft magnetic material with low retentivity and coercivity, and also which can be eco friendly for the preparation of an electromagnet. Justify your answer.

POs Mapped: PO # 1,2,7

4. Even though based on quantum mechanical principles quantum free electron theory is a partly successful theory. Justify the statement.

POs Mapped: PO # 1,2

5. Explain how Hall Effect can be utilized to determine carrier concentration in semiconductors with the help of experimental method.

POs Mapped: PO # 1,2

6. Explain the motion of free and bound electron in a periodic potential with the help of quantum mechanics.

POs Mapped: PO # 1,2



Questions pertaining to Open Ended Assessment Instrument

Course: Computer Organization

1. Examine the contents of registers E, A, Q, and SC change during the multiplication process for signed magnitude data of two binary numbers, using a specific example of a multiplicand of 10111 and assume a multiplier? What is the significance of these changes, and how do they contribute to the overall result of the multiplication operation?
2. Justify how the combination of cache memory with other memory hierarchy components can lead to improved overall system performance and efficiency, and discuss some common techniques for managing data transfer between different memory levels in the hierarchy.
3. Analyze the concepts of shift micro operations and explain how it be applied to optimize the performance of modern computer systems, and what are some real-world examples of this optimization in action?
4. Distinguish direct addressing mode from other addressing modes, such as indirect or indexed addressing compare and contrast in terms of their functionality, advantages, and limitations, and how can they be used to optimize memory usage and improve the performance of computer programs and systems?



Questions pertaining to Open Ended Assessment Instrument

Course: Heat Transfer

1. Assume you are in Vijayawada in the month of May and you are surrounded in a room; calculate the net heat loss by you to the surroundings and restrict to 40W.
2. Create a heat exchanger suitable for the food industry, which can sustain a heat transfer rate of 60KW. The heat exchanger must be designed to accommodate the inlet temperatures of 90 degrees Celsius for the hot hazelnut paste and 10 degrees Celsius for the cold air.
3. Given a hot baked potato on a plate, which experiences a temperature drop of 40 degrees Celsius during the first minute, determine whether the temperature drop during the second minute will be greater than, less than, or equal to 40 degrees Celsius. Provide a justification for your answer based on the principles of thermodynamics and heat transfer.
4. Can you analyze the handle of an iron cooking pot (2.5cm diameter rod, handle 7.5cm radius) using a cylindrical rod model with an adiabatic tip at the farthest cross-section from the attachment points? Provide a physical explanation for why this model is appropriate, and then determine the following properties for the handle
 - a) Temperature distribution (present as a plot of temperature vs distance);
 - b) Temperature at the farthest cross-section from the attachment point; c) rod effectiveness (does the handle function as an effective fin?);
 - d) Heat transfer through the handle;
 - e) Rod (fin) efficiency (why is the efficiency low?).Assume that the pot surface temperature is 88°C, the surrounding air temperature is 30°C, and the heat transfer coefficient $h = 277 \text{ W/m}^2\text{K}$. This could be an open book exam question on heat transfer and thermodynamics.
5. White potatoes ($k = 0.50 \text{ W/m.K}$ and $\alpha = 0.13 \times 10^{-6} \text{ m}^2/\text{s}$) that are initially at a uniform temperature of 25°C and have an average diameter of 6 cm (consider them spherical) are to be cooled by refrigerated air at 2°C flowing at a velocity of 4 m/s. Determine:
 - a) How long it will take for the center temperature of the potatoes to drop to 6°C;
 - b) Will any part of the potatoes experience chilling injury during the process (for a potato, chilling injury occurs if any part of the potato is below 4°C);

c) If chilling injury is experienced, name two simple ways they could be avoided. If either of those solutions are introduced, what will be the consequence on the cooling time?

6. A can of Thumps up with a diameter of 6.5 cm and height of 12 cm is initially at 300K and placed in a refrigerator at 227K for 6 hours. Assuming an outside heat transfer coefficient of $2.5 \text{ W/m}^2\text{K}$, estimate the temperature of the Thumps up when it is removed from the refrigerator and poured into a glass. Also, calculate the amount of energy that is removed from the Thumps up during the 6 hours of cooling
7. A pure copper extrusion comes out of a heat treatment furnace at 400°C in a metal manufacturing plant. It is then quenched by immersing it in a 50°C air stream flowing perpendicular to its axis at 10 m/s. The extrusion is a long, hexagonal rod with a cross-sectional area of 7.79 cm^2 and a hexagonal perimeter of 10.4 cm. The opposing flat sides of the rod are 3 cm across. Determine the time it takes for the center of the copper to cool to 100°C .
8. Consider heat conduction through a wall of thickness L and area A . Under what conditions will the temperature distributions in the wall be a straight line? Name the top 2 conditions and explain.
9. Consider heat conduction through a plane wall. Does the energy content of the wall change during steady state heat conduction? Explain
10. A large aluminum plate of thickness 200 mm originally at a temperature of 530°C is suddenly exposed to an environment at 30°C . The convective heat transfer coefficient between the plate and the environment is $500 \text{ W}/(\text{m}^2 \text{ K})$. Determine with the temperature at a depth of 20 mm from one of the faces 225 seconds after the plate is exposed to the environment. Also calculate how much energy has been lost per unit area of the plate during this time.



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INSTITUTE OF TECHNOLOGY
(AUTONOMOUS)**



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Questions pertaining to Open Ended Assessment Instrument

Course: APPLIED CHEMISTRY (20BSX23)

CO:20BSX23.1 : Explain the different types of polymers and their applications of Bakelite, Nylon-6, 6 and carbon fibers.

1. Some of the plastics are widely used in many industries, including automotive, aerospace, packaging, and construction, due to repeatedly melted and reshaped, resistant to atmospheric conditions, water resistance, chemical resistance and scratch resistance making it an attractive option for manufacturers seeking to create complex shapes and designs. Based on this an industrialist wants to establish an industry for manufacturing of plastic articles. Suggest different polymers related to above plastic category with required parameters, synthesis & Will they be eco friendly or not & give your suitable reasons.
2. Synthetic rubber belongs to polymer category which has become an essential material in the footwear and automotive industries due to its durability, performance, and versatility. In the footwear industry, synthetic rubber is commonly used to make the soles of shoes. It is often preferred over natural rubber because it is more durable and can withstand a wider range of temperatures and weather conditions. In the automotive industry, synthetic rubber is used in a wide range of applications, including tyres, hoses, seals, and gaskets. Tyres, in particular, heavily rely on synthetic rubber due to its durability and ability to withstand extreme temperatures and weather conditions. Synthetic rubber tyres also offer better fuel efficiency, as they have lower rolling resistance than traditional tires made from natural rubber. Will you agree this or not & Give suitable reasons with an example.
3. A type of plastic materials which are cured and hardened through a chemical reaction they cannot be reversed. This process creates a rigid, durable material that can withstand high temperatures, making it an essential material in many industries and they are also valued for their strength and durability. They are also resistant to wear, corrosion, and chemical damage, making them ideal for use in harsh environments. This makes them a popular choice for applications where reliability and longevity are critical, such as in the construction of infrastructure, telecommunications, and electrical systems. Based on this an industrialist wants to establish an industry for manufacturing of this type of plastic articles. Suggest suitable plastics with their synthesis, applications & Will they be really useful or not give your suitable reasons.

Questions pertaining to Open Ended Assessment Instrument

Course: Digital System Design

- The figure below shows a combinational logic gate.

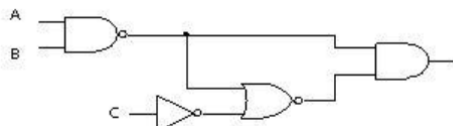


Fig. 1

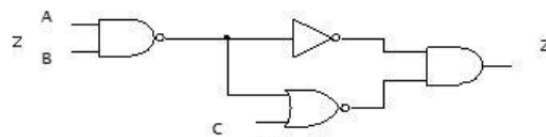


Fig. 2

Compare the output z produced by the circuit in Fig. 1 and Fig. 2, state one difference between them

POs Mapped: PO # 1,2,3

- After completing the design and fabrication of an SSI -based digital system, a designer finds that one more inverter is required. However, the only spare gates in the system are a 2 input OR, a 3 input AND, and 2 input XNOR. How should the designer realize the inverter function without adding another IC.

POs Mapped: PO # 1,2,3

- Design a non-trivial looking logic circuit that contains a feedback loop but whose output only depends on its current input.

POs Mapped: PO # 1,2,3,4

- Design a synchronous counter to give a counting sequence 0, 2, 3, 6, 5, 1, 0... using J-K F/F.

POs Mapped: PO # 1,2,3

- Design an asynchronous sequential circuit with inputs x1 and x2 and one output z. Initially and at any time if both the inputs are 0, the output is equal to 0. When x1 or x2 becomes 1, z becomes 1. When the second input also becomes 1, z=0; the output stays at 0 until the circuit goes back to the initial state.

POs Mapped: PO # 1,2,3

Questions pertaining to Open Ended Assessment Instrument

1. One of the main reasons why cars have become more prevalent and important is because it is an easy mode of transportation. ... You don't need to rely on public transportation for your daily commutes any more, and can enjoy the liberty and independence that comes with a car. So that



1. Cars front glass is not breakable but side and back glass are breakable. Justify with your answer in terms of method of preparation
POs Mapped: PO # 1,2,12

2. Car body exposed to outer atmospheric conditions, but doesn't undergo any kind of corrosion. Give your comment on this.

POs Mapped: PO # 1,2,7,12

3. To avoid car accidents and interruption's to our journey by tire punctures, can you suggest a kind of rubber material which is having the property of puncture resistant at any extreme conditions, with proper reasons.

POs Mapped: PO # 1,2,7,12

4. Can you suggest suitable fabrication method for car interior parts like gear stick, steering wheel, clutch, hand brake, brake. Justify with reasons.

POs Mapped: PO # 1,2



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Questions pertaining to Open Ended Assessment Instrument

Course: Linear Algebra & Differential Equations (20bsx11)

1. Population of insects in a region will grow at a rate that is proportional to their current population .In the absence of any outside factors the population will triple in two weeks time. On any given day there is a net migration in the area of 15 insects & 16 are eaten by the local bird population and 7 die of the natural causes. If there are initially 100 insects in the area will the population survive? If not when do they die out.
2. Assume that the level of a hormone in the blood of a patient varies with time .Suppose that the time rate of change is the difference between a sinusoidal input of a 24 –hour period from the thyroid gland and a continuous removal rate proportional to the level present. Set up a model for the hormone level in the blood .Find the Particular solution satisfying a suitable initial condition?
3. Suppose that in winter the day time temperature in a certain office building is maintained at 700F.The heating is shut off at 10 p.m & turned on again at 6 a.m was found to be 650F The outside temperature was 500F at 10 p.m and had dropped to 400F by 6 a.m .what was the temperature inside the building when the heat was turned on at 6 a.m



Questions pertaining to Open Ended Assessment Instrument

Course: Design and Drawing of Steel Structures

1. Create a truss member for a steel structure 20m above ground level that will accommodate operations within the building in a 40 x 20 foot space.
2. The room's 8 x 12 m roof is made out of an RC slab supported by a steel beam spaced 3 metres apart. Prepare and execute all necessary assessments.
3. Build a railway bridge with a span of 24 metres that holds a weight and also exhibits the welding connection.

Questions pertaining to Open Ended Assessment Instrument

Course: Antenna and Wave Propagation

1. The audio power of the human voice is concentrated at about 300Hz, Antennas of the appropriate size for this frequency is impracticably large, so that to send voice by radio the voice small must be used to modulate a higher carrier frequency for which natural antenna size is smaller
 - a. What is the length of antenna one half wave lengths long for sending radio at 300 MHz?
 - b. Suppose we would like to have a half-wavelength antenna to have a length of 2m what carrier frequency would we use?
 - c. If a transmitter's power is applied to a unity Gain antenna with a 900MHz Carrier frequency, what is the received power in dBm at a free space distance of 100m

POs Mapped: PO # 1,2,3

2. Design an array of two elements (Element A & Element B). Each element is itself an array of three elements (A1, A2, A3 for element A. and B1, B2, B3 for element B). The array should point towards end fire direction. Find the orientation of the array elements, excitation phase each element, spacing between the elements. Also draw the graph of array factors to show the pattern multiplication?

POs Mapped: PO # 1,2,3

3. You have to build a reflector antenna with a gain of 48 dB at 18 GHz. What must be the diameter of the reflector? A couple of points to be taken into account:
 - You use a corrugated horn as the feed antenna of the reflector antenna. With good design, using a corrugated feed horn, you can achieve a surface efficiency of 78 % with an ideal parabolic reflector
 - However, it is not possible to manufacture an ideal parabolic reflector. If we assume that the average deviation of the reflector surface from an ideal parabolic form is 0.4 mm, it can be calculated that the gain of the antenna is decreased by 0.5 dB (compared to using an ideal paraboloid).

POs Mapped: PO # 1,2,3

4. Develop the array factors for 2-element linear uniform array Placed on azimuthal and elevation planes and compare the results.

POs Mapped: PO # 1,2,3

5. Design a log periodic dipole antenna to cover all the VHF TV channels from 55 MHz to 220 MHz. The required directivity is 9 dB and input impedance is 50 Ohms. The elements should be made of aluminum tubing with 2.0 cm outside diameters for the largest element and the feeder line and 0.48 cm for the smallest element. These diameters yield identical (l/d) ratios for smallest and largest elements

POs Mapped: PO # 1,2,3

Questions pertaining to Open Ended Assessment Instrument

Course: Artificial Neural Networks

1. Design a neural network model that can effectively distinguish between real and fake images. In addition, how might altering the connectivity of neurons in a parallel configuration affect the model's performance and accuracy and analyze the potential benefits and drawbacks of utilizing parallel neuron connections within a neural network for this specific type of image classification task?

POs Mapped: PO # 1, 2, 3, 5

2. Assume we have a set of data from patients who have visited a hospital. A set of features (e.g., temperature, height) have been also extracted for each patient. Our goal is to decide whether a new visiting patient has any of diabetes, heart disease, or Alzheimer (a patient can have one or more of these diseases). We have decided to use a neural network to solve this problem. We have two choices: either to train a separate neural network for each of the diseases or to train a single neural network with one output neuron for each disease, but with a shared hidden layer. Which method do you prefer? Justify your answer.

POs Mapped: PO # 1, 2, 3

3. Suppose we clustered a set of N data points using two different clustering algorithms: k-means and Gaussian mixtures. In both cases we obtained 5 clusters and in both cases the centers of the clusters are exactly the same. Can 3 points that are assigned to different clusters in the kmeans solution be assigned to the same cluster in the Gaussian mixture solution? If no, explain. If so, sketch an example & explain.

POs Mapped: PO # 1, 2, 3

4. Design an associative memory neural network and critically evaluate and improve the performance of an associative memory neural network in reconstructing corrupted data. In what ways can we optimize the design and architecture of the network to improve its ability to accurately recall and restore stored patterns, and handle noisy or incomplete input data? Evaluate the robustness and reliability of the network's associative memory capabilities, and develop strategies to enhance its accuracy and efficiency in producing correct outputs.

POs Mapped: PO # 1, 2, 3, 5

5. Design a neural network to classify two-dimensional data into two distinct classes, and analyze the decision boundary that the network can identify. In what ways can the structure of the neural network and the parameters used impact the accuracy and efficiency of the classification task? Analyze how might different types of data and features affect the network's ability to accurately classify the data and identify an optimal decision boundary?

POs Mapped: PO # 1, 2, 3, 5

Questions pertaining to Open Ended Assessment Instrument

Course: Python Programming

1. How can you use a combination of loops, conditionals, and mathematical operations to design an efficient algorithm that generates a list of the first n prime numbers and returns a list of the first n primes and implement it as a Python function called **Primes** ? How would you test your function to ensure it works correctly for a range of input values, including edge cases?

POs Mapped: PO # 1,2,3

2. Develop an object-oriented banking application that utilizes modular design principles to enable secure and efficient transactions, including deposit and withdrawal of funds. Use abstraction and encapsulation to design classes that represent different aspects of the banking system, such as customers, accounts, and transactions. Utilize inheritance and polymorphism to ensure code reusability and flexibility. Implement appropriate data structures and algorithms to handle the storage and manipulation of account and transaction data. Ensure that the application has a user-friendly interface that can securely authenticate users and provide them with options to manage their accounts and perform transactions.

POs Mapped: PO # 1,2,3

3. Develop a Graphical User Interface (GUI) program using the tkinter module in Python. The program should create a Text widget, which allows the user to input and display text. Implement the following functionalities:
 - i. Insert a string at the beginning of the text.
 - ii. Insert a string at the current position of the cursor in the text.
 - iii. Delete the first and last characters of the text.

Ensure that the program is user-friendly, and provide clear instructions on how to use each functionality.

POs Mapped: PO # 1,2,3

4. Create a Python function that can generate a summary of essential information for a given Data Frame input. Utilize the dictionary data structure and list labels to ensure clarity and organization. The function should accept the Data Frame as input and then use appropriate methods to extract and calculate basic information such as the number of rows and columns, data types of each column, number of null values, and summary statistics and store them in a dictionary using appropriate labels. The resulting dictionary should be returned as output, providing an easy-to-read summary of the input Data Frame's basic characteristics.

POs Mapped: PO # 1,2,3



Questions pertaining to Open Ended Assessment Instrument

Course: Theory of Computation

1. Analyze the relationship between Formal languages and automata theory and demonstrate an understanding of regular languages and their recognition by finite automata.

POs Mapped: PO # 1, 2, 3

2. Evaluate the usefulness of Turing machines and context-free grammars in real-world applications and demonstrate an understanding of how these concepts work

POs Mapped: PO # 1, 2, 3

3. Analyze the differences between NFAs and DFAs and demonstrate an understanding of how NFAs recognize certain languages that DFAs cannot

POs Mapped: PO # 1, 2, 3

4. How do pushdown automata (PDAs) differ from finite automata (FAs)? Discuss the concept of context-free languages and how they can be recognized by PDAs. Provide an example of a context-free language and explain how it can be recognized by a PDA.

POs Mapped: PO # 1, 2, 3

5. The Chomsky hierarchy classifies formal languages into four categories: regular, context-free, context-sensitive, and recursively enumerable. Discuss the differences between these four categories and provide an example of a language that belongs to each category. Explain why each language belongs to its respective category

POs Mapped: PO # 1, 2, 3



Questions pertaining to Open Ended Assessment Instrument

Course: Design and Drawing of Reinforced Concrete Structures

1. Design a cantilever slab in an auditorium with a seating capacity of 50 members in an area of 200 square yards. This seating is to be considered in an existing auditorium. Consider the building bye laws and consider the loads as per the IS specifications and carry out the design.
POs Mapped: 1, 3, 8, 10, PSO #1
2. Design a column for an industrial structure which is situated in the Visakhapatnam district of Andhra Pradesh. Infront of the structure there is a 30 feet CC road is present. Assume the required data and perform the design criteria.
POs Mapped: 1, 3, 8, 10, PSO #1
3. Design a footing for a residential building of 10 storey in height, the type of soil is loose. Assume the required data for designing the single footing with respect to all aspects.
POs Mapped: 1, 3, 8, 10, PSO #1
4. Design a water tank to carry a capacity which should be sufficient for the 100 households in a low-lying area. Make sure the water flow should be uniform for all the houses from first to end.
POs Mapped: 1, 3, 8, 10, PSO #1

Questions pertaining to Open Ended Assessment Instrument

Course: Probability and Statistics(20BSX15)

1. A jar contains four marbles: three red, and one white. Two marbles are drawn
 - a. List a sample space containing four outcomes.
 - b. List a sample space with sixteen outcomes.
 - c. Write the probability of each of the four outcomes in (a).
 - d. What are the probabilities of the outcomes in (b)?
 - e. What is the probability the colors of the two marbles match? f. What is the probability the same marble is drawn twice?

PO's Mapped #2,3

2. Select any bi-variate data (X, Y) containing 10 observations such that the mean of the X series is greater than twice the sum of the Y series then find
 - a. Karl Pearson's product-moment correlation and comment on its value?
 - b. show that the correlation coefficient is independent of change of origin and scale?
 - c. The regression line of Y on X and predict the value of y when X=12.285?
 - d. The regression coefficients, and verify whether their geometric mean equals to the correlation coefficient.
 - e. What predictions might you make about the future of this?

PO's Mapped #2,3,4

3. Following data represent t-shirts sizes that a cloths retailer offers on sale: **S, M, L, S, M, L, XL, XL, M, XL, XL, L, M, S, M, L, L, XL, XL, XL, L, M**
 - a) Analyze the data and interpret results in a graphical form.
 - b) Determine what percentage of people bought t-shirts of L size maximum.

PO's Mapped #2,3,4

4. A table glass manufacturer has developed less expensive technology for improving fire-resistant glass. 10 glass table sheets were selected for testing. Half of them were treated by the new technology while the other half was used for comparison. Both lots were tested by the fire until they cracked. These are the results: Critical temperature (glass cracked)

xi 475 485 436 390 495

Yi 520 483 460 426 488

Compare both technologies by means of basic characteristics of the exploratory analysis

PO's Mapped #2,3,4,5

5. You have a thoroughly shuffled deck of 52 cards. Each time you choose one card from the deck. The drawn card is put back in the deck and all 52 cards are again thoroughly shuffled. You continue this procedure until you have seen all four different aces.

a. What are the expected value and the standard deviation of the number of times you have to draw a card until you have seen all four different aces?

b. What different strategies could be used to solve this problem?

PO's Mapped #2,3,4

6. If you guess all 20 questions in this exam what is the probability that you will pass

a. 10% to 30%

b. 5% to 10%

c. 1% to 5%

PO's Mapped #2,3,4

Questions pertaining to Open Ended Assessment Instrument

Course: Thermal Engineering

1. For Higher Performance of engine which types of rated fuels are to be selected with the modification of Hybrid Cycle

POs Mapped: PO # 1,2,3,4,10

2. Design A Four stroke cylinder running at 2000 rpm develop 60 kw power and take the convenient dimensions of engine has bore and stroke with less fuel consumption with considering of two or three cylinders

POs Mapped: PO # 1,2,3,4,10

3. Analyze the possible way to increase thermal efficiency of Otto cycle

POs Mapped: PO # 1,2,3,4,10

4. How the steady flow energy effect the different

POs Mapped: PO # 1,2,3,4,10

5. Develop Ram Jet engine is more preference compared to remaining jet engine in terms of efficiency and environmental causes

POs Mapped: PO # 1,2,3,4,10

6. How can the specific humidity ,relative humidity And absolute humidity effect the factors in controlling the refrigeration system

POs Mapped: PO # 1,2,3,4,10

7. Design the power output of heat engine is admitted to refrigeration system is equitable

POs Mapped: PO # 1,2,3,4,10

8. How pure substance are taken into consideration for achieving triple point and critical point with respect to saturation and superheating Analysis

POs Mapped: PO # 1,2,3,4,10

9. Design SI Engine without disturbing efficiency due to knocking and How the factors effecting detonation of in SI Engine

POs Mapped: PO # 1,2,3,4,10

List of initiatives taken in the area of National Interest related to HEIs by IQAC

1. A month long faculty development program on “Open Book Examination” for the members of faculty in association with National Institute of Technical Teachers Training Institute (NITTTR), Chennai and concluded during May 17 - 19, 2023. And the FDP aims at nurturing the members of faculty in developing assessment instruments in the form of Rubrics for the open book examinations integrating few online assessment tools promoting problem solving skills
2. Seven-day FDP on 360 degree Accreditation Communications and Accuracy: Expectations and Compliance during January 19 – 25, 2023
3. Three-day FDP on Accreditation Communications and Accuracy: Expectations and Compliance during December 22 - 24, 2022



