Diploma in Electrical & Electronics Engineering

II Semester

TEACHING AND EXAMINATION SCHEME

Sl No	Course Code	Course Name	Teaching Scheme					Examination Scheme						
			Instruction periods per week			Total periods per semester	Credits	Continuous internal evaluation			Semester end examination			
			L	T	P			Mid sem1	Mid sem 2	Internal evaluation	Max Marks	Min Marks	Total marks	Min marks for passing including internal
1	18EE-201F	Communicative English	3	1	0	60	3	20	20	20	40	14	100	35
2	18EE-202F	Engineering Mathematics	3	1	0	60	3	20	20	20	40	14	100	35
3	18EE-203F	Applied Physics	3	1	0	60	3	20	20	20	40	14	100	35
4	18EE-204F	Engineering Chemistry &Environmental Studies	3	1	0	60	3	20	20	20	40	14	100	35
5	18EE-205C	Electrical Engineering & Electronics Devices	3	1	0	60	3	20	20	20	40	14	100	35
6	18EE-206P	Advanced Engineering Drawing	1	0	2	45	1.5	20	20	20	40	20	100	50
7	18EE-207P	Advanced Computer Aided Drafting	1	0	2	45	1.5	20	20	20	40	20	100	50
8	18EE-208P	Advanced Electrical Workshop Practice	1	0	2	45	1.5	20	20	20	40	20	100	50
9	18EE-209P-A+B	AppliedScienceLab Practice	1	0	2	45	1.5	20	20	20	40	20	100	50
10	18EE-210P	IT Lab Practice	1	0	2	45	1.5	20	20	20	40	20	100	50
11		Skill Upgradation	0	0	7	105	2.5	0	0	**Rubrics**			--	-
			20	5	17	630	**25**	200	200	200	400	170	1000	425
11	Activities: student performance is to be assessed through Rubrics													

Department of Technical Education

State Board of Technical Education & Training, Telangana

Course Title : Advanced English	**Course Code : 18 EE-201F**
Semester : II	**Course Group : Foundation**
Teaching Scheme in Periods (L:T:P:) : 36:24:0	**Credits : 3**
Methodology : Communicative Language Teaching + Assignments	**Total Contact Hours : 60 periods**
CIE : 60 Marks	**SEE : 40 Marks**

Prerequisites: Basic knowledge of English Language

COURSE OUTCOMES

	At the end of the course the students will have the ability to:
201.1	learn homonyms and one word substitutes and use them in professional interaction
201.2	listen for specific purpose and use appropriate prepositions.
201.3	acquire values through stories and reports
201.4	write resumes, reports and make notes
201.5	work in pairs and groups confidently
201.6	analyse errors and make communication flawless

CO-PO Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	Mapping POs
201.1	2	2	2	--	1	--	--	3	3	3	1,2,3,5,8,9,10
201.2	2	2	1	2	--	--	--	3	3	3	1,2,3,4,8,9,10
201.3	2	2	--	1	1	1	2	3	3	3	1,2,4,5,6,7,8,9,10
201.4	2	2	2	2	1	--	2	3	3	3	1,2,3,4,5,7,8,9,10
201.5	2	2	2	--	1	--	2	3	3	3	1,2,3,57,8,9,10
201.6	2	2	--	--	--	--	--	3	3	3	1,2,8,9,10

COURSE CONTENTS

UNIT – 1 SPEAKING **Duration: 10 Periods**

1. Expressing Obligation
2. Fixing and Cancelling Appointments
3. Extending and Accepting Invitations
4. Giving Instructions
5. Asking for and Giving Directions

UNIT - 2: LISTENING **Duration: 6 Periods**

6. The Here and Now!

UNIT –3: VOCABULARY **Duration: 6 Periods**

7. How to Learn a New Word
8. Synonyms, Antonyms and One word Substitutes

UNIT -4: GRAMMAR **Duration: 12 Periods**

9. Reported Speech
10. Error Analysis - I
11. Error Analysis - II
12. Error Analysis - III

UNIT - 5: READING **Duration: 6 Periods**

13. An Environmental challenge
14. The Will to Succeed
15. Waiting for Mr. Clean

UNIT- 6: WRITING **Duration: 20 Periods**

16. Data Interpretation- I
17. Data Interpretation- II
18. Data Interpretation- III
19. Writing a Resume
20. Writing a Cover Letter
21. Note Making
22. Writing a Report

Specific Learning Outcomes:

On completion of the course the students will be able to:

- express obligation, fix and cancel appointments, extend –accept and decline invitations.
- give instructions and directions
- identify and use prepositions
- learn homonyms and use one word substitutes
- read and understand main ideas and answer the questions
- understand and write reported speech
- identify and correct common errors
- interpret data
- learn to prepare cover letter and resume
- make notes and write reports

Internal evaluation

Test	Units	Marks	Pattern
Mid Sem 1	Speaking Listening	20	Part A 5 Short answer questions Part B 2 Essay questions out of 3 Questions Part C 2 Essay questions out of 3 Questions
Mid Sem 2	Vocabulary Grammar	20	Part A 5 Short answer questions Part B 2 Essay questions out of 4 Questions Part C 2 Essay questions out of 3 Questions
Slip Test 1	Speaking Listening	5	2 Essay Questions out of 3 Questions
Slip Test 2	Vocabulary Grammar	5	2 Essay Questions out of 3 Questions
Assignment	One assignment per one semester	5	Different group assignments of Higher order Questions that develop problem solving skills and critical thinking should be given
Seminars	One seminar per one semester	5	
	Total	**60**	

Suggested Student Activities :

- Listen to a song and answer the questions

- Listen to a passage/conversations/dialogues/speeches and answer the questions
- Group Discussions
- Student Presentations
- Seminars
- Talk about a movie/review
- Talk about a book
- Narrating a story
- Chain stories
- JAM on topics like environment, pollution, ethics, morals, responsibilities of citizens
- Speak about incidents/events/memories/dreams/role model
- Interview with famous personalities
- Cricket commentary
- Reading for main ideas
- Reading for specific details
- Summarizing
- Picture description
- Writing a recipe
- Surprise test
- Compare and contrast two people/pictures/news items/ideas etc
- Surveys
- Filling forms
- e-mail etiquette

Textbook: English for Polytechnics

REFERENCES:

1. Practical English Grammar by A.J Thomson and A.V. Martinet
2. A Course in Phonetics and Spoken English by J. Sethi and P.V Dhamija
3. Word Power Made Easy by Norman Lewis
4. Keep Talking by Friederike Klippel
5. More Grammar Games by Mario Rinvolucri and Paul Davis
6. Essential English Grammar by Raymond Murphy
7. Spoken English-A Self Learning Guide to Conversation Practice by V Sasi Kumar

e-learning:

1.www.duolingo.com

2. www.bbc.co.uk

3. www.babbel.com

4. www.merriam-webster.com

5. www.ello.org

6. www.lang-8.com
7. youtube.com
8. Hello English(app)
9. mooc.org
10. https://onlinecourses.nptel.ac.in

DISTRIBUTION OF QUESTIONS/MARKS FOR SEMESTER MID/END EXAMINATION

Module	Unit Name	No. of Periods	NUMBER OF QUESTIONS TO BE CONSIDERED						MARKS WEIGHTAGE				UNIT WISE WEIGHTAGE	(MS+EE) WEIGHTAGE
			R		U		A							
			MID	END	MID	END	MID	END	MS-I	MS-II	MS-III	END EXAM		
PART-A	Speaking	10	3	1	2	1	2	1	36	-	-	17	53	74
	Listening	6	2	1	1	0	1	0	19	-	-	02	21	
PART-B	Vocabulary	6	2	1	1	0	1	0	-	19	-	02	26	74
	Grammar	12	3	1	2	1	2	1	-	36	-	17	48	
PART-C	Reading	6	3	1	0	0	1	0	-	-	16	2	18	72
	Writing	20	2	0	3	1	2	1	-	-	39	15	54	
TOTAL		**60**	**15**	**05**	**9**	**3**	**9**	**3**	**55**	**55**	**55**	**55**	**220**	**220**
											110			

LEGEND	R: Remembering
	U: Understanding
	A: Applying

Semester End Examination Marks Distribution

	Short answer	Essay	Marks
Part A	10	0	20
Part B			
Group 1	0	2/3	10
Group 2	0	2/3	10
Part C			
Group 1	0	2/3	20
Group 2	0	2/3	20
Total	10	8/12	80

Mid Sem Examination Marks Distribution

	Short answer	**Essay**	**Marks**
Part A	5	0	10
Part B	0	2/3	10
Part C	0	2/3	20
Total	5	4/6	40

Mid Sem Examination marks distribution

	Short answer	Essay	Marks
Part A	5	0	10
Part B	0	2/3	10
Part C	0	2/3	20
Total	5	4/6	40

State Board of Technical Education, Telangana State
Model Paper- 18EC201F (Advanced English)
Mid Sem-I

Time : 1 ½ Hours **Total Marks : 40**

PART – A **5 X 2 = 10**

Instructions:

i) Answer all the following questions:
ii) Each question carries two marks.

1. Write two sentences, one with 'must' and another with 'have to', to express obligations.
2. Fill the blanks with suitable prepositions.
   a) He came home _____ a car.
   b) Kiran mixed coffee _____ a spoon.
3. How do you invite your neighbor to attend a seminar on global warming?
4. Fix an appointment with the dentist at 5.30 p.m.
5. Fill the blanks with the suitable prepositions given below:

Among, between, by, with, from, at, for

   a) She distributed sweets _____ her two brothers.
   b) Mohan died _____ cancer.

PART- B **2 X 5 = 10**

Instructions:

i. Answer any two questions.
ii. Each question carries five marks.

6. Write a dialogue between you and the receptions about the cancellation of an appointment you have with the doctor.
7. Give directions to your friend to reach to the park from your house.
8. Write a paragraph describing your polytechnic using at least five prepositions.

PART- C **2 X 10 = 20**

Instructions:

i. Answer any two questions.
ii. Each question carries ten marks.

9. Fill the blanks with the suitable prepositions.
   a) He looked ____ me.
   b) Listen _____ my instructions carefully.
   c) Geetha suffered _____ fever.
   d) Bhagya threw a stone _____ the well.
   e) Prathap kept a ladder _____ the wall.

f) We played cricket _____ five hours.
g) My books were stolen _____ Kiran.
h) We will go to library _____ 15th of this month.
i) Shailaja has been reading a novel _____ 10.00 a.m.
j) We bought this television _____ 2014.

10. Give instructions on how to send an e-mail to your friend.
11. a). Fix an appointment with your M.L.A. next Sunday at 4.00 p.m. to discuss the problems in your village.
    b). Cancel the same appointment as you are going to leave for Adilabad on some urgent personal work.

State Board of Technical Education, Telangana State
Model Paper- 18EC201F (Advanced English)
Mid Sem-II

Time : 1 ½ Hours **Total Marks : 40**

PART – A **5 X 2 = 10**

Instructions:

i) Answer all the following questions:
ii) Each question carries two marks.

1. Write one word substitutes for the following expressions.
   a) A place where books are available to be borrowed and for reference.
   b) That which cannot be heard.
2. Write the synonyms of the following words:
   a. Rich
   b. Happy
3. Change the following into indirect speech.
   a. Vinod said, "I have gone to Bhadrachalam yesterday."
   b. Gopal said to Mamatha, "I will play cricket tomorrow."
4. Change the following onto direct speech.
   a. David said to Madhavi, " Give me your calculator now."
   b. Jayanth said to Fathima, " Where are you going?"
5. Correct the words given in italics in the following sentences.
   a. Lalitha *go* to Nanded tomorrow.
   b. Adarsh sat *besides* Vikas.

PART-B 2 X 5 =10 marks

Instructions*:*

1. Answer any two questions.

2. Each question carries 5 marks.

6. How should a new word be learnt?
7. Correct the following sentences.
   a. It is very hot to go outside.
   b. Shiva works hardly.
   c. She is more cleverer than Bhaskar.
   d. Vidya is senior than Indira.
   e. Praveen is angry on his sister.
8. Change the following into indirect speech.
   a. She said to him, "When will you go to temple?"
   b. Radhika said to her brother, "Will you pay the examination fee tomorrow?"
   c. Vasu said, " I do not eat non-vegetarian food."
   d. Rafi said to Mathews, "Show me your record."

e. Pramod said to Sandhya, " My brother will bring fruits tomorrow from Karimnagar."

PART-C 2 X 10 =20 marks

***Instructions**:*

1. Answer any two questions.

2. Each question carries ten marks.

9. Mention any five ways of learning a new word.
10. Change the following dialogue into a paragraph.

Ajay: Hai Sudha! How are you?
Sudha" I am fine. How are you?
Ajay: I am fine too. Where are you going now?
Sudha: I am going to market.
Ajay: What do you want to buy there?
Sudha: I want to buy fruits and vegetables.
Ajay: Do you know the mobile number of Suresh?
Sudha: No. I don't have his mobile number. Why do you need his number?
Ajay: I want to invite him for my sister's birthday.

11. Correct the following sentences.
    a. Every student has to bring their textbook tomorrow.
    b. She is having a house.
    c. We are living in this house for the last ten years.
    d. This machine works perfectly.
    e. He is the taller student in my class.
    f. Music classes begin from 27th July.
    g. She is weak and she can run fast.
    h. The door was painted by a small brush.
    i. Where your brother is studying?
    j. He awaited for the bus here yesterday.

State Board of Technical Education, Telangana State

C18-Semester End Examination (SEE)

Model Paper- 18Common201F (Advanced English)

Time: 3 Hours **Total Marks: 80**

PART – A

Instructions: **10 X 2 = 20**

i. Answer all the following questions.

ii. Each question carries two marks.

1. Fill the blanks with the suitable expressions of obligation:
    a) We _____wear helmet while riding a two wheeler.
    b) A student _____ be in time to college.
2. Fill the blanks with suitable prepositions:
    a) He went to polytechnic ____ a bicycle.
    b) They have been waiting _____ a bus since 8.00 a.m.
3. Write the antonyms of the following words:
    a) Legal
    b) Honest
4. Change the following sentences into direct speech:
    a. He said that he had a beautiful house.
    b. The visitors thanked the guide.
5. What do you write about the following ones in your resume?
    a. Your skills
    b. Your work experience
6. What do you write about the following ones in your resume?
    a. Your interests and activities
    b. Your educational qualifications
7. Read the following paragraph and answer the questions given in questions no. 7 and 8.

Subhas Chandra Bose was born in a Bengali Kayasth family on January 23, 1897 in Cuttack (Odiya Baazar), Orissa, to Janakinath Bose, and Prabhavati Devi. He was the ninth child of 14. He studied in an Anglo school at Cuttack (now known as Stewart School) until standard 6. He then shifted to Ravenshaw Collegiate School of Cuttack. From there he went to the prestigious Presidency College where he studied briefly. His nationalistic temperament

came to light when he was expelled for assaulting Professor Oaten for his anti-India comments.

His high score in the Civil Service examinations meant an almost automatic appointment. He then took his first conscious step as a revolutionary and resigned the appointment on the premise that the best way to end a government is to withdraw from it. At the time, Indian nationalists were shocked and outraged because of the Amritsar massacre and the repressive Rowlatt legislation of 1919. Returning to India, Bose wrote for the newspaper Swaraj and took charge of publicity for the Bengal Provincial Congress Committee. His mentor was Chittaranjan Das, spokesman for aggressive nationalism in Bengal. Bose worked for Das when the latter was elected mayor of Calcutta in 1924. In a roundup of nationalists in 1925, Bose was arrested and sent to prison in Mandalay, where he contracted tuberculosis.

Answer the following questions.

a. Where was Subhas Chandra Bose born?
b. Who were his parents?

8. Answer the following questions
    a. Why was Bose expelled from Presidency College?
    b. Why was he sent to Mandalay?
9. Read the following paragraph and answer the questions given in questions no. 9 and 10.

Dr. Rajendra Prasad, son of Mahadev Sahai, was born in Zeradei village, in the Siwan district of Bihar, on 3 December 1884. He was the youngest in a large family, & was close to his mother and eldest brother. He was known as "Rajen" to his family and friends. His father, Mahadev Sahay, was a scholar of both the Persian and Sanskrit languages, while his mother, Kamleshwari Devi, was a religious woman. Zeradei's population was diverse, with both Muslims and Hindus living in relative harmony.

When Rajendra Prasad was five years old, his parents put him under a Mawlawi, an accomplished Muslim scholar, to learn the Persian language, followed by Hindi and arithmetic. After the completion of traditional elementary education, Rajendra Prasad was sent to the Chhapra District School. At the age of 12, Rajendra Prasad was married to Rajavanshi Devi. He, along with his elder brother Mahendra Prasad, then went on to study at T.K. Ghosh's Academy in Patna.

Since childhood, Rajendra Prasad was a brilliant student. He placed first in the entrance examination to the University of Calcutta and was awarded Rs.30 per month as a scholarship. In 1902, Rajendra Prasad joined the Presidency College. He was initially a student of science

and his teachers included Jagadish Chandra Bose and Prafulla Chandra Roy. Later he decided to focus on the arts. Prasad lived with his brother in the Eden Hindu Hostel

Answer the following questions:

a. Where was Rajendra Prasad born?

b. What was he known as?

10. Answer the following questions.
    a. Where did he learn the Persian language?
    b. Where was he awarded Rs. 30 per month as a scholarship?

PART- B **4 X 5 = 20**

Group 1 **2 X 5 = 10**

Instructions: ***1. A*nswer any two of the following questions.**

2. Each question carries five marks.

11. Write instructions on how to prepare tea.
12. Write a cover letter to the Managing Director, Vijaya Cement Works, Godavarikhani as you wish to apply for the post of Assistant Executive Engineer.
13. Correct the following sentences.
    a. They congratulated Aravind for his success.
    b. Though Anand is poor, but he is honest.
    c. I wish I have a laptop.
    d. Nafeesa and me are playing shuttle badminton.
    e. Hari is having a car.

Group 2 **2 X 5 = 10**

Instructions: ***1. A*nswer any two of the following questions.**

2. Each question carries five marks.

14. Write a report on the industry you have visited last week.
15. Observe the following table and write a paragraph analyzing the information given in it.

Table showing the number of students admitted in different courses in Private Engineering colleges in the past four years.

Year	ECE	EEE	Mechanical	Civil	CSE
2017	54065	36255	21600	34000	13436
2016	49008	36255	20900	29000	22687
2015	45032	36255	20600	14500	32008
2014	38060	36254	20300	14500	38065

16. Observe the following flow chart and write a paragraph describing the steps involved in creating an e-mail.

Click Internet Explorer icon

↓

Click create an account

↓

Click sign up

↓

Create your user name

↓

Create a password

↓

Give your mobile number and alternate e-mail id

↓

Enter verification code

↓

Accept to the terms and conditions

PART-C **4 X10 = 40**

Group 1 **2 X 10 = 20**

Instructions: ***1.*** **Answer any two of the following questions.**

2. Each question carries ten marks.

17. Write a resume to apply for the post of AEE in the Department of Tribal Welfare, Government of Telangana.
18. Write instructions for the following:
    a. Opening an account in a bank.
    b. Taking a bus pass for six months
19. Correct the following sentences.
    a. One of my friend met me yesterday.

b. Anitha is going to park everyday at 6.00 p.m.
c. Myself went to Hyderabad last month.
d. If you read well, you get the first rank.
e. There was many students in the hall.
f. Prasad wants to quickly write the examination.
g. We ran fastly to catch the bus.
h. Pallavi prefers milk than coffee.
i. When did Kamala went to Hyderabad?
j. Harika returned back my book.

Group 2 **2 X 10 = 20**

Instructions: ***1.*** **Answer any two of the following questions.**
2. Each question carries ten marks.

20. Write a report to your Principal on the industrial visit by you to BHEL, Patancheruvu, Hyderabad.
21. Read the following paragraph and make notes:

In1920, the Congress meeting was held at Nagpur under the leadership of Gandhiji. It was attended by 15000 delegates and the Congress Constitution was amended and resolutions were taken to fight Swaraj by nonviolent methods and undo the injustice done to Punjab and Turkey.

This movement was called Non-Cooperation Movement. Renunciation of honorary titles like 'Sir' given by British, boycott of legislatures, schools and colleges, courts, tendering resignation to government jobs nonpayment of taxes to government were the important programmes of this movement. Gandhi returned his Kaiser-i-Hind title in August, 1920. There were strikes, hartals and burning of foreign goods all over the country. Many Indian were killed in firings and many other were jailed.

In Kerala, a rebellion broke out by Mophlah peasants and it was suppressed brutally. Though Gandhiji warned the people many times not to resort to violent methods, on 5th February, 1922 in Chauri-Chaura in Uttar Pradesh people resorted to violence. When policemen opened fire on peaceful demonstrations, the angry people set ablaze the police station and 22 policemen were killed. Gandhiji stopped the movement because it lost its nonviolent nature. On 10th March, 1922 Gandhiji was arrested fir six years.

22. Read the following passage and answer the questions that follow:

Subhas Chandra Bose was born in a Bengali Kayasth family on January 23, 1897 in Cuttack (Odiya Baazar), Orissa, to Janakinath Bose, and Prabhavati Devi. He was the ninth child of 14. He studied in an Anglo school at Cuttack (now known as Stewart School) until standard 6. He then shifted to Ravenshaw Collegiate School of Cuttack. From there he went to the prestigious Presidency College where he studied briefly. His nationalistic temperament came to light when he was expelled for assaulting Professor Oaten for his anti-India comments.

His high score in the Civil Service examinations meant an almost automatic appointment. He then took his first conscious step as a revolutionary and resigned the appointment on the premise that the best way to end a government is to withdraw from it. At the time, Indian nationalists were shocked and outraged because of the Amritsar massacre and the repressive Rowlatt legislation of 1919. Returning to India, Bose wrote for the newspaper Swaraj and took charge of publicity for the Bengal Provincial Congress Committee. His mentor was Chittaranjan Das, spokesman for aggressive nationalism in Bengal. Bose worked for Das when the latter was elected mayor of Calcutta in 1924. In a roundup of nationalists in 1925, Bose was arrested and sent to prison in Mandalay, where he contracted tuberculosis.

Questions:

i. When and where was Subhas Chandra Bose?
ii. Who was his mentor?
iii. How did Subhas Chandra Bose participate in National Movement after coming back to India?
iv. Why didn’t he join civil Services?
v. What is the synonym of ‘aggressive’?

Department of Technical Education - TELANGANA

State Board of Technical Education and Training – HYDERABAD

Course Title **: ENGINEERING MATHEMATICS**	Course Code **: 18EE-202F**
SEMESTER : **II**	Course Group **: COMMON**
Teaching Scheme (L : T : P) : **36 :24 : 0 (** in Periods)	Credits : **3 Credits**
Type of Course : **Lecture + Assignments**	Total Contact Periods : **60**
CIE : 6**0 Marks**	SEE : **40 Marks**
Programme : **Common to all Engineering Diploma Programmes**	

Pre requisites

This course requires the basic knowledge of Algebra, Trigonometry in Mathematics at Secondary school level and Basic Engineering Mathematics at Diploma 1st Semester level

Course Outcomes: COs

At the end of the course, the student will have the ability to:

CO 1	Formulate the equations of Straight Line , Circle and Conic Sections
CO 2	Evaluate the Limits of different Functions
CO 3	Determine the Derivatives of Various Functions
CO 4	Find the Successive Derivatives and Partial Derivatives of Functions
CO 5	Use Differentiation in Geometrical and Physical Applications
CO 6	Find Maxima and Minima.

Course Contents:

Co-ordinate geometry

Unit – I **Duration: 10 Periods (L: 6.0 – T:4.0)**

1. **Straight lines:** Write the different forms of a straight line – point slope form, two point form, intercept form, normal form and general form - Find distance of a point from a line, acute angle between two lines, intersection of two non-parallel lines and distance between two parallel lines - perpendicular distance from a point to a line - Solve simple problems on the above forms
2. **Circle:** Define locus of a point, circle and its equation. Find equation of the Circle given (i) Centre and radius, (ii) two ends of a diameter (iii) Centre and a point on the circumference (iv) three

non collinear points and (v) Centre and tangent equation - general equation of a circle - finding Centre, radius - tangent, normal to circle at a point on it - simple problems.

Unit – II **Duration: 8 Periods (L: 4.8 – T:3.2)**

3.**Conic Sections:** Define a conic section, focus, directrix, eccentricity, axes and latus rectum – Find equation of a conic when focus directrix and eccentricity are given. Properties of parabola, ellipse and hyperbola - standard forms with Vertex (Centre) at the Origin and Axis (Axes) along Co – Ordinate Axes only – Simple Problems.

Differential Calculus

Unit-III **Duration: 12 Periods (L: 7.2 – T:4.8)**

4. **Functions & Limits :** Concept of Limit- Definition- Properties of Limits and Standard Limits (without proof) - $\lim_{x\to a}\frac{x^n-a^n}{x-a}$, $\lim_{x\to 0}\frac{\sin x}{x}$, $\lim_{x\to 0}\frac{\tan x}{x}$, $\lim_{x\to 0}\frac{a^x-1}{x}$, $\lim_{x\to 0}\frac{e^x-1}{x}$, $\lim_{x\to 0}(1+x)^{\frac{1}{x}}$, $\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x$ - Simple Problems . Evaluate the limits of the type $\lim_{x\to l}\frac{a x^2+b x+c}{\alpha x^2+\beta x+\gamma}$ and $\lim_{x\to\infty}\frac{f(x)}{g(x)}$

5. **Differentiation – I :** Concept of derivative - definition from first principle as $\lim_{h\to 0}\frac{f(x+h)-f(x)}{h}$ - different notations - derivatives of elementary functions like x^n, a^x, e^x, log x, sin x, cos x, tanx, Secx, Cosecx and Cotx. Derivatives of sum, product, quotient, scalar multiplication of functions - problems. Derivative of function of a function (Chain rule) with illustrative examples such as

(i) $\sqrt{t^2+\frac{2}{t}}$ **(ii)** $x^2\sin 2x$ **(iii)** $\frac{x}{\sqrt{x^2+1}}$ **(iv)** $\log\left(\sin(\cos x)\right)$.

Unit – IV **Duration: 12 Periods (L: 7.2 – T:4.8)**

6. **Differentiation – II:** Derivatives of inverse trigonometric functions, derivative of a function with respect to another function, derivative of parametric functions, derivative of hyperbolic, implicit functions, logarithmic differentiation – problems in each case. Higher order derivatives -

examples – functions of several variables – partial differentiation, Euler's theorem-simple problems.

Applications of Derivatives:

Unit – V **Duration: 8 Periods (L: 4.8 – T:3.2)**

7. **Geometrical Applications: Geometrical** meaning of the derivative, equations of Tangent and normal to a curve at any point on the curve. Lengths of tangent, normal, sub tangent and subnormal to the curve at any point on it. Angle between two intersecting curves - problems.

Unit – VI **Duration: 10 Periods (L: 6 – T:4)**

8. **Physical Applications: Physical** applications of the derivative – Explain the derivative as a rate of change in distance-time relations to find the velocity and acceleration of a moving particle with examples. Explain the derivative as a rate measure in the problems where the quantities like volumes, areas vary with respect to time- illustrative examples– Simple Problems.

9. **Maxima & Minima: Applications** of the derivative to find the extreme values – Increasing and decreasing functions, finding the maxima and minima of simple functions - problems leading to applications of maxima and minima.

References

1. Co - Ordinate Geometry – by S.L. Loney

2. Thomas Calculus, Pearson Addison – Wesley Publications

3. Calculus – I by Shanti Narayan and Manicavachagam Pillai, S.V Publications.

4. NCERT Mathematics Text Books Of Class XI, XII.

5. Intermediate Mathematics Text Books (Telugu Academy)

Suggested E-Learning references

1. www.freebookcentre.net/mathematics/introductory-mathematics-books.html

2.E-books:www.mathebook.net

Suggested Learning Outcomes

Coordinate Geometry

Unit – I

1.0 Solve the problems on Straight lines

1.1 Write the different forms of a straight line – point slope form, two point form, intercept form, normal form and general form

1.2 Solve simple problems on the above forms

1.3 Find distance of a point from a line, acute angle between two lines, intersection of two non-parallel lines and distance between two parallel lines.

2.0 Solve the problems on Circles

2.1 Define locus of a point, circle and its equation.

2.2 Find the equation of a circle given

(i) Centre and radius

(ii) Two ends of a diameter

(iii) Centre and a point on the circumference

(iv) Three non collinear points

(v) Centre and tangent

2.3 Write the general equation of a circle and find the centre and radius.

2.4 Write the equation of tangent and normal at a point on the circle.

2.5 Solve the problems to find the equations of tangent and normal.

Unit – II

3.0 Appreciate the properties of Conics in engineering applications

3.1 Define a conic section.

3.2 Understand the terms focus, directrix, eccentricity, axes and latus rectum of a conic with illustrations.

3.3 Find the equation of a conic when focus, directrix and eccentricity are given

3.4 Describe the properties of Parabola, Ellipse and Hyperbola

3.5 Solve problems in simple cases of Parabola, Ellipse and Hyperbola.

Differential Calculus

UNIT - III

4.0 Use the concepts of Limit for solving the problems

4.1 Understand the concept of limit and meaning of $\lim_{x\to a} f(x)=l$ and state the properties of limits.

4.2 Mention the Standard limits $\lim_{x\to a}\frac{x^n-a^n}{x-a}$, $\lim_{x\to 0}\frac{\sin x}{x}$, $\lim_{x\to 0}\frac{\tan x}{x}$, $\lim_{x\to 0}\frac{a^x-1}{x}$, $\lim_{x\to 0}\frac{e^x-1}{x}$, $\lim_{x\to 0}(1+x)^{\frac{1}{x}}$, $\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x$ (All without proof).

4.3 Solve the problems using the above standard limits

4.4 Evaluate the limits of the type $\lim_{x\to l}\frac{a x^2+b x+c}{\alpha x^2+\beta x+\gamma}$ and $\lim_{x\to\infty}\frac{f(x)}{g(x)}$

5.0 Appreciate Differentiation and its meaning in engineering situations

5.1 State the concept of derivative of a function y = f(x) – definition, first principle as $\lim_{h\to 0}\frac{f(x+h)-f(x)}{h}$ and also provide standard notations to denote the derivative of a function.

5.2 State the significance of derivative in scientific and engineering applications.

5.3 Find the derivatives of elementary functions like x^n , a^x, e^x, log x, sin x, cos x, tanx, Secx, Cosecx and Cot x using the first principles.

5.4 Find the derivatives of simple functions from the first principle.

5.5 State the rules of differentiation of sum, difference, scalar multiplication, product and quotient of functions with illustrative and simple examples.

5.6 Understand the method of differentiation of a function of a function (Chain rule) with illustrative examples such as

(i) $\sqrt{t^2+\frac{2}{t}}$ **(ii)** $x^2\sin 2x$ **(iii)** $\frac{x}{\sqrt{x^2+1}}$ **(iv)** $\log\left(\sin(\cos x)\right)$.

Unit – IV

6.0 Appreciate Differentiation and its meaning in engineering situations

6.1 Find the derivatives of Inverse Trigonometric functions and examples.

6.2 Understand the method of differentiation of a function with respect to another function and also differentiation of parametric functions with examples.

6.3 Find the derivatives of hyperbolic functions.

6.4 Explain the procedures for finding the derivatives of implicit function with examples.

6.5 Explain the need of taking logarithms for differentiating some functions with examples like $[f(x)]^{g(x)}$.

6.6 Explain the concept of finding the higher order derivatives of second and third order with examples.

6.7 Explain the concept of functions of several variables, partial derivatives and difference between the ordinary and partial derivatives with simple examples.

6.8 Explain the definition of Homogenous function of degree n

6.9 Explain Euler's theorem for homogeneous functions with applications to simple problems.

Applications of Differentiation

UNIT - V

7.0 Understand the Geometrical Applications of Derivatives

7.1 State the geometrical meaning of the derivative as the slope of the tangent to the curve y=f(x) at any point on the curve.

7.2 Explain the concept of derivative to find the slope of tangent and to find the equation of tangent and normal to the curve y=f(x) at any point on it.

7.3 Find the lengths of tangent, normal, sub-tangent and sub normal at any point on the curve y=f(x) .

7.4 Explain the concept of angle between two curves and procedure for finding the angle between two given curves with illustrative examples.

Unit – VI

8.0 Understand the Physical Applications of Derivatives

8.1 Explain the derivative as a rate of change in distance-time relations to find the velocity and acceleration of a moving particle with examples.

8.2 Explain the derivative as a rate measurer in the problems where the quantities like volumes, areas vary with respect to time- illustrative examples.

9.0 Use Derivatives to find extreme values of functions

9.1 Define the concept of increasing and decreasing functions.

9.2 Explain the conditions to find points where the given function is increasing or decreasing with illustrative examples.

9.3 Explain the procedure to find the extreme values (maxima or minima) of a function of single variable - simple problems yielding maxima and minima.

9.4 Solve problems on maxima and minima in applications like finding areas, volumes, etc.

Suggested Student Activities

1. Student visits Library to refer Standard Books on Mathematics and collect related material.
2. Quiz
3. Group discussion
4. Surprise tests
5. Seminars
6. Home assignments.

Course Content and Blue Print of Marks for SEE – 202F

UNIT No.	UNIT NAME	Periods	Questions for SEE			Marks weightage	Weightage %
			R	U	A		
I	Straight lines	4	1			2	8
	Circles	6	1	1		7	
II	Conic Sections	8		1		10	9
III	Functions & Limits	6	1			2	8

	Differentiation – I	6	1	1		7	
IV	Differentiation – II	12		1		10	9
V	Geometrical Applications	8	3		1+2	31 (6+5+20)	28.5
VI	Physical Applications	5	2		2+1	24 (4+5+5+10)	37.5
	Maxima & Minima	5	1		1+1	17 (2+5+10)	
	Total	60	10	4	8	110	100

R – Remembering: 20 M U – Understanding : 30 M A -- Application : 60 M

DISTRIBUTION OF QUESTIONS/MARKS FOR SEMESTER MID/END EXAMINATION – 202F

Module	Unit No.	No. of Periods	NUMBER OF QUESTIONS TO BE CONSIDERED						MARKS WEIGHTAGE				UNIT WISE WEIGHTAGE	(MS+EE) WEIGHTAGE
			R		U		A							
			MID	END	MID	END	MID	END	MS-I	MS-II	MS-III	END EXAM		
PART-A	I	10	3	2	2	1	2	0	36	-	-	9	45	74
	II	8	2	0	1	0	1	1	19	-	-	10	29	
PART-B	III	12	3	2	1	1	1	0	-	21	-	9	30	74
	IV	12	2	0	2	0	2	1	-	34	-	10	44	
PART-C	V	8	2	1	1	0	1	1	-	-	19	12	31	72
	VI	10	3	0	2	1	2	0	-	-	36	5	41	
TOTAL		**60**	**15**	**5**	**9**	**3**	**9**	**3**	**55**	**55**	**55**	**55**	**220**	**220**
											110			

LEGEND	**R**: Remembering
	U: Understanding
	A: Applying

Question Paper Blue Print for SEE

Course: ENGINEERING MATHEMATICS CODE: 18COMMON202F

UNIT No./NAME		No. of Hours	PART – A 2 Marks	PART – B 5 Marks	PART– C 10 Marks	Marks weightage	Weightage (%)
I	a).Straight Lines	04	01	----	----	02	8
	b).Circles	06	01	01	----	07	
II	Conic Sections	08	----	----	01	10	9
III	a).Functions & Limits	06	01	----	----	02	8
	b). Differentiation – I (up to Chain rule)	06	01	01	----	07	
IV	Differentiation – II	12	----	----	01	10	9
V	Geometrical Applications	08	03	01	02	31	28.5
VI	a).Physical Applications	05	02	02	01	24	37.5
	b).Maxima and Minima	05	01	01	01	17	
TOTAL		60	10	06	06	110	100
Questions to be Answered			10	04	04	80	

Code: C18Common202F

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA

DIPLOMA EXAMINATIONS, MODEL PAPER, II SEMESTER

ENGINEERING MATHEMATICS

TIME: 3 Hours Max. Marks: 80

PART – A Marks: 10 X 2 = 20

*NOTE: 1) Answer **ALL** questions and each question carries **Two** marks.*
2) Answers should be brief and straight to the point and shall not exceed three simple sentences

1. Find the slope of the curve $y = x^2 + 2x - 1$ at (1, 2)
2. Write the formula to find the equation of Normal to a given curve at a point (x_1, y_1)
3. Write the condition for orthogonality of two intersecting curves?
4. Find the velocity of a particle when $S = t^2 + 3t - 4$ at t = 1sec .
5. Find the acceleration of the particle when $S = t^2 - 6t + 8$ (t is in sec.) at the instant where the velocity is zero.
6. Define increasing and decreasing functions.
7. Find the distance between parallel lines $2x + 3y + 5 = 0$ and $2x + 3y + 9 = 0$
8. Find the centre of the circle $x^2 + y^2 - 6x + 4y - 12 = 0$.
9. Evaluate $\lim_{x \to 0} \frac{2x^3 - 3x^2 + 1}{9x^2 + 8x + 7}$
10. Differentiate $x^3 + \sin x$ w.r.t. x

PART – B

Group -1 Marks: 2 X 5 = 10

*NOTE: 1) Answer any **Two** questions and each question carries **Five** marks*
2)The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. Find the equations of the tangent and normal to the curve $y = x^2 + 2x - 1$ at (1,2)
12. The volume of spherical balloon is increasing at a rate of 40 cu.cm/sec. Find the rate of increase of its surface area and radius at the instant when its radius is 10 cms.
13. Find the Maximum and Minimum values of $4x^3 - 3x^2 - 18x + 12$

Group -2 Marks : 2 X 5 = 10

*NOTE: 1) Answer any **Two** questions and each question carries **Five** marks*

2)The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

14. Find the equation of the Circle passing through the points (0, 0), (a,0) and (0, b).

15. Find $\frac{dy}{dx}$, If $y = \text{Sin}(x^2 + 2x + 1)^3$

16. A Circular metal plate expands by heat so that its radius is increasing at the rate of 0.02 cm per second. At what rate its area is increasing when the radius is 20 cm?

PART – C

Group-1

Marks: 2 X 10 = 20

*NOTE:1) Answer any **Two** questions and each question carries **Ten** marks*
2)The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

17. Show that the curves $y^2 = 4ax \text{ and } xy = c^2 \text{ cut each other orthogonally}$

$$if \quad c^4 = 32a^4$$

18. An inverted cone has a depth of 10 cm., base radius is 4 cm , water is poured in to the cone at the rate of 1 cc/sec . Find the rate at which the level of water is increasing when the height of the water level is 6 cm .

19 A rectangular sheet of metal of dimensions 8cm X 5 cm , equal squares are cut off from the corners and the flaps are then folded up to form an open rectangular box . Find the side of the square cut off so that the box may be of greater capacity. What is the maximum capacity of the box so made.

Group-2

Marks: 2 X 10 = 20

*NOTE:1) Answer any **Two** questions and each question carries **Ten** marks*
2)The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

20. Find the Centre, Vertices, Eccentricity, Foci, Lengths of axes, Length of Latus Rectum, and equations of Directrices of the Hyperbola $\frac{x^2}{25} - \frac{y^2}{16} = 1$

21 a) Find the derivative of logSinx w.r.t Cotx

b) Find $\frac{\partial^2 z}{\partial x^2}$ & $\frac{\partial^2 z}{\partial y^2}$, *if* $z = x^3 + y^3 - 3axy$

22. a) Find the angle between the curves $y = x^2$, $y = 4 – x^2$

b) Find the lengths of the tangent, normal, sub-tangent and sub-normal for the curve

$y = x^3 – 3x^2 – 8x – 2$ at (3, 4)

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Code: C18-Common-202F

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA

BOARD DIPLOMA EXAMINATIONS

MID SEM –I, MODEL PAPER, II SEMESTER

ENGINEERING MATHEMATICS

TIME: 1: 30 Hours Max. Marks: 40

PART – A Marks: 5 X 2 = 10

*NOTE: 1) Answer **ALL** questions and each question carries **Two** marks.*
2) Answers should be brief and straight to the point and shall not exceed three simple sentences

1. Find the distance between parallel lines 2x + 3y + 5 =0 and 2x + 3y + 9 = 0
2. Find the slope of the straight line 3x + 4y + 9 = 0
3. Find the radius of the circle $x^2 + y^2 - 6x + 4y - 12 = 0$.
4. Find the focus and length of latus rectum of the parabola $y^2 = 8x$
5. Find the Length of major and minor axes of the Ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$

PART – B Marks: 2 X 5 = 10

*NOTE: 1) Answer any **Two** questions and each question carries **Five** marks*
2)The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

6. Find the point of intersection of the lines x – 3y + 6 = 0 and 2x + 3y – 10 = 0 .
7. Find the equation of the Circle passing through the points (0, 0), (1,0) and (0,2)
8. Find the equation of the Parabola with focus at (2 , -3) and whose directrix is

   3x – 4y + 16 = 0

PART – C Marks: 2 X 10 = 20

*NOTE: 1) Answer any **Two** questions and each question carries **Ten** marks*
2)The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

9a) Find the angle between the lines 2x – y + 3 = 0 and x +y – 2 = 0

b) Find the equation of the straight line passing through the point (2 , -5) and perpendicular to the line 7x + 2y – 1 = 0 .

10 Find the equations of the Tangent and Normal to the Circle $x^2 + y^2 - 6x - 3y - 2 = 0$ at (2 , -2)

11. Find the Centre, Vertices, Eccentricity, Foci, Lengths of axes, Length of Latus Rectum, and equations of Directrices of the Hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$

Code: C18-Common-202F

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA

BOARD DIPLOMA EXAMINATIONS

MID SEM –II, MODEL PAPER, II SEMESTER

ENGINEERING MATHEMATICS

TIME: 1: 30 Hours Max. Marks: 40

PART – A Marks: 5 X 2 = 10

*NOTE: 1) Answer **ALL** questions and each question carries **Two** marks.*
2) Answers should be brief and straight to the point and shall not exceed three simple sentences

1. Evaluate $\underset{x\to 0}{Lt}\dfrac{2x^3-3x^2+1}{9x^2+8x+7}$
2. Evaluate $\lim\limits_{x\to 2}\dfrac{x^3-8}{x-2}$
3. Differentiate x^3 + Tanx w.r.t. x
4. Find $\dfrac{d^2y}{dx^2}$, $if\ y = x^3 + 4x^2 - 8x + 2$
5. Find $\dfrac{\partial u}{\partial x}$ $if\ U = x^3 + y^3 + 3axy$

PART – B Marks: 2 X 5 = 10

*NOTE: 1) Answer any **Two** questions and each question carries **Five** marks*
2)The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

6. Evaluate ; $\lim\limits_{n\to\infty}\left(\frac{1+2+3+\cdots.+n}{n^2}\right)$

7. If $y = \cos x^{\tan x}$, find $\dfrac{dy}{dx}$

8. Find $\frac{dy}{dx}$ $if\ x = at^2$, $y = 2at$.

PART – C Marks: 2 X 10 = 20

*NOTE: 1) Answer any **Two** questions and each question carries **Ten** marks*
2)The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

9. Find $\dfrac{dy}{dx}$, If $y = log\frac{1+x^2}{1-x^2}$

10. If $y = Sin(logx)$, $prove\ that\ x^2y_2 + xy_1 + y = 0$.

11 If $U = Sin^{-1}\left(\frac{x^2+y^2}{x+y}\right)$ *then prove that* $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = tanu$

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CO / PO - MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	Mapped POs
CO1	3	2	2							3	1,2,3,10
CO2	3	2	2							3	1,2,3,10
CO3	3	2	2							3	1,2,3,10
CO4	3	2	2							3	1,2,3,10
CO5	3	2	2								1,2,3
CO6	3	2	2								1,2,3

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Department of Technical Education

State Board of Technical Education & Training (TS)

Course Title	Applied Physics	**Course Code**	18EE-203F
Semester	II	**Course Group**	Core
Teaching Scheme in Pds/Hrs(L:T:P)	30:15:0 Hrs 40:20:00 Pds	**Credits**	3
Type of course	Lecture+ Assignments	**Total Contact Hrs**	60Pds
CIE	60 Marks	**SEE**	40 Marks

Pre requisites: Basic High school science, basic mathematics

Course Objectives: After studying this course, the student will be able to understand and appreciate the role of Engineering Physics in different areas of engineering and technology.

Course outcomes: On successful completion of the course, the student will have the ability to attain below Course outcomes (CO):

Course Outcomes		Linked POs	Teaching Hours
CO 1	Apply knowledge of waves and sound in engineering problems.	PO1,PO2	10
CO 2	Apply knowledge of Simple Harmonic Motion to solve engineering problems	PO1, PO2	10
CO 3	Use modern instruments in engineering	PO1, PO2,PO3, PO4	10
CO 4	Use various magnetic materials in engineering equipments	PO1, PO2,PO3	10
CO 5	Use various electrical measuring instruments as tools in engineering	PO1, PO2,PO3, PO4	10

CO 6	Apply Electronics principles in engineering problems	PO1, PO2,PO3, PO4	10

APPLIED PHYSICS

Course Contents

1. UNIT – 1 WAVES AND SOUND Duration: 10 periods (L:6.0 – T: 4.0)

Wave motion – definition and characteristics – audible range – infrasonic and ultrasonic – longitudinal and transverse waves – examples – Relation between wavelength, frequency and velocity of a wave – derivation –stationary waves- beats - applications of beats - Doppler effect – list of applications – ultrasound and radar in medicine and engineering as special emphasis - echo –definition - applications - relation between time of echo and distance of obstacle –derivation- Reverberation and time of reverberation - Sabine's formula - Free and forced vibrations - Resonance - Conditions of good auditorium - noise pollution – definition – effects and methods to minimize noise pollution - problems

2. UNIT – 2 SIMPLE HARMONIC MOTION Duration: 10 periods (L:6.0 – T: 4.0)

Periodic motion - Simple Harmonic Motion (SHM)– definition - examples - Conditions for SHM – Projection of circular motion on any diameter of a circle is SHM - Expressions for Displacement, Velocity and Acceleration of a particle executing SHM – derivations - Time period, frequency, amplitude and phase of particle in SHM - Ideal simple pendulum – time period of simple pendulum – derivation - laws of simple pendulum -Seconds pendulum - problems.

3. UNIT – 3 MODERN PHYSICS Duration: 10 periods (L:6.0 – T: 4.0)

Photo electric effect - Einstein's photo electric equation – Work function and threshold frequency - laws of photo electric effect - applications of photo electric effect – photo cell - concept of Refraction of light - critical angle and total internal reflection - principle of Optical fiber - Applications of optical fiber – LASER – definition and characteristics – principle of LASER - spontaneous and stimulated emission-population inversion-examples of LASER – Uses.

4. UNIT-4 MAGNETISM Duration: 10 periods (L:6.0 – T: 4.0)

Magnetic field - magnetic lines of force -properties - Uniform and Non-uniform magnetic field – Magnetic length, pole strength – magnetic induction field strength- definition - Coulomb's inverse square law of magnetism - expression for moment of couple on a bar magnet placed in a uniform magnetic field – derivation - expression for magnetic induction field strength at a point on the axial line of a bar magnet -derivation- Dia, Para and Ferro magnetic materials – examples - related problems.

5. UNIT-5 ELECTRICITY AND MEASURING INSTRUMENTS
Duration: 10 periods (L:6.0 – T: 4.0)

Ohm's law –Ohmic and non ohmic conductors – examples - Temperature dependence of resistance – coefficients of resistance with examples - Specific resistance – units – conductance- moving coil galvanometer - conversion of galvanometer into ammeter and voltmeter with diagram (qualitatively) – Kirchhoff's current and voltage laws in electricity – Expression for balancing condition of Wheatstone's bridge – derivation – Meter bridge – working with neat diagram –Superconductivity-definition-superconductors-definition and examples-applications- related problems.

6. UNIT – 6 ELECTRONICS Duration: 10 periods (L:6.0 – T: 4.0)

Solids – definition – energy bands in solids- valence band, conduction band and forbidden band – Energy band diagram of conductors, insulators and semiconductors – concept of Fermi level - Intrinsic semiconductors - examples - Concept of holes in semiconductors - Doping - Extrinsic semiconductor - P-type and N-type semiconductors - PN Junction diode – Forward Bias and Reverse Bias - Applications of PN diode - Diode as rectifier – principle – principle of Light Emitting Diode and solar cell.

References:

1. **Engineering Physics by R.K. Gaur, S.L. Gupta, Dhanpatrai Publications, New Delhi.**
2. **ISC Physics, Book I&II, P. Vivekanandan, DK Banerjee, S Chand, New Delhi.**
3. **Intermediate Physics, Vol. I&II, Telugu Academy, TS, Hyderabad.**
4. **Fundamentals of Physics by Halliday and Resnick.**

Suggested learning outcomes:

Upon completion of the course the student shall be able to

1. know the concept of Waves and Sound

1.1 Define wave. Explain the characteristics of wave (frequency, wavelength, amplitude)
1.2 Explain audibility range of sound.
1.3 Define infrasonic and ultrasonic sounds.
1.4 Define longitudinal and transverse wave motion. Write examples for each. Distinguish between them.
1.5 Derive the relation between wavelength, frequency and velocity of wave ($v = n\lambda$)
1.6 Define stationary waves.
1.7 Explain the phenomenon of beats. List the applications of beats.
1.8 Explain Doppler Effect. List the applications of Doppler Effect.
1.9 Application of Doppler Effect in medicine and engineering - ultrasound and radar.
1.10 Define echo. List the applications of echo.
1.11 Derive the relation between time of echo and distance of obstacle.
1.12 Explain Reverberation and time of reverberation.

1.13 Write Sabine's formula and explain the terms.
1.14 Define free and forced vibrations.
1.15 Define resonance with examples.
1.16 State the conditions of a good auditorium.
1.17 Define noise pollution.
1.18 List the effects and methods to minimize noise pollution.
1.19 Solve related numerical problems.

2. know the concept of Simple Harmonic Motion

2.1 Define periodic motion
2.2 Define Simple Harmonic Motion (SHM)
2.3 List the examples of SHM.
2.4 State the conditions of simple harmonic motion
2.5 Projection of circular motion on any diameter of a circle is SHM.
2.6 Derive the expressions for Displacement, Velocity and Acceleration of a particle executing SHM.
2.7 Define the terms time period, frequency, amplitude and phase of particle in SHM
2.8 Define Ideal simple pendulum and derive the expression for time period of simple pendulum.
2.9 State the laws of simple pendulum.
2.10 Define seconds pendulum.
2.11 Solve related numerical problems.

3. know the concept of Modern Physics

3.1 Explain Photo electric effect.
3.2 State Einstein's photo electric equation.
3.3 Define terms work function and threshold frequency.
3.4 State laws of photo electric effect.
3.5 List the applications of photo electric effect.
3.6 Define critical angle.
3.7 Define Total internal reflection.
3.8 State conditions for Total internal reflection
3.9 What is Optical fiber? and explain working principle of optical fiber
3.10 List the applications of optical fiber.
3.11 Explain the principle of LASER.
3.12 Define spontaneous and stimulated emission.
3.13 Define population inversion.
3.14 List the examples of LASER.
3.15 List the uses of LASER.

4 know the concept of Magnetism

4.1 Define magnetic field.
4.2 Define magnetic lines of force.
4.3 State the properties of magnetic lines of force.
4.4 Define Uniform and Non-uniform magnetic field.
4.5 Define the terms magnetic length and pole strength of a bar magnet.
4.6 Define magnetic induction field strength.
4.7 State and explain Coulomb's inverse square law of magnetism.
4.8 Derive the expression for moment of couple on a bar magnet placed in a uniform magnetic field.

4.9 Derive the formula for magnetic induction field strength at a point on the axial line of a bar magnet.
4.10 Define Dia, Para and Ferro magnetic materials with examples.
4.11 Solve related numerical problems.

5 know the concept of Electricity and measuring instruments

5.1 State Ohm's law – Define ohmic and non ohmic conductors with examples
5.2 Explain temperature dependence of resistance – types of temperature coefficients with examples
5.3 Define specific resistance. Write its units.
5.4 Define conductance.
5.5 Write the formulae for effective resistance in series and parallel combination of resistors.
5.6 State and explain Kirchhoff's current and voltage laws in electricity.
5.7 Explain moving coil galvanometer.
5.8 How a galvanometer is converted to ammeter and voltmeter?
5.9 Derive an expression for balancing condition of Wheatstone's bridge with legible sketch.
5.10 Explain briefly Meter Bridge with neat diagram.
5.11 Define superconductivity.
5.12 Define superconductor. Give examples.
5.13 List the applications of superconductors.
5.14 Solve related numerical problems.

6 know the concepts of Electronics and applications

6.1 Define solid.
6.2 Define valence band, conduction band and forbidden band.
6.3 Explain conductors, insulators and semiconductors on the basis of energy band diagram.
6.4 Explain the concept of Fermi level.
6.5 Define intrinsic semiconductors.
6.6 List the examples for intrinsic semiconductors.
6.7 Explain the concept of hole in semiconductors.
6.8 Define doping
6.9 Define extrinsic semiconductors.
6.10 Explain P-type and N-type semiconductors.
6.11 Explain PN Junction Diode (formation only).
6.12 Explain forward and reverse bias of PN diode (biasing and flow of majority and minority carriers with diagram only)
6.13 List applications of PN Diode.
6.14 Explain the principle of diode as a rectifier.
6.15 Explain working principle of Light Emitting Diode (LED)
6.16 Explain the working principle of solar cell.

Internal evaluation

Test	Units	Marks	Pattern
Mid Sem 1	1 and 2	20	Part A-5 Short answer questions

			Part B-2 Essay questions out of 3 Questions Part C-2 Essay questions out of 3 Questions
Mid Sem 2	3 and 4	20	Part A-5 Short answer questions Part B-2 Essay questions out of 3 Questions Part C-2 Essay questions out of 3 Questions
Slip Test 1	1 and 2	5	2 Essay Questions out of 3 Questions
Slip Test 2	3 and 4	5	2 Essay Questions out of 3 Questions
Assignment	1	5	Different group assignments of Higher order Questions that develop problem solving skills and critical thinking should be given
Seminars	1	5	
	Total	60	

Suggested Student Activities

1. Student visits Library to refer Text books, reference books and manuals to find their specifications.
2. Student inspects the available equipment in the Physics Lab to familiarize with them.
3. Quiz
4. Seminar
5. Group discussion
6. Surprise test

DISTRIBUTION OF QUESTIONS/MARKS FOR SEMESTER MID/END EXAMINATION

MODULE	UNIT NO	UNIT NAME	Periods	NUMBER OF QUESTIONS TO BE CONSIDERED						MARKS WEIGHTAGE				UNIT WISE WEIGHTAGE	(MS+EE) WEIGHTAGE
				R		U		A							
				MID	END	MID	END	MID	END	MS-I	MS-II	MS-III	END EXAM		
PART-A	1	WAVES AND SOUND	10	3	1	2	1	1	0	26	_	_	7	33	74
	2	SIMPLE HARMONIC MOTION	10	2	1	1	0	2	1	29	_	_	12	41	
PART-B	3	MODERN PHYSICS	10	2	1	1	0	2	1	_	29	_	12	41	74
	4	MAGNETISM	10	3	1	2	1	1	0	_	26	_	7	33	
PART-C	5	ELECTRICITY AND MEASURING INSTRUMENTS	10	3	0	2	0	1	1	_	_	26	10	36	72
	6	ELECTRONICS	10	2	1	1	1	2	0	_	_	29	7	36	
		TOTAL	60	15	5	9	3	9	3	55	55	55	55	220	220
												110			

Cognitive levels: R=Remember, U=Understand, A=Apply

MODEL QUESTION PAPER (MID SEM-I)

BOARD DIPLOMA EXAMINATION, (C-18)

SECOND SEMESTER, 18 COMMON-203F

APPLIED PHYSICS

Time: $1\frac{1}{2}$ Hours] [Max Marks: 40

PART-A

Answer **ALL** questions. Each question carries two marks. 5 x 2 = 10

1. Write Sabine's formula and explain terms in it.
2. An observer listens echo from a distant hill in 10 sec. If velocity of sound in air is 340 m/s find distance between observer and hill.
3. Define transverse and longitudinal wave motion.
4. Define SHM and give examples.
5. Find length of seconds pendulum.

PART-B

Answer any **TWO** questions. Each question carries five marks. 2 x 5 = 10

6. Define noise pollution and write methods to reduce noise pollution.
7. Define Doppler effect and write its application.
8. Write conditions for SHM.

PART-C

Answer any **TWO** questions. Each question carries ten marks. 2 x 10 = 20

9 (a) Define beats and write its applications. (5)

(b) Write conditions for good auditorium. (5)

10 (a) Derive formula for velocity and acceleration in case of SHM. (6)

(b) A body under SHM is represented by y = 10 Sin(6t) in meter. Find its maximum velocity and maximum acceleration. (4)

11 (a) Define ideal simple pendulum. Find expression for time period in case of simple pendulum. (7)

(b) State laws of simple pendulum. (3)

MODEL QUESTION PAPER (MID SEM-II)

BOARD DIPLOMA EXAMINATION, (C-18)

SECOND SEMESTER, 18 COMMON-203F

APPLIED PHYSICS

Time: $1\frac{1}{2}$ Hours] [Max Marks: 40

PART-A

Answer **ALL** questions. Each question carries two marks. 5 x 2 = 10

1. Define photo electric effect.
2. Define threshold frequency.
3. Define magnetic length of a bar magnet.
4. Find the magnetic moment of a bar magnet of length 20 cm and pole strength is 5 A-m.
5. Write any two properties of bar magnet.

PART-B

Answer any **TWO** questions. Each question carries five marks. 2 x 5 = 10

6. Write Einstein's photo electric equation and explain the terms in it.
7. What conditions are required for total internal reflection to take place.
8. State and explain Couloumb's inverse square law.

PART-C

Answer any **TWO** questions. Each question carries ten marks. 2 x 10 = 20

9 (a). State the laws photo electric effect. (6)

(b). Write the applications of photo electric effect. (4)

10(a). Discuss the expression for moment of a couple on a bar magnet placed in a uniform magnetic field. (6)

(b). A bar magnet of length 20 cm and pole strength 5 A-m makes an angle 30^0 with a uniform magnetic field of induction 100 tesla. Find the moment of couple on it. (4)

11(a). Derive the expression for magnetic induction field strength at a point on the axial line. (7)

(b). Calculate the magnetic induction due to a short bar magnet of magnetic moment 0.5 A m^2 at a distance of 20 cm on the axial line from the mid point of magnet. (3)

Semester End Examination marks distribution

	Short Answer	Essay	Marks

Part A	10	0	20
Part B	0	4/6	20
Part C	0	4/6	40
Total	10	8/12	80

BOARD DIPLOMA EXAMINATION, (C-18)

MODEL PAPER

SECOND SEMESTER EXAMINATION

APPLIED PHYSICS

Time: 3 Hours] **[Max Marks: 80**

PART-A **10 x 2 = 20**

Instructions: (1) Answer **ALL** questions.
(2) Each question carries **TWO** marks.

1. Define terms reverberation and reverberation time.
2. Define terms time period and frequency in case of SHM.
3. Write Einstein Photo electric equation. Explain terms involved in it.
4. Define uniform magnetic field and non uniform magnetic field.
5. Define ohmic and non ohmic conductors.
6. Define specific resistivity.
7. Define super conductors and give examples.
8. Define conduction band and valence band.
9. Define intrinsic and extrinsic semi conductors.
10. Write applications of PN Diode.

PART-B

GROUP-1 **Answer any TWO questions** **2 x 5 = 10**

11. Define echo. Derive formula for minimum distance to listen echo. (1+4)
12. Define noise pollution. Write four bad effects of noise pollution. (1+4)
13. Derive expression for couple acting on a bar magnet placed inside a uniform magnetic field. (5)

GROUP-2 **Answer any TWO questions** **2 x 5 = 10**

14. Explain conversion of galvanometer into ammeter and voltmeter with the help of diagrams. (2+3)
15. Draw energy band diagrams for conductors, insulators and semi conductors.
16. Explain the working of solar cell.

PART-C

GROUP-1 **Answer any TWO questions** **2 x 10 = 20**

17 (a) Derive expression for time period in case of simple pendulum. (7)

(b) Find the length of seconds pendulum on the surface of moon (g on the moon = 1/6 th of g on the earth) (3)

18 (a) Define Dia, para and ferro magnetic materials. (3)

(b) Derive formula for magnetic induction field strength at a point on the axial line of bar magnet. (7)

19 (a) State and explain Kirchhoff's law. (6)

(b) Two wires of same material are having lengths in the ratio 2:3 and radii 1:2. Find the ratio of their resistances. (4)

GROUP-2 Answer any TWO questions 2 x 10 = 20

20 (a) Derive an expression for balancing condition of Wheatstone's bridge. (7)

(b) Three currents 1 mA, 3 mA and x mA are flowing towards a junction and two currents 2 mA and 3 mA are flowing away from the junction. Find the value of x. (3)

21 (a) What is doping? Explain formation of P-type and N-type semi conductors. (7)

(b) Explain principle of diode as rectifier. (3)

22 (a) What is PN diode? Draw diagrams for forward and reverse bias. (6)

(b) Explain the working principle of Light Emitting Diode (LED) (4)

Department of Technical Education

State Board of Technical Education & Training (TS)

Prerequisite:

Course Title: **Engineering Chemistry and Environmental Studies**	Course Code : 18-EE-**204F**
Semester : **Semester II**	Course Group :
Teaching Scheme in hours (L:T:P) : 3**0:15:00**	Credits : **3**
Type of course : **Lecture + Assignments**	Total Contact Hours : **60 periods**
CIE : **60 Marks**	SEE : **40 Marks**

Basic knowledge of chemistry in secondary education.

Course Objectives: After studying this course the student will be able to understand and appreciate the role of Chemistry and environmental studies in different spheres of industries.

Course Outcome:

On successful completion of the course, the students will have ability to attain below Course Outcomes (CO):

CO	Course outcome	CL	Linked PO	Teaching periods
CO1	Understand and explain the different metallurgical processes, alloys and applications of alloys	R/U/A	1,2,9,10	**10**
CO2	Understand and explain corrosion and preventive methods of corrosion	R/U/A	1,2,9,10	**10**
CO3	List out the different methods of preparation and industrial uses of plastics, rubber and fibers. vulcanization of rubber and its applications	R/U/A	1,2,5,6,7, 10	**12**
CO4	Classify the fuels and explain basic terms of fuel, outline the composition and industrial use of gaseous fuels	R/U/A	1,2,10	**8**
CO5	Under stand and Explain Galvanic cell, emf of cell - electro chemical series-Applications of Galvanic cells, batteries and cells and distinguish the Galvanic and electrolytic cell	R/U/A	1,2,5	**12**
CO6	Explain the causes, effects and controlling methods of air and water pollutions.	R/U/A	1,2,5,7	**8**
	Total Periods			60

Legends: R = Remember, U= Understand, A = Apply

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

COURSE CONTENTS

UNIT - I: Metallurgy: (10 periods)

Characteristics of Metals - distinguish between Metals and Non Metals- Ore, Gangue, Flux, Slag - Concentration of Ore -Froth floatation - Methods of Extraction of crude Metal - Roasting, Calcination, Smelting – Alloys-purpose of making alloys - Composition of Brass, German silver, Nichrome, Stainless steel and Duralumin

UNIT – II: Corrosion: **(10 periods)**

Introduction - factors influencing the rate of corrosion - electrochemical theory of corrosion - composition, stress and concentration cells- rusting of iron and its mechanism - prevention of corrosion - coating methods, Paints-constituents and characteristics of paints -cathodic protection.

UNIT – III: Polymers: (12 periods)

Introduction - polymerization - types of polymerization - addition, condensation with examples - plastics - types of plastics - advantages of plastics over traditional materials - Disadvantages of using plastics - preparation and uses of the following plastics: 1. Polythene 2. PVC 3. Teflon 4. Polystyrene 5. Urea formaldehyde 6. Bakelite - Rubber - Elastomers –Preparartion of Butyl rubber, Buna-s, Neoprene rubber and their uses-Fibres-Preparation and uses of fibres-Nylon 6,6-Polyester.

UNIT – IV: Fuels: (8 periods)

Definition and classification of fuels- characteristics of good fuel - Calorific value-HCV and LCV-Calculation of oxygen required for combustion of methane and ethane - composition and uses of gaseous fuels- a) water gas b) producer gas, c) natural gas, d) coal gas, e) Bio gas and f) acetylene.

UNIT – V: Electro Motive Force (12 periods)

Galvanic cell – standard electrode potential – electro chemical series -emf of cell- Batteries-Types of batteries-Fuel cells.

UNIT – VI: ENVIRONMENTAL STUDIES-II : (8 periods)

Introduction- classification of air pollutants based on origin and states of matter-Air pollution - causes-Effects - control methods - Water pollution - causes - effects - control measures.

Reference Books :

1. Engineering chemistry – Jain & Jain – Dhanpat Rai Publishing Company.
2. A Text book of Engineering Chemistry – S.S.Dara – S.Chand Publications.
3. Environmental Studies – A.K.De.
4. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press
5. Intermediate Chemistry I and II – Telugu Academy TS

Specific Learning Outcomes:

Upon completion of the course, the student will have ability to

UNIT – I: METALLURGY

1.1. List the Characteristics of Metals.
1.2. Distinguish between Metals and Non Metals
1.3. Define the terms 1.Mineral, 2.Ore, 3. Gangue, 4. Flux and 5.Slag
1.4. Describe Froth Floatation method of concentration of ore.
1.5. Describe the methods involved in extraction of crude metal- Roasting, Calcination and Smelting.
1.6. Define an Alloy
1.7. Explain the purpose of making of alloys
1.8. Write the Composition of the following alloys:1.Brass, 2.German silver, 3.Nichrome 4. Stainless steel, 5. Duralumin
1.9. List the uses of following Alloys: Brass, German silver, Nichrome, Stainless steel, Duralumin

UNIT – II: CORROSION

2.1. Define the term corrosion
2.2. Explain the Factors influencing the rate of corrosion
2.3. Explain the concept of electrochemical theory of corrosion
2.4. Describe the formation of a) composition cell, b) stress cell c) concentration cell
2.5. Define rust and explain the mechanism of rusting of iron with chemical reactions.
2.6. Explain the methods of prevention of corrosion:
a) Protective Coatings i) Metallic coatings (Anodic and cathodic coatings) ii) Inorganic coatings iii) Organic coatings, paint, constituent of paint and characteristics of good paint.
b) Cathodic protection (Sacrificial anode process and Impressed - voltage process).

UNIT – III: POLYMERS

3.1. Explain the concept of polymerization
3.2. Describe the methods of polymerization a) addition polymerization b) condensation polymerization with examples.
3.3. Define the term plastic
3.4. List the Characteristics of plastics.
3.5. State the advantages of plastics over traditional materials
3.6. State the disadvantages of using plastics.
3.7. Types of plastics with examples.
3.8. Distinguish between thermoplastics and thermosetting plastics
3.9. Explain the methods of preparation and uses of the following plastics:
1. Polythene, 2. PVC, 3.Teflon, 4. Polystyrene 5. Urea formaldehyde 6. Bakelite (only flow chart for Bakelite i.e. without chemical equations).
3.10. Define the term natural rubber
3.11. Explain preparation of natural rubber
3.12. State the structural formula of Natural rubber
3.13. List the Characteristics of natural rubber
3.14. Explain the process of Vulcanization
3.15. List the Characteristics of Vulcanized rubber
3.16. Define the term Elastomer
3.17. Describe the preparation and uses of the following synthetic rubbers a) Butyl rubber, b) Buna-s and c) Neoprene rubber.
3.18. Define fibre.
3.19. Explain the preparation and uses of fibres –Nylon 6,6 and Polyester

UNIT – IV: FUELS

4.1. Define the term fuel
4.2. Classify the fuels based on physical state - solid, liquid and gaseous fuels with examples.
4.3. Classify the fuels based on occurrence- primary and secondary fuels with examples.
4.4. List the characteristics of a good fuel
4.5. Advantages of gaseous fuels

4.6. Define Calorific value- HCV and LCV.
4.7. Calculate the oxygen required for the combustion of Methane and Ethane fuel gases.
4.8. State the composition and uses of the following gaseous fuels:
a) water gas, b) producer gas, c) natural gas, d) coal gas, e) Bio gas and f) acetylene

UNIT – V: Electro Motive Force

5.1. Define Galvanic cell
5.2. Explain the construction and working of Galvanic cell
5.3. Distinguish between electrolytic cell and galvanic cell
5.4. Explain standard electrode potential
5.5. Explain standard hydrogen electrode
5.6. Define electrochemical series and explain its significance.
5.7. Define and explain emf of a cell.
5.8. Solve the numerical problems on emf of cell
5.9. Explain Batteries (Cells) and types of batteries with examples –working and applications of Dry cell (Leclanche cell), Lead storage battery, Ni-Cd cell
5.10. Explain working and advantages of Fuel cell (Hydrogen - Oxygen Fuel Cell)

UNIT – VI: ENVIRONMENTAL STUDIES-II

6.1. Define air pollution
6.2. Classify the air pollutants- based on origin and states of matter
6.3. Explain the causes of air pollution
6.4. Explain the effects of air pollution on human beings, plants and animals
6.5. Explain the green house effect - ozone layer depletion and acid rain
6.6. Explain the methods of control of air pollution
6.7. Define water pollution
6.8. Explain the causes of water pollution
6.9. Explain the effects of water pollution on living and non living things
6.10. Explain the methods of control of water pollution.

Internal evaluation:

Test	Units	Marks	Pattern
Mid Sem 1	1 and 2	20	Part A- 5 Short answer questions Part B- 2 Essay questions out of 3 Questions Part C- 2 Essay questions out of 3 Questions
Mid Sem 2	3 and 4	20	Part A 5 Short answer questions Part B 2 Essay questions out of 3 Questions Part C- 2 Essay questions out of 3 Questions
Slip Test 1	1 and 2	5	2 Essay Questions out of 3 Questions
Slip Test 2	3 and 4	5	2 Essay Questions out of 3 Questions
Assignment	1	5	Different group assignments of Higher order Questions that develop problem solving skills and critical thinking should be given , Group discussion
Seminars	1	5	
	Total	60	

Suggested Student Activities for Induction Program:

	Forenoon	Afternoon
Day1	Registration	Class work as per Time table Chemistry Lab practice classes may be conducted
Day2	Rules and Regulations	
Day3	Getting acquainted with Head and faculty	
Day4	Familiarization with Institutional facilities	
Day5	Interaction with Class teacher and Seniors	
Day6	Introducing the mentor	
Day7	Parent –Teacher meeting	

Suggested Student Activities

1.Student visits Library to refer to Text books, reference books and manuals to find their specifications

2.Student inspects the available equipment in the Chemistry Lab to familiarize with them.

3..Quiz

4.Group discussion

5. Seminar

6.Surprise test

E learning links:

https://iupac.org/
https://www.youtube.com
https://www.khanacademy.org/
www.nptel.ac.in

DISTRIBUTION OF QUESTIONS/MARKS FOR SEMESTER-MID/END EXAMINATION OF SEMESTER - II

MODULE	UNIT NUMBER	NAME OF THE UNIT	No. OF PERIODS	NUMBER OF QUESTIONS TO BE CONSIDERED										UNIT WISE WEIGHTAGE	MID+END EXAM WEIGHTAGE
				R		U		A		MARKS WEIGHTAGE					
				MID	END	MID	END	MID	END	MS-I	MS-II	MS-III	END EXAM		
PART-A	I	Metallurgy	10	3	1	1	1	1.5	0.5	26			12	38	74
	II	Corrosion	10	2	1	2	0	1.5	0.5	29			7	36	
PART-B	III	Polymers	12	3	1	2	1	1.5	0.5		29		12	43	74
	IV	Fuels	8	2	1	1	0	1.5	0.5		26		7	31	
PART-C	V	Electro Motive Force	12	2	1	1	1	2	0			29	7	36	72
	VI	Environmental Studies-II	8	3	0	2	0	1	1			26	10	36	
TOTAL			60	15	5	9	3	9	3	55	55	55	55	220	220
												110			

LEGEND	
	R: Remembering
	U: understanding
	A: Applying

Mid term Examination marks distribution

	Short answer	Essay	Marks
Part A	5	0	10
Part B	0	2/3	10
Part C	0	2/3	20
Total	5	4/6	40

Model Question paper:

Model Paper for Mid-I
BOARD DIPLOMA EXAMINATION, (C-18)
SECOND SEMESTER, 18 COMMON-204F
CHEMISTRY AND ENVIRONMENTAL STUDIES-I

Time : **1** ½ Hrs Total Marks :40Marks

PART-A

Answer **all** questions, each carries **two** marks 5 X 2 = 10

1. Define the terms Mineral and Ore.
2. What is Roasting of Ore? Give example.
3. Define Corrosion.
4. Define alloy.
5. What is paint.

PART-B

Answer any **two** questions, each carries **five** marks 2 X 5 = 10

6. Explain the purpose of making alloys.
7. Mention any five factors influencing the rate of corrosion.
8. Explain the mechanism of rusting.

PART-C

Answer any **two** questions, each carries **ten** marks 2 X 10 = 20

9. (a) Explain froth-floatation process of concentration of ore.
   (b) Write any five differences between metals and non-metals.
10. (a) Explain the process of calcination and smelting.
    (b) Explain the composition and concentration cells formed during corrosion.
11. (a) Differentiate anodic and cathodic coatings.
    (b) Explain the sacrificial anode method of protecting metal from corrosion.

Model Paper for Mid-II
BOARD DIPLOMA EXAMINATION, (C-18)
SECOND SEMESTER, 18 COMMON-204F
CHEMISTRY AND ENVIRONMENTAL STUDIES-I

Time : **1** ½ Hrs Total Marks :40Marks

PART-A

Answer **all** questions, each carries **two** marks 5 X 2 = 10

1. Define polymerization.
2. Write any two characteristics of plastic.
3. What are fibres.
4. Define fuel. Give two examples.
5. What is the calorific value of a fuel?

PART-B

Answer any **two** questions, each carries **five** marks 2 X 5 = 10

6. What any five differences between thermoplastics and thermosetting plastics.
7. Write any five characteristics of natural rubber.
8. What are primary and secondary fuels? Give examples.

PART-C

Answer any **two** questions, each carries **ten** marks 2 X 10 = 20

9. (a) Write the preparation method and uses of PVC and Tefflon.
   (b) Write about vulcanization of natural rubber.
10. (a) Write the preparation methods and uses of buna-s and neoprene.
    (b) Write any five advantages of gaseous fuel.
11. (a) Write the composition and uses of water gas and producer gas.
    (b) Calculate the volume of oxygen required at STP for complete combustion of one mole of ethane.

Semester End Examination marks distribution

	Short answer	Essay	Marks
Part A	10	0	20
Part B	0		
GROUP – I		2/3	10
GROUP - II		2/3	10
Part C	0		
GROUP – I		2/3	20
GROUP - II		2/3	20
Total	10	8/12	80

Model Paper for SEE

BOARD DIPLOMA EXAMINATION, (C-18)

SECOND SEMESTER, 18 COMMON -204F

(SEMESTER END EXAM)

CHEMISTRY AND ENVIRONMENTAL STUDIES-II

Time : **3** Hrs Total Marks : 80Marks

PART-A

Answer **all** questions, each carries **two** marks 10 X 2 =20

1. Write any four characteristics of metals.
2. Define corrosion..
3. Define addition polymerization.
4. Define calorific value.
5. Define galvanic cell.
6. Define emf.
7. Define standard electrode potential.
8. Define global warming.
9. Define primary pollutant. Give example.
10. Define water pollution.

PART-B

Group - I

Answer any **two** questions, each carries **five** marks 2 X 5 = 10

11. Distinguish electrolytic cells from galvanic cells.
12. Write any five effects of air pollution on human beings.
13. Write a brief note on depletion of ozone layer.

Group - II

Answer any **two** questions, each carries **five** marks 2 X 5 = 10

14. Write about roasting and calcination.
15. Write any five advantages of plastics.
16. Explain the construction of standard hydrogen electrode.

PART-C

GROUP - I

Answer any **two** questions, each carries **ten** marks 2 X 10 = 20

17. (a) Explain the significance of electro chemical series .
    (b) Calculate the emf of the following cell if the standard reduction potentials of Zn and Cu are -0.76 V and +0.34 V respectively.
    $Zn \mid Zn^{2+} \parallel Cu^{2+} \mid Cu$
18. (a) Explain about the working and applications of Ni-Cd cell.
    (b) Explain about the working of Hydrogen- Oxygen fuel cell and its advantages.
19. (a) Write a brief note on acid rain.
    (b). Write about the role of Cottrell electrostatic precipitator and Zoning of industries in controlling air pollution.

GROUP - I

Answer any **two** questions, each carries **ten** marks 2 X 10 = 20

20. (a) Explain the process of concentration of sulphide ore by froth flotation process.

(b) Explain the impressed voltage method of protecting metal from corrosion.

21. (a) Write the preparation method and uses of nylon 6,6 and polyester.

(b) Calculate the volume of oxygen required at STP for complete combustion of one mole of methane.

22. (a) Write any four effects of water pollution.

. (b) Explain any three methods of controlling water pollution.

Department of Technical Education

State Board of Technical Education &Training (TS)

Course Title	: **Electrical Engineering and Electronic Devices**	Course Code	: **18EE-205C**
Semester	: **II**	Course Group	: **Core**
Teaching Scheme in Hrs (L:T:P)	: **3:1:0**	Credits	: **3**
Type of course	**: Lecture + Tutorial**	Total Contact Hours	:**45 Hrs/60 Pds**
CIE	: **60 Marks**	SEE	: **40 Marks**

Course Content and Blue Print of Marks for SEE

Module	Unit No.	Unit Name	No. of Periods	NUMBER OF QUESTIONS TO BE CONSIDERED						MARKS WEIGHTAGE				UNIT WISE WEIGHTAGE	(MS+EE) WEIGHTAGE
				R		U		A							
				MID	END	MID	END	MID	END	MS-I	MS-II	MS-III	END EXAM		
PART-A	I	Magnetic effects of electric current	8	2	1	1	1	1	0	19	-	-	7	26	74
	II	Magnetic circuits	12	3	1	2	0	2	1	36	-	-	12	48	
PART-B	III	Electromagnetic induction	10	3	1	1	1	2	0	-	31	-	7	38	74
	IV	Electrostatics and capacitance	10	2	1	2	0	1	1	-	24	-	12	36	
PART-C	V	Inductors	6	2	0	1	0	1	0	-	-	19	0	19	72
	VI	Semi conductor devices	14	3	1	2	1	2	1	-	-	36	17	53	
TOTAL			**60**	**15**	**5**	**9**	**3**	**9**	**3**	**55**	**55**	**55** / **110**	**55**	**220**	**220**

Pre requisites

This course requires the knowledge of basic principles of electricity.

Course Outcomes

CO1 : Describe the effects of magnetic fields due to electric currents in current carrying conductors.

CO2 : State the significance of force acting on a current carrying conductor placed in a magnetic field and relate the similarities of magnetic circuits to electric circuits.

CO3 : Apply the principles of electromagnetic induction to electrical engineering and solve the problems on energy stored in an inductor.

CO4 : Apply the concept of electrostatic field due to static charges and solve the problems on capacitance.

CO5 : Classify different types of inductors used in electronic circuits and state their applications

CO6 : Describe the basic principles, characteristics of semi conductor devices and their applications.

Course Content

UNIT 1 - Magnetic effects of electric current **Duration: 10 Periods (L:6 - T: 4)**

Magnetic lines of force - Field pattern due to long straight current carrying conductor - Right hand thumb rule - Field pattern of solenoid and toroid - Work law and its applications -Biot Savart's Law (Laplace's Law) - Field strength at centre and any point on the axis of a circular current carrying conductor- Field Strength around a straight current carrying conductor- Field strength on the axis of a solenoid – Simple problems on Work law and field strength.

UNIT 2 - Magnetic circuits **Duration: 12 Periods (L:7.2 - T: 4.8)**

Mechanical force on a current carrying conductor in magnetic field - Direction of force - Fleming's left hand rule - Force between two parallel current carrying conductors – Ampere - Simple problems on force - Magnetic circuit Comparison of magnetic circuit with electric circuit - simple problems on magnetic circuit-Magnetic leakage coefficient.

UNIT 3– Electromagnetic induction **Duration: 10 Periods (L:6 - T: 4)**

Faraday's laws of electromagnetic induction- dynamically and statically induced E.M.F - Lenz's law & Fleming's right hand rule -self and mutual inductance - co-efficient of coupling - inductance in series - Energy stored in a magnetic field - energy stored per unit volume - simple problems

UNIT 4 : Electrostatics and capacitance **Duration: 10 Periods (L:6 – T:4)**

Coulomb's law - permittivity - electrostatic field - comparison of electrostatic and magnetic lines of force - electric potential - potential difference – dielectric strength - dielectric constant - capacitance -types of capacitors - uses - capacitors in series and parallel – energy stored in capacitor - simple problems.

UNIT 5– Inductors **Duration: 06 (L:4.5 - T:1.5)**

Inductors: Classify inductors- symbols - Specifications - Important parameters of Air cored inductors- -List various core materials used constructional features - Applications of A.F. and R.F chokes

UNIT 6 : Semiconducter devices **Duration: 14 Periods (L:10.5– T:3.5)**

Electrons & Holes in PN Junction, forward and reverse bias- Zener diode, Zener diode characteristics – formation and working of PNP and NPN transistors -Transistor as a switch and amplifier- Transistor configurations- CB, CE and CC - input and output characteristics of CB,CE and CC - comparison of CB,CE and CC configurations.

Recommended Books

1. Introduction to Engineering materials – B.K.Agarwal.
2. Materials science for Electrical and Electronic Engineers – Ian P.Jones (Oxford Publications)
3. Electrical Engineering Materials and Semiconductors- J.B.Guptha and Rena Guptha,SK Kotaria &Sons Publishers
4. B.L.Theraja -Electrical Technology Vol.I- S.Chand &co
5. T.K.Nagsarkar & M.S.Sukhija -Basic Electrical Engineering– Oxford
6. Principles of Electrical Engg.& Electronics- V.K.Mehtha, Rohith Mehtha-S.Chand Publishers
7. Theory and Problems of Basic Electrical Engineering D.P.Kothari & I.J.Nagarath – PHI

Specific Learning Outcomes

1.0: Describe the effects of magnetic fields due to electric currents in current carrying conductors.

1.1 Draw the lines of force around a magnet.

1.2 Explain the concept of field lines around current carrying conductors.

1.3 State Right hand thumb rule.

1.4 Plot the field pattern due to i) Straight current carrying conductor ii) Solenoid iii) Toroid.

1.5 Explain Work law and its applications.

1.6 State Laplace law (Biot-Savart's Law)

1.7 Give expressions for field strength (No derivation)

i) At centre of a circular conductor

ii) At any point on the axis of a circular conductor

iii) Around a straight conductor

iv) On the axis of a solenoid

1.8 Simple problems on Work law and field strength

2.0 State the significance of force acting on a current carrying conductor placed in a magnetic field and relate the similarities of magnetic circuits to electric circuits.

2.1 Explain the mechanical force on a current carrying conductor in a magnetic field.

2.2 Derive an expression for magnitude of the force on a conductor in a magnetic field.

2.3 State the Fleming's left hand rule.

2.4 Derive an expression for the force between two parallel current carrying conductors.

2.5 State the nature of the force with different directions of the currents.

2.6 Define ampere

2.7 Solve problems on the above.

2.8 Explain the concept of the magnetic circuits

2.9 Compare magnetic circuit with electric circuit

2.10. Solve simple problems on magnetic circuits

2.11 State magnetic leakage coefficient.

3.0 Apply the principles of electromagnetic induction to electrical engineering and solve the problems on energy stored in an inductor.

3.1 State Faraday's laws of electromagnetic induction.

3.2 Explain dynamically and statically induced E.M.F.

3.3 State Lenz's law

3.4 Explain Fleming's right hand rule.

3.5 Explain the concept of self and mutual inductance.

3.6 Derive expressions for self and mutual inductance.

3.7 State coefficient of coupling.

3.8 Explain the total inductance with series connections with reference to direction of flux.

3.9 Develop an expression for energy stored in a magnetic field.

3.10 Develop an expression for energy stored per unit volume.

3.11 Solve problems on the above.

4.0 Apply the concept of electrostatic field due to static charges and solve the problems on capacitance.

4.1 State Coulomb's law of electrostatics and define unit charge

4.2 Define absolute and relative permittivity.

4.3 Solve problems on Coulomb’s law.

4.4 Define electrostatic field.

4.5 Plot electrostatic field due to

i) Isolated positive charges

ii) Isolated negative charge

iii) Unlike charges side by side

iv) Like charges side by side

4.6 State electric flux, electric flux density and field intensity

4.7 Compare electrostatic and magnetic circuits.

4.8 State Gauss theorem

4.9 Explain electric potential and potential difference.

4.10 Explain dielectric strength and dielectric constant

4.11 Define capacitance and state its unit.

4.12 Derive the formula for capacitance of a capacitor.

4.13 State different types of capacitors

4.14 Give uses of different capacitors

4.15 Derive the expression for equivalent capacitance of

i) Capacitors connected in series

ii) Capacitors connected in parallel

4.16 Derive the expression for energy stored in a capacitor

4.17 Solve problems on the above.

5.0 Classify the inductors used in electronic circuits and state their applications

5.1 Classify inductors

5.2 Draw the symbols of different types of inductors

5.3 List the specifications of inductors

5.4 List and explain the important parameters of air cored inductors

5.5 Explain the various terms stray inductance and stray capacitance

5.6 List various core materials used in the construction of inductors

5.7 List the applications of A.F and R.F chokes

5.8 List the common faults in inductors

6.0 Describe the basic principles, characteristics of semi conductor devices and their applications.

6.1 Explain the working of PN junction diode with no bias, forward bias and reverse bias

6.2 Draw the static VI characteristics of PN junction diode.

6.3 Mention the applications of diode

6.4 Explain the operation of zener diode.

6.5 Draw the characteristics of zener diode.

6.6 Define Voltage regulation

6.7 Mention the applications of Zener diode

6.8 Explain formation and working of PNP transistors.

6.9 Explain formation and working of NPN transistors.

6.10 Define α and β and its relation

6.11 Describe operation of transistor as a switch.

6.12 Describe operation of transistor as an amplifier.

6.13 Mention the applications of a transistor

6.14 State the different transistor configurations.

6.15 Plot the performance characteristics of a transistor in CB, CE and CC configurations.

6.16 Compare the performance characteristics of transistor in CB, CE and CC Configurations.

Internal evaluation

Test	Units	Marks	Pattern
Mid Sem 1	1 and 2	20	Part A 5 Short answer questions Part B 2 Essay questions out of 3 Questions Part C 2 Essay questions out of 3 Questions
Mid Sem 2	3 and 4	20	Part A 5 Short answer questions Part B 2 Essay questions out of 3 Questions Part C 2 Essay questions out of 3 Questions
Slip Test 1	1 and 2	5	2 Essay Questions out of 3 Questions
Slip Test 2	3 and 4	5	2 Essay Questions out of 3 Questions
Assignment	-	5	Different group assignments of Higher order Questions that develop problem solving skills and critical thinking should be given
Seminars	-	5	
	Total	60	

Suggested Student Activities

1.Student visits Library to refer to Electrical Manuals

2.Student visits the Lab to identify the available electrical equipment

3.Visit nearby Industry to familiarize with electrical and electronics devices and components

4.Quiz

5.Group discussion

6.Surprise test

Suggested E-Learning references

1.http://electrical4u.com/

2. www.nptel.ac.in

3. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/

Semester End Examination marks distribution

	Short answer	Essay	Marks
Part A	10	0	20
Part B	0	4/6	20
Part C	0	4/6	40
Total	10	8/12	80

Mid Sem Examination marks distribution

	Short answer	Essay	Marks
Part A	5	0	10
Part B	0	2/3	10
Part C	0	2/3	20
Total	5	4/6	40

CO-PO Mapping Matrix

Course Outcome		**CL**	**Linked PO**	**Teaching Hours**
CO1	Describe the effects of magnetic fields due to electric currents in current carrying conductors.	R/U	1,2,10	**8**
CO2	State the significance of force acting on a current carrying conductor placed in a magnetic field and relate the similarities of magnetic circuits to electric circuits.	R/U/A	1,2,3,10	**12**
CO3	Apply the principles of electromagnetic induction to electrical engineering and solve the problems on energy stored in an inductor.	R/U/A	1,2,6,10	**10**
CO4	Apply the concept of electrostatic field due to static charges and solve the problems on capacitance.	R/U/A	2,10	**10**
CO5	Classify different types of inductors used in electronic circuits and state their applications	R/U/A	2,10	**06**
CO6	Describe the basic principles, characteristics of semi conductor devices and their applications.	R/U/A	2,10	**14**
				60

STATE BOARD OF TECHNICAL EDUCATION & TRAINING ,TELANGANA
DIPLOMA IN ELECTRICAL & ELECTRONICS ENGG.
SUB CODE: 18EE-205C
ELECTRICAL ENGG.& ELECTRONIC DEVICES
MID SEM -I EXAM MODEL PAPER

TIME: 90 MIN **TOTAL MARKS: 40**

PART – A **Marks: 5 X 2= 10**

Instructions: (1) Answer all questions
(2) Each question carries **two** marks.

1. State Right hand thumb rule
2. Give the expression for field strength at the centre of a circular conductor
3. State Flemings left hand rule
4. Define ampere
5. State magnetic leakage coefficient

PART - B **Marks: 2 x 5 = 10**

Instructions: (1) Answer any **two** questions.
(2) Each question carries **five** marks.

6. Plot the field pattern due to i) Straight current carrying conductor ii) Solenoid.
7. Explain biot -savart law
8. Derive an expression for force between two parallel current carrying conductors

PART - C **Marks: 2 x 10= 20**

Instructions: (1) Answer any **two** questions choosing at least one from each section.
(2) Each question carries **ten** marks.

9. Explain work law and its applications
10. Two long straight parallel conductors carry the same current I in the same direction. The conductors are placed 20 cm apart in air. The magnetic flux density between the conductors 5 cm from one of them is $1{\cdot}33 \times 10{-}5 Wb/m^2$. If the force on each conductor per metre length is $25 \times 10^{-6} N$, find the current in each conductor.
11. a) Compare magnetic and electric circuit in five aspects

    b) A cast steel electromagnet has an air gap length of 3 mm and an iron path of length 40 cm. Find the number of ampere-turns necessary to produce a flux density of 0.7 Wb/m2 in the gap. Neglect leakage and fringing. Assume ampere-turns required for air gap to be 70% of the total ampere turns

18EE-205C

STATE BOARD OF TECHNICAL EDUCATION & TRAINING ,TELANGANA
DIPLOMA IN ELECTRICAL & ELECTRONICS ENGG.
SUB CODE: 18EE-205C
ELECTRICAL ENGG.& ELECTRONIC DEVICES
SEMESTER END EXAM MODEL PAPER

TIME: 3 HOURS **TOTAL MARKS: 80**

PART – A **Marks: 10 X 2= 20**

Instructions: (1) Answer all questions
(2) Each question carries **two** marks.

1. Plot the field pattern due to a toroid
2. State Flemings left hand rule
3. State Lenz's law
4. Define self inductance
5. Define i) Absolute permittivity ii) Relative permittivity
6. Name the different types of inductors used in electronic circuits
7. Draw the static VI characteristics of PN junction diode
8. Draw the symbols for PNP and NPN transistors
9. List any four applications of semiconducting devices
10. State the different transistor configurations

PART - B **Marks: 4 x 5 = 20**

Instructions: (1) Answer any **four** questions choosing at least one from each section.
(2) Each Question carries **five** Marks.

11. State and explain biot-savart law
12. Compare magnetic and electric circuit in five aspects
13. Derive an expression for equivalent capacitance when two capacitors are connected in series
14. Distinguish between A.F & R.F chokes
15. Explain the operation of a zener diode
16. Describe the operation of a transistor as a switch

PART - C **Marks: 4 x 10= 40**

Instructions: (1) Answer any **four** questions choosing at least one from each section.
(2) Each Question carries **ten** Marks.

17. An iron ring of cross sectional area 6 cm^2 is wound with a wire of 100 turns and has a saw cut of 2 mm.Calculate the magnetising current required to produce a flux of 0·1 mWb if mean length of magnetic path is 30 cm and relative permeability of iron is 470.
18. The self-inductances of two coils are L_1 = 150 mH, L_2 = 250 mH. When they are connected in series with their fluxes aiding, their total inductance is 620 mH. When the connection to one of the coils is reversed (they are still in series), their total inductance is 180 mH. How much mutual inductance exists between them
19. Explain the construction of Air cored Inductor
20. Explain the working of PN junction diode with no bias, forward bias and reverse bias
21. Explain with a neat sketch the working of PNP transistor
22. Draw and explain the input and output characteristics of a transistor in CB configuration

Department of Technical Education
State Board of Technical Education &Training (TS)

Course Title :	**Advanced Engineering Drawing**	**Course Code**	**18EE-206P**
Semester	**II**	**Course Group**	**Core**
Teaching Scheme in Hrs (L :P)	**18.5 : 19.0**	**Credits**	**1.5**
Methodology	**Lecture + practice**	**Total Contact Hours :**	**37.5Hrs /45Pds**
CIE	**60 Marks**	**SEE**	**40 Marks**

*****This Course is Common to all Programs of Diploma in Level Offered by State Board of Technical Education – Telangana State**

Prerequisites: Knowledge of Basic Engineering Drawing and Clear visualization and sound pictorial intelligence to learn this course.

This Course is aimed at developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation.

Course Content and Blue Print of Marks for SEE

Unit No	**Unit Name**	**Hours**	**Questions to be set for SEE**					**Marks Weightage**	**Weightage (%)**
			R	**U**		**A**			
				SQ	**EQ**	**SQ**	**EQ**		
1	**Projection Solids**	**09**	**--**	**2**	**--**	**--**	**1**	**20**	**18**
2	**Sectional Views**	**06**		**1**	**--**		**1**	**15**	**14**
3	**Auxiliary views**	**06**	**--**	**1**	**--**	**--**	**1**	**15**	**14**
4	**Pictorial drawing**	**15**	**--**	**2**	**--**	**--**	**2**	**30**	**27**
5	**Development of surfaces**	**09**	**--**	**2**	**--**	**--**	**2**	**30**	**27**
	Total	**45**		**40**	**--**	**--**	**70**	**110**	**100**

R: Remembering, U: Understanding, A: Applying, SQ: Short Questions, EQ: Essay Questions

SEE Question Paper Pattern:

Maximum Marks: 80, Time: 3 Hours

Part A (Short answer questions):

Consists**8** Short Questions, students have to attempt **6** Questions and Each Question Carries **5** Marks.**(6 X 5 = 30 M)**

Part B (Essay type answer questions):

Consists **7**Essay type Questions, students have to attempt **5** Questions and Each Question Carries **10** Marks.**(5 X 10 = 50 M)**

Note:

1. **To pass in practical Exam student should acquire 50% marks in both CIE and SEE separately and CIE & SEE put together**
2. **If the students acquire less than 50% in CIE, accordingly the students have to acquire more than 50% in SEE to get overall 50 % to pass.**

Course Outcomes (CO)

Upon successful completion of the course, the students will be able to attain the following Course Outcomes (CO):

Course Outcome	
CO1	Apply the principles of Projection of solids also draw the projections of solids.
CO2	Appreciate the need of Sectional views also draw the sectional views and true sections of the engineering components.
CO3	Escalate the need of auxiliary views and draw the auxiliary views of the given engineering components.
CO4	Gainthe knowledge of Isometric views of engineering components also draw the isometric views of given components.
CO5	Grasp the knowledge and draw the development of surfaces of different engineering components

Course Contents

1.0 Projection of solids (09 Hours)

Projection of regular solids
(a) Axis perpendicular to one of the planes
(b) Axis parallel to VP and inclined to HP and vice versa.

2.0 Sectional views (06 Hours)

Need for drawing sectional views – what is a sectional view - Location of cutting plane – Purpose of cutting plane line – Selection of cutting plane to give maximum information (vertical and offset planes) - Hatching – Section of regular solids inclined to one plane and parallel to other plane

3.0 Auxiliary views (06 Hours)

Need for drawing auxiliary views -Explanation of the basic principles of drawing an auxiliary views - explanation of reference plane and auxiliary plane -Partial auxiliary view.

4.0 Pictorial Drawings (15 Hours)

Brief description of different types of pictorial drawing viz., Isometric, oblique, and perspective and their use - Isometric drawings: Iso axis, angle between them, meaning of visual distortion in dimensions - Need for an isometric scale, difference between Isometric scale and ordinary scale difference between Isometric view and Isometric projection - Isometric and non-Isometric lines -Isometric drawing of common features like rectangles, circular shapes, non-isometric lines - Use of box and offset methods.

5.0 Development of Surfaces (09 Hours)

Need for preparing development of surface with reference to sheet metal work -Concept of true length of a line with reference to its orthographic projection when the line is (i) parallel to the plane of projection (ii) inclined to one principal and parallel to the other -Development of simple solids like cubes, prisms, cylinders, cones, pyramid (sketches only) -Types of development: Parallel line and radial line development -Procedure of drawing development, drawings of trays, funnels, elbow pipes and rectangular ducts.

Reference Books

Engineering Drawing by Kapil dev – (Asian Publisher)
Engineering Drawing by Basant Agarwal & C.M Agarwal - (McGraw-hill)
Engineering Drawing by N.D.Bhatt. (Charotar Publishing House Pvt. Ltd.)
A Textbook on Engineering Drawing by P. Kannaiah, K. L. Narayana, K. Venkata Reddy

Suggested Specific Learning Outcomes

1.0 Apply Principles of Projection of solids

1.1. Draw the projections of solids to axis of solids parallel to one plane.
1.2. Draw the projections of solids to axis of solid inclined to other plane.

2.0 Appreciate the need of Sectional Views

2.1 Explain the need to draw sectional views.

2.2 Select the section plane for a given component to reveal maximum information.
2.3 Explain the positions of section plane with reference planes
2.4 Differentiate between true shape and apparent shape of section
2.5 Draw sectional views and true sections of regular solids discussed in 6.0
2.6 Apply principles of hatching.

3.0 Understand the need of auxiliary views

3.1 State the need of Auxiliary views for a given engineering drawing.
3.2 Draw the auxiliary views of a given engineering component
3.3 Differentiate between auxiliary view and apparent view

4.0 Prepare pictorial drawings

4.1 State the need of pictorial drawings.
4.2 Differentiate between isometric scale and true scale.
4.3 Prepare Isometric views for the given orthographic drawings.

5.0 Interpret Development of surfaces of different solids

5.1 State the need for preparing development drawing.
5.2 Prepare development of simple engineering objects (cubes, prisms, cylinders, cones, pyramid) using parallel line and radial line method.
5.3 Prepare development of surface of engineering components like trays,funnel, 90^0 elbow & rectangular duct.

CIE Question Paper Pattern and Syllabus

Unit No	Unit Name Hours	Questions to be set for SEE					Marks Weightage	Weightage (%)
		R	U		A			
			SQ	EQ	SQ	EQ		
First Mid Examination								
1	Projection Solids	--	3	--	--	2	35	64
2	Sectional Views	--	2	--		1	20	36
	Total		5			3	55	100
Second Mid Examination								
3	Auxiliary views	--	2	--	--	1	20	36
4	Pictorial drawing	--	3	--	--	2	35	64
	Total		5	--	--	3	55	100
R: Remembering, U: Understanding, A: Applying, SQ: Short Questions, EQ: Essay Questions								

CIE Question Paper Pattern:

Maximum Marks: 40, Time: 3 Hours

Part A:

Carries **5** Short Questions, students have to attempt **4** Questions and Each Question Carries **5** Marks.**(4 / 5 X 5 = 20 Marks)**

Part B:

Carries **3**Essay type Questions, students have to attempt **2** Questions and Each Question Carries **10** Marks.**(2 / 3 X 10 = 20 Marks)**

Note: Students have to get Minimum 50% of the total (i.e. 20 Marks).

Course Outcome		CL	Linked Program Objectives (PO)
CO1	Apply the principles of Projection of solids also draw the projections of solids.	**R / U / A**	**1, 2, 3, 4, 9, 10**
CO2	Appreciate the need of Sectional views also draw the sectional views and true sections of the engineering components.	**R / U / A**	**1, 2, 3, 4, 9, 10**
CO3	Escalate the need of auxiliary views and draw the auxiliary views of the given engineering components.	**R / U / A**	**1, 2, 3, 4, 9, 10**
CO4	Gainthe knowledge of Isometric views of engineering components also draw the isometric views of given components.	**R / U / A**	**1, 2, 3, 4, 9, 10**
CO5	Grasp the knowledge and draw the development of surfaces of different engineering components	**R / U / A**	**1, 2, 3, 4, 9, 10**

Course-PO Attainment Matrix

Course Name	Program Outcomes (PO)									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Advanced Engineering Drawing	3	3	3	2	--	--	--	--	3	3
Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed										

Department of Technical Education
State Board of Technical Education &Training (TS)

Course Title :	**Advanced Computer Aided Drafting**	Course Code	**18EE-207P**
Semester	**II**	Course Group	**Core**
Teaching Scheme in Hrs(L:T:P)	**7.5:0:30**	Credits	**1.5**
Methodology	**Tutorials + Practice**	Total Contact Hours :	**37.5Hrs/45Pds**
CIE	**60 Marks**	SEE	**40 Marks**

Course Content and Blue Print of Marks for SEE

Unit No	Unit name	Periods	Questions for SEE			Marks Weightage	%Weightage
			R	U	A		
1.	Make a drawing with Layers	**6**		**2**		**20**	**25**
2	Create and insert the Blocks and add attributes	**9**					
3	Generate Solid models with different surfaces	**15**		**2**		**20**	**25**
4.	Create complicated 3D drawings using layers and blocks	**15**			**2**	**40**	**50**
	Total	**45**		**4**	**2**	**80**	**100**

R: Remembering, U: Understanding, A: Applying

SEE Question Paper Pattern:
Maximum Marks: 80, Time: 3Hrs
Part – A: Short answer questions: 4 X 10= 40 Marks
Part - B: Essay Type Questions: 2 X 20= 40 Marks

Pre requisites

This course requires the Basic CAD Skills and concepts of engineering drawing

Course Outcomes

CO1	Significance of Layers. Create and assign properties to layers and modify layers
CO2	Importance and advantages of blocks. Use of standard blocks and user defined blocks
CO3	Need of solid modeling and various methods of solid modeling with different surfaces
CO4	Create and modify 3D drawings

Course Contents

UNIT -1 **Duration: 06 periods (T:1 + P:4hrs)**

Organize the information on layers

Setting a current layer, layers color, line type, line weight, print style locking and unlocking of layers, the layer visibility and layer printing. Setting of current line type. The loading of additional line types, creating and naming of line type, editing of line type.

UNIT -2 **Duration: 9 periods (T:1.5 + P:6hrs)**

Use the Blocks, Attributes and External references to manage the drawing blocks

The purpose of a block, creating a block, inserting a block, redefining a block, exploding a block

Attribute

Editing attribute definitions, attaching attribute to blocks. Editing attributes attached to blocks, Extracting attributes information.

UNIT -3 **Duration: 15 periods (T:2.5 + P:10hrs)**

3.0 Viewing entities in three dimensions

Setting a new viewing direction
Dynamically setting a view direction

3.1 Creation of three-dimensional entities using different methods

Drawing of two dimensional entities in three dimensional space.
Converting two dimensional planar entities into three dimensional entities by applying elevation and thickness.
Converting two dimensional planar entities into three dimensional entities by revolving or extruding.
Creation of three-dimensional faces, rectangular meshes, ruled surface meshes, extruded surface meshes, revolved surface meshes, three dimensional entities such as boxes, Cylinders,

Cones, Spheres, wedges, torus, Regions, extruded solids, revolved solids, composite solids, intersect solids.

3.2 Editing in three dimensions

Rotating in three dimensions, Array in three dimensions (Rectangular and polar). Mirroring in three dimensions, aligning in three dimensions.

3.3 Editing of three dimensional solids

Sectioning and Slicing of solids, hiding, shading and rendering.

3.4 Selection of material from library

Enable the material library, editing materials and material library.

UNIT- 4

Application of above three units

Recommended Books

1. Auto cad by George Omura
2. 4MCAD User Guide- IntelliCAD Technology Consortium

Suggested learning outcomes

1.0 Organize the information on layers

- **1.1** Explain the need and importance of Layers.
- **1.2** Practice creating new layer, naming the layer and assigning properties like Layer colour, Line type and line weight and setting the current layer
- **1.3** Practice the locking and unlocking of layers
- **1.4** Practice the Freezing and thawing of layers
- **1.5** Practice the layer visibility and layer printing
- **1.6** Practice the loading of additional line types

2.0 Use the Blocks, Attributes and External references to manage the Drawing

- **2.1** Define a block
- **2.2** Explain the purpose of a block
- **2.3** Practice the creating a block
- **2.4** Practice the inserting a block
- **2.5** Practice the redefining a block
- **2.6** Practice the exploding a block
- **2.7** Define an Attribute
- **2.8** Practice the editing attribute definitions
- **2.9** Practice the attaching attribute to blocks
- **2.10** Edit attributes attached to blocks
- **2.11** Extract attributes information
- **2.12** Define external reference
- **2.13** Practice the Attaching, Removing, and Reloading of external references
- **2.14** Practice the Binding, Clipping and changing the path of external references

3.0 Understand the concepts of 3D

View entities in three dimensions

3.0.1 To set a new viewing direction

3.0.2 To dynamically set a view direction

3.1 Create three-dimensional entities using different methods

3.1.1 Draw two dimensional entities in three dimensional space.

3.1.2 Convert two dimensional planar entities into three dimensional entities by applying elevation and thickness.

3.1.3 Convert two dimensional planar entities into three dimensional entities by revolving or extruding.

3.1.4 Create three-dimensional faces.

3.1.5 Create rectangular meshes.

3.1.6 Create ruled surface meshes.

3.1.7 Create extruded surface meshes.

3.1.8 Create revolved surface meshes.

3.1.9 Create three dimensional entities such as boxes, Cylinders, Cones, Spheres, wedges, torus, Regions.

3.1.10 Create extruded solids.

3.1.11 Create revolved solids.

3.1.12 Create composite solids.

3.1.13 Create intersect solids.

3.2 Editing in three dimensions

3.2.1 Rotate in three dimensions

3.2.2 Array in three dimensions (Rectangular and polar)

3.2.3 Mirror in three dimensions

3.2.4 Align in three dimensions

3.3 Edit three dimensional solids

3.3.1 Practice Sectioning and Slicing solids

3.3.2 Practice hiding, shading and rendering

4 Practice applications on above units

Exercise	Key components
Layers	• Importance of layers • Creation of new layers and controlling properties of layers
Working with blocks	• Create, insert and explode a block • Attach attribute to blocks • Edit and extract attributes attached to blocks
View entities in three dimensions	• Set a new viewing direction • Set dynamically view direction
Create three-dimensional entities	• Create three-dimensional faces • Create rectangular meshes, ruled surface meshes, extruded surface meshes, revolved surface meshes • Create three dimensional entities such as boxes, Cylinders.

Edit in three dimensions	• Rotate in three dimensions • Array in three dimensions (Rectangular and polar) • Mirror in three dimensions • Align in three dimensions
Edit three dimensional solids	• Practice Sectioning and Slicing solids • Practice hiding, shading and rendering
Practice the selection of material from library	• Enable material library • Edit materials and material library

Course Outcome		Cognizant Level	Linked PO	Teaching Hours
CO1	Significance of Layers. Create and assign properties to layers and modify layers	U/A	1,2,3,9,10	15
CO2	Importance and advantages of blocks. Use of standard blocks and user defined blocks	U/A	1,2,3,9,10	9
CO3	Need of solid modeling and various methods of solid modeling with different surfaces	U/A	1,2,3,9,10	6
CO4	Create and modify 3D drawings	A	1,2,3,10	15

ELECTRICAL WIRING LAB PRACTICE

Course Title :	**Electrical Wiring Lab Practice**	Course Code	**18EE-208P**
Semester	**II**	Course Group	**:Core**
Teaching Scheme in Periods(L:T:P)	**1:0:2**	Credits	: **1.5**
Methodology	**Lecture + Practical**	Total Contact Hours :	**:45Pds**
CIE	**60 Marks**	SEE	**40 Marks**

Pre requisites

This course requires the skills of handling electrical tools, accessories and performing wiring connections

Course Content and Blue Print of Marks for SEE

Unit No	Unit name	Hours/ Periods	Marks for SEE			Marks weightage	% Weightage
			Handling	Manipulation	Precision		
1	Special lamp connections	6	2	4	2		
2	Resistance measurement &capacitor measurement	9	2	6	4		
3	Wiring power loads	15	4	6	2		
4	Battery voltage measurement &earthing	15	2	4	2		
	Total	45	12	20	10		

Course Outcomes

Course Outcome		CL	Linked PO	Teaching Hours
CO1	Identify, select necessary materials and perform electrical wiring of special lamp circuits	R/U/A	2,3,4,5,7,8,9,10	6
CO2	Identify the resistors, capacitors, compute and measure their values	R/U/A	1,2,3,4,8,9,10	9
CO3	Identify, select necessary materials and perform electrical wiring for power circuits	U/A	2,3,4,5,7,8,9,10	15
CO4	Identify the terminals, parts of a battery, measure the battery voltage, perform earthing and measure earth resistance	U/A	2,3,4,5,7,8,9,10	15

Course Contents

1.0 Special lamp connections

1.1 Control and practice the wiring for Fluorescent Lamp/LED Lamp

1.2 Control and practice the wiring for Mercury Vapour Lamp/ Sodium Vapour Lamp/Halogen Lamp

2.0 Resistance measurement & Capacitor measurement

2.1 Identify different types of resistors.

2.2 Calculate resistance by its colour code.

2.3 Measuring the resistance using multimeter

2.4 Connecting resistors in series and parallel and measuring the resistance using multimeter.

2.5 Connect a rheostat in a given circuit and vary its resistance from minimum to maximum resistance position.

2.6 Identify different types of capacitors.

2.7 Find the value/specifications of capacitor from value printed and color code.

3.0 Wiring power loads

3.1 Control two sub-circuits through Energy meter, MCB's and two 1way switches.

3.2 Control 1.5 ton capacity A/C equipment by MCB and stabilizer.

3.3 Connect the Inverter to power supply through 3 pin socket and 1way switch (Back up)

3.4 Connect Computer by main switch board with a Miniature Circuit Breaker (MCB)

3.5 Connect and test the given Public Address System

4.0 Battery voltage measurement &earthing

4.1 Measurement of battery voltage using voltmeter and multimeter.

4.2 Connecting batteries in series and parallel and observing the output voltage using voltmeter and DMM.

4.3 Measurement of current supplied by battery using ammeter and multimeter with rheostat as load

4.4 Demonstration on Pipe Earthing and Plate Earthing and measure the value of earth resistance

State Board of Technical Education and Training,Telangana

Semester End Examination Model Question paper

DEEE II semester practical Examination

Corse Code:18EE-208P **Duration:3 hours**

Course Name: Electrical Wiring Lab Practice **Max.Marks:40**

Instructions to the Candidate:

(i)Answer any One of the following Questions.

(ii)Record the results on a graph sheet if required , and conclude your observation of the experiment

(iii) Draw the circuit diagram for illustration, choose appropriate values when not mentioned in the question

1. a) Make the wiring connections for fluorescent lamp
   b) Compute the resistance value of the given resistor by using colour code and also verify the same with a multimeter
2. Select suitable materials and make the wiring connections for Mercury Vapour Lamp
3. Make the wiring connections for two sub-circuits (for a lighting and a power circuit) through energy meter, MCB's and two 1-way switches
4. Install 1.5 ton/1 ton capacity A/C equipment witha stabilizer having separate MCB control
5. a) Measure the battery voltage using voltmeter and multimeter
   b) Compute the capacitance value of the given capacitor by using colour code and also verify the same with a multimeter
6. Control the brightness of a bulb by connecting a rheostat in series and also measure the voltage across the bulb in each case
7. Install inverterto backup the power supply through 3 pin socket and 1way switch
8. Make the wiring connections for computer by main switch board with a Miniature Circuit Breaker (MCB)
9. Connect and test the given Public Address System
10. Demonstrate pipe earthing and measure the value of earth resistance
11. Demonstrate plate earthing and measure the value of earth resistance

Department of Technical Education
State Board of Technical Education & Training (TS)

Course Title	**Applied Science Lab Practice (Physics Lab)**	**Course Code**	**18EE-209P(A)**
Semester	**II**	**Course Group**	**Core**
Teaching Scheme in Pds/Hrs(L:T:P)	**0:1:2 periods**	**Credits**	**1.5/2**
Type of course	**Tutorial & practical**	**Total Contact Hrs**	**22.5Pds**
CIE	**30 Marks**	**SEE**	**20 Marks**

Pre requisites: Knowledge of basic concepts of basic High school science, basic mathematics

Course objectives: To provide practical knowledge about the basics of Physics instrumentation and calculations/measurements.

Tutorial: 0.83 Hrs/Experiment:

1. Introduction Physics practical and its importance, safety precautions in maintenance of equipment in the laboratory.
2. Maintenance of apparatus and equipment.
3. Follow of Do's and Don'ts.
4. Maintenance of data in manual and record book.
5. Write the procedure of the experiment before the commencement of each experiment.
6. Strictly following of instructions given from time to time by the lecturer-in-charge.
7. Demonstration of each experiment by the lecturer in charge.

Conduct of an experiment: 3periods/experiment.

Course outcomes:

On successful completion of the course, the student will have ability to:

1: Determine the Focal length and focal power of convex lenses using U-V and graphical method.
2: Determine the value of acceleration due to gravity using Simple Pendulum and verify with L-T^2graph.
3: Determine the velocity of sound in air at room temperature .
4: Determine the refractive index of a solid using travelling microscope.
5: Practice the mapping of magnetic lines of force-locating neutral points.

References:

1. Basic Applied Physics – R.K. Gaur
2. Laboratory manual for class XI and XII - NCERT

PHYSICS PRACTICALS

List of experiments

Semester II

1. Convex lens-Determination of Focal length and focal power using U-V and graphical method.

2: Simple Pendulum-Determination of the value of acceleration due to gravity and verify with L-T^2graph.
3: Resonance apparatus-Determination of velocity of sound in air at room temperature .
4: Travelling microscope-Determination of refractive index of a solid.
5: Practice the mapping of magnetic lines of force-location of neutral points

Course Delivery:

The course will be delivered through lectures, class room interaction, group discussions, graded exercises, demonstration and practice.

Conduction of experiments: 2 periods/Experiment.

Student must perform experiment individually under the supervision of the lecturer-in charge.

On successful completion of the course, the student will have the ability to attain below Course outcomes (CO):

Course Outcomes		CL	Linked experiments	Linked POs	Teaching Hours
CO 1	Focal length and Focal power of convex lens (Separate & Combination)	U/A		1,2,3,8,9	L:P::1:2
CO 2	Acceleration due to gravity using simple pendulum	U/A		1,2,3,8,9	L:P::1:2
CO 3	Velocity of sound in air – (Resonance method)	U/A		1,2,3,8,9	L:P::1:2
CO 4	Refractive index of solid using traveling microscope	U/A		1,2,3,8,9	L:P::1:2

CO 5	Mapping of magnet lines of force-locating neutral points	U/A		1,2,3,8,9	L:P::1:2
CO 6	Related the answers to the oral questions		Covered in all COs		

Cognitive levels: R=Remember, U=Understand, A=Apply

Scheme of Valuation of SEE		
S.No	Particulars	Marks
1.	Identification of apparatus/equipment/etc	01
2.	Writing procedure	04
3.	Conducting of experiment	10
4.	Results	01
5.	Viva-voce	04
	Total	20

Suggested learning outcomes

Name of the Experiment (No of Periods)	**Competencies**	**Key competencies**
1. Focal length and Focal power of convex lens (Separate & Combination)	• Fix the object distance • Find the Image distance • Calculate the focal length and power of convex lens	• Calculate the focal length and power of convex lens • Draw u-v and 1/u – 1/v
2. Simple pendulum – acceleration due to gravity – length of seconds pendulum	• Fix the simple pendulum to the stand • Adjust the length of pendulum • Find the time for number of oscillations • Find the time period • Calculate the acceleration due to gravity • Draw l-T and l-T^2 graph	• Find the time for number of oscillations • Find the time period • Calculate the acceleration due to gravity • Draw l-T and l-T^2 graph

3. Velocity of sound in air –Resonance method	• Arrange the resonance apparatus • Adjust the reservoir level for booming sound • Find the first and second resonanting lengths • Calculate velocity of sound	• Adjust the reservoir level • Find the first and second resonanting lengths • Calculate velocity of sound • Calculate velocity of sound at 0^0 C
4. Refractive index of solid using traveling microscope	• Find the least count of vernier on microscope • Place the graph paper below microscope • Read the scale • Calculate the refractive index of glass slab	• Read the scale • Calculate the refractive index of glass slab
5. Mapping of magnet lines of Force – neutral points	• Draw magnetic meridian • Place the bar magnet in NN(North pole of bar magnet pointing North) and NS (South pole of bar magnet pointing North) directions • Draw magnetic lines of force • Locate the neutral points along equatorial and axial lines	• Draw magnetic lines of force • Locate the neutral points along equatorial and axial lines

Department of Technical Education
State Board of Technical Education & Training (TS)

Course Title: **Applied Science Lab Practice (Chemistry Lab)**	Course Code: **18 EE-209(B)**
Semester: **II**	Core/Elective:
Teaching Scheme(L:P):**1:2**periods	Credits: **1.5/2**
Type of Course: **Lecture& practical**	Total Contact Hours: 22.5 periods
CIE: **30 Marks**	SEE: **20 Marks**

Prerequisite:
Knowledge of basic concepts of chemistry of secondary education.

Course Objectives:
To provide practical knowledge about the basics of volumetric analysis of chemical compounds.

Course Outcomes:

On successful completion of the course, the student will have ability to attain CO:

Course Outcome		**CL**	**Linked PO**	**Teaching Periods**
CO1	Estimate the amount of the mohr's salt in the given solution	**U/A**	1,2,3,8	L:P ::1:2
CO2	Determination of acidity , alkalinity and pH of given water samples/ solutions.	**U/A**	1,2,3,8	L:P ::3:6
CO3	Estimate the amount of the chlorides in the given solution.	**U/A**	1,2,3,8	L:P ::1:2
CO4	Relate the answers to the oral questions	**U/A**		

U = Understand, A = Application

Course Delivery:

The course will be delivered through lectures, classroom interaction, group discussion, demonstration and practicals.

Conduction of experiments: Lecture 1 period + Experiment 2 periods..

Student must conduct experiment individually under the supervision of the staff-in-charge.

Tutorial:

1. Introduction of chemistry practical and its importance, safety precautions in maintenance of cleanliness and orderliness of chemicals in the laboratory.
2. Maintenance of apparatus and equipment.
3. Follow of DO's and Don'ts.
4. Maintenance of data in record book.
5. Write the procedure of the experiment before the commencement of each experiment.
6. Strict following of instructions given from time to time by the staff-in- charge.
7. Demonstration of each experiment by the staff in charge.

Course content

Volumetric Analysis: (22.5 Hrs)

Volumetric analysis by Titrimetric Method:-

Volumetric Analysis -Titration – Standard Solutions- Concentration of solutions- Indicators- acid base indicators- selection of indicators-endpoint of titration-Neutralization.

List of experiments:

1. Estimation of Mohr's salt by using 0.02M potassium permanganate solution.
2. Determination of acidity of water sample by using 0.02N NaOH solution.
3. Determination of alkalinity of water sample by using 0.02N H_2SO_4 solution.
4. Estimate the chloride content present in water sample by using 0.0141N $AgNO_3$ solution.
5. Find out the pH of the given solution by using pH meter.

Suggested Learning Outcomes

Upon completion of the course, the student will have ability to

1. Estimate Mohr's salt by using standard potassium permanganate solution.
2. Determine the partial and total acidity of water sample by using 0.02N NaOH solution.
3. Determine the partial and total alkalinity of water sample by using 0.02N H_2SO_4 solution.
4. Estimate the chloride content present in water sample by using 0.0141N $AgNO_3$ solution.
5. Find out the pH of the given solution by using pH meter.

Reference Books:

1. Vogel's Inorganic Qualitative and Quantitative Analysis.
2. Practical chemistry by O.P.Pande & others.
3. Qualitative and quantitative analysis by Alex.

Scheme of Valuation for MID I & II and SEE		
Sl. No.	**Particulars**	**Marks**
1	Identification of apparatus/equipment/chemical compounds/tools/etc.	2
2	Writing Procedure	5
3	Conducting of experiment	4
4	Observation and Results	6
5	Viva-voice	3
Total		20

INFORMATION TECHNOLOGY LAB PRACTICE

Course Title : **INFORMATION TECHNOLOGY LAB PRACTICE** Semester : **II** Teaching Scheme in Hrs (L:T:P) : **0:1:2** Type of course **: Tutorial + Practical** CIE : **60 Marks**	Course Code : **18EE-210P** Course Group : **Core** Credits : **3** Total Contact Hours : **37.5Hrs/45Pds** SEE : **40 Marks**

Prerequisites

Knowledge of Computer basics and DOS

Course Outcome

On successful completion of the course, the students will be able to attain below Course Outcome (CO):

Course Outcome		CL	Linked PO	Practical hrs
CO1	Demonstrate skills using spreadsheet software	**A**	**1,2,3,4,8,9,10**	**15**
CO2	Demonstrate skills using presentation software	**A**	**1,2,3,4,8,9,10**	**15**
CO3	Demonstrate skills using database software	**A**	**1,2,3,4,8,9,10**	**15**
		Total Sessions		**45**

Legends: R = Remember U= Understand; A= Apply and above levels (Bloom's revised taxonomy)

Course Content

Spread Sheet

1. Open MS-Excel and identify the components on the screen
2. Create a Worksheet in MS-Excel and save it in .xls or .xlsx format
3. Inserting column and row in Excel
4. Creation of new worksheet in the existing Excel Book file
5. Generate a Chart using the data in Excel-worksheet
6. Automate calculations in a worksheet using formula
7. Sort and filter data in a worksheet
8. Protecting a worksheet, working with multiple sheets
9.

Presentation Software

10. Create a simple Power point presentation for a small topic and saving in .ppt or pptx format
11. Inserting a new slide in the existing PowerPoint file
12. Inserting chart or image in a PowerPoint slide
13. Exercise with animation and sound features in PowerPoint

14. Exercise with Rehearse Timings feature in PowerPoint
15. Exercise in printing the PowerPoint file in (a) Slides (b) Handouts

Database Management System

16. Create a table for given data and save in .mdb or .accdb format
17. Add, Delete and rename fields
18. Use the Primary key field
19. Enter and edit data
20. Use Relationships option
21. Create forms
22. Modify and save forms
23. Create and use queries
24. Sort data
25. Display data
26. Create and print reports

Resources:

1. Computer Fundamentals Concepts, Systems, Application, D.P.Nagapal, S.Chand Publication, RP-2014, ISBN: 81-219-2388-3
2. http://www.tutorialsforopenoffice.org/
3. http://www.libreoffice.org/get-help/documentation/

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	Bloom's Category	%
1	Remembrance	20
2	Understanding	20
3	Application	60

Mapping Course Outcomes with Program Outcomes:
(Course Outcome linkage to Cognitive Level)

Course Outcome		Experiment Linked	Linked PO	CL	Practical Sessions
CO1	Demonstrate skills using spreadsheet software	**1,2,3,4,5,6,7,8**	**1,2,3,4,8,9,10**	**A**	**15**
CO2	Demonstrate skills using presentation software	**9,10,11,12,13,14**	**1,2,3,4,8,9,10**	**A**	**15**
CO3	Demonstrate skills using	**15,16,17,18,19,20,21,**	**1,2,3,4,8,9,10**	**A**	**15**

	database software	**22,23,24,25**			

U-Understanding; A-application/ Analysis; App-Application

Course-PO Attainment Matrix

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Course Delivery

The course will be delivered through tutorial of one hour and one & half hours of hands on practice per week.

Suggested Student Activities:

1. Create a spreadsheet for the class
2. Create power point presentation for a course
3. Create a database for the class

Format for Student Activity Assessment

Internal Assesment

Activity	Marks
Writing the experiment, record evaluation	30
Execution of the given experiment	20
Viva-voce	10
Total	60

Model Question Bank

Course Title: **IT LAB PRACTICE**	Course Code: **18EE-210P**

1. Using Spreadsheet Application, create a worksheet with five columns. Enter ten records and find the sum of all columns using auto sum feature.
2. You have a monthly income of Rs.10000. Your monthly expenditures are Rent- Rs 3000, Food- Rs. 1500, Electricity- Rs.100, Phone- Rs. 150, and Cable TV-Rs. 200. Prepare a worksheet with the Monthly Income, the Monthly Expenditures listed and summed, monthly savings amount (what's left over each month) calculated, and the amount saved per day (assuming 30 days in a month). Use Spreadsheet Application.
3. Using Spreadsheet Application, create a worksheet containing the pay details (containing Basic pay, DA, HRA ,Other Allowance , Deductions- PF, PT, Insurance, Gross and Net salary) of the employees using formulas.
4. Using Spreadsheet Application, create a Simple Bar Chart to highlight the results of your institute for three years.
5. Using Spreadsheet Application, create a Pie Chart for a sample data and give legends.

6. Using presentation tool, Create a simple Presentation consisting of 4-5 slides about Input and Output Devices.
7. Create a presentation about a book containing Title, Author, Publisher and Contents.
8. Create an automated (timings & animation) Presentation with five slides about different Models of Computers. Use Presentation tool