

K.S.R.M COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B.Tech I Sem R-18 (ECE/CSE)

Model Paper

SUB: BASIC ELECTRICAL ENGINEERING

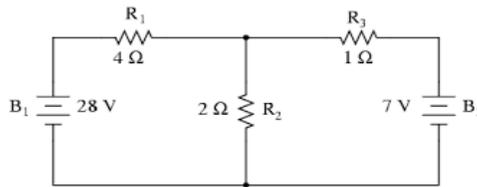
Time: 3 hours

Max Marks: 70 M

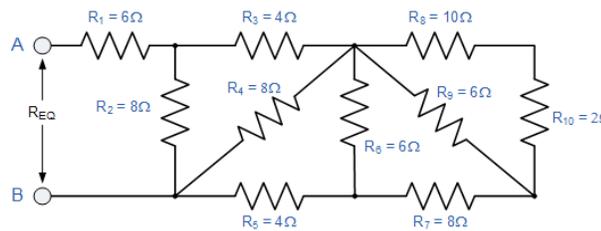
- Note: 1. Answer any **FIVE** questions by Choosing **ONE** Question from each Unit
2. All questions carry Equal Marks

Unit-1

1. a) Determine Current passing through 2Ω Resistance for the given circuit shown in figure



- b) Find the Resistance between A and B

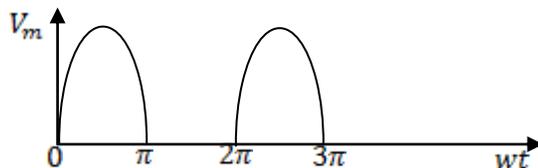


(or)

2. Derive the equation of star (Y) to delta (Δ) transformation.

Unit-2

3. a) Define the following terms for sinusoidal form
a) Average value, b) RMS values, c) form factor and d) peak factor
b) Find the form factor of the half-wave rectified sine wave



(or)

4. A given load consisting of a resistor R and a capacitor C, take a power of 4800W from 200V, 60Hz Supply mains. Given that the voltage drop across the resistor is 120V

Calculate the a) impedance, b) current, c) power factor d) resistance, e) capacitance. Write down the equations for the current and voltage.

Unit-3

5. a) Explain the working principle and constructional details of DC Generator With a neat Sketch.
b) Explain the OCC of generator and Critical speed & Critical Resistance.

(or)

6. a) Write about different types of DC motor.
b) Derive the Torque equation of DC Motor.

Unit-4

7. a) explain the construction and working principal of single phase transformer
b) Derive the EMF equation of single phase transformer

(or)

8. a) Explain Construction and working principle of 3- ϕ Induction motor with a neat Sketch i) Squirrel cage ii) Slip ring
b) The power input to the rotor of a 3- ϕ , 50Hz, 6-Pole IM is 80KW, the Rotor EMF makes 120 complete alternations per minute. Find a) Slip b) Motor Speed

Unit-5

9. Write a short note on switch fuse unit (SFU) and miniature circuit breaker
(or)
10. Explain about different types of cables and significance of Earthing

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B.Tech. I Semester (R18) Degree Examinations

Programming for Problem Solving

Model Question Paper

Time: 3Hours

(Common to CE, ME and EEE)

Max.Marks:70

Note: Answer any **FIVE** questions choosing **ONE** question from each unit.
All questions carry **Equal** marks.

Unit - I

1. a) Explain the process of software development life cycle in detail. [7M]
b) What are formatted input and output functions available in c? Explain with suitable C programs. [7M]

(OR)

2. a) What is a variable? Explain rules for writing variables in C? [7M]
b) Explain various steps involved in creating and running a C program and illustrate it with help of a diagram. [7M]

UNIT-II

3. a) Explain the different types of operators available in C [7M]
b) Explain syntax of **for loop**. Write a C program to find whether a given number is prime number or not using for loop. [7M]

(OR)

4. a) Explain the syntax of **while loop**. Write a C program to find sum of individual digits of a given number using while loop. [7M]
b) Explain the syntax of **if - else statement**. Write a C program to find whether a given number is even or odd. [7M]

UNIT-III

5. a) Define array. Explain declaration and initialization of one dimensional arrays with an example. [7M]
b) Write a C program to sort array elements in ascending order using bubble sort technique. [7M]

(OR)

6. a) Define String. Write a C program to find given string is palindrome or not without using string handling functions. [7M]
b) Write a C program to check whether the entered character is vowel or not. [7M]

UNIT-IV

7. a) Define function. Explain the following storage classes used in C with the help of examples.
i. static ii. extern [7M]
b) Define pointer? Explain declaration and initialization of a pointer with an example. [7M]

(OR)

8. a) Explain the following parameter passing mechanisms through C programs
(i) call by value (ii) call by reference [7M]
b) What is recursion? Write a C program to find factorial of a given number using recursion. [7M]

UNIT-V

9. a) Define structure. Explain how structure members are declared, initialized and accessed using a C program. [7M]
b) Explain the concept of copying and comparing structure variables [7M]

(OR)

10. a) Write a C program to accept the roll number, name and marks obtained in three tests of three students of a class and display the roll number, name, marks of three tests and their average. [10M]
b) Write the differences between arrays and structures. [4M]

K.S.R.M. COLLEGE OF ENGINEERING (Autonomous), KADAPA.

B.Tech I Sem (R18) Model Question paper

Mathematics – I
(Common to All Branches)

Time: 3 Hrs.

Max Marks : 70

Note : Answer any **FIVE** questions by choosing one from each unit.

All questions carry equal marks.

UNIT - I

1. a) Determine the rank of the following matrix. (7M)

$$A = \begin{bmatrix} 2 & -1 & 3 & 4 \\ 0 & 3 & 4 & 1 \\ 2 & 3 & 7 & 5 \\ 2 & 5 & 11 & 6 \end{bmatrix}$$

- b) Discuss for what values of λ and μ the simultaneous equations
 $x + y + z = 6, x + 2y + 3z = 10, x + 2y + \lambda z = \mu$, have
(i) no solution (ii) a unique solution (iii) an infinite number of solutions. (7M)
(OR)

2. Verify Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ and find its inverse. (14 M)

UNIT – II

3. Test for the convergence of the series
(i) $\frac{1}{2\sqrt{1}} + \frac{x^2}{3\sqrt{2}} + \frac{x^4}{4\sqrt{3}} + \dots \infty$ (7M)
(ii) $\frac{1}{2} + \frac{2}{3}x + \left(\frac{3}{4}\right)^2 x^2 + \left(\frac{4}{5}\right)^3 x^3 + \dots \infty$ ($x > 0$) (7M)

(OR)

4. (a) Discuss the convergence of the series $\frac{2}{1^p} + \frac{3}{2^p} + \frac{4}{3^p} + \frac{5}{4^p} + \dots \infty$ (7M)
(b) State the values of x for which the following series convergent:
 $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots \infty$ (7M)

UNIT – III

5. a) Prove that $\log(1 + e^x) = \log 2 + \frac{x}{2} + \frac{x^2}{8} - \frac{x^4}{192} + \dots$ (7M)
b) A window has the form of a rectangle surmounted by a semi-circle. If the perimeter is 40ft, find its dimensions so that the greatest amount of light may be admitted. (7M)

(OR)

6. a) Find the coordinates of the centre of curvature at any point of the parabola $y^2 = 4ax$. (7M)
 b) Show that the radius of curvature at any point of the cardioid $r = a(1 - \cos\theta)$ varies as \sqrt{r} . (7M)

UNIT – IV

7. a) If $u = x^2 - y^2$, $v = 2xy$ and $x = r\cos\theta$, $y = r\sin\theta$, find $\frac{\partial(u,v)}{\partial(r,\theta)}$ (7M)
 b) Show that the rectangular solid of maximum volume that can be inscribed in a sphere is a cube. (7M)
 (OR)
8. In a plane triangle, find the maximum value of $\cos A \cos B \cos C$. (14M)

UNIT – V

9. Show that $\beta(m,n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$. (14M)
 (OR)
10. a) Find $f(x) = x^2$ as half range cosine series in $(0, \pi)$ (7M)
 b) Expand $f(x) = \begin{cases} \frac{1}{4} - x, & \text{if } 0 < x < \frac{1}{2} \\ x - \frac{3}{4}, & \text{if } \frac{1}{2} < x < 1 \end{cases}$ as the Fourier of sine terms. (7M)

K.S.R.M. COLLEGE OF ENGINEERING:: KADAPA
(Autonomous)

B.Tech I Sem (R18 - UG)

Model Question Paper

(2021)

Sub: Engineering Physics

Time: 3 hrs.

(Common to ECE)

Max. Marks: 70

Answer any **FIVE** questions choosing *one* question from each unit.

UNIT – I

- 1 a. Define simple harmonic oscillator? Derive the equation for energy of simple harmonic oscillator? 10M
b. Write any four characteristics of simple harmonic oscillator 4M
(or)
- 2 a. Derive the equation for energy and power dissipations in damped harmonic oscillations? 10M
b. Define Resonance? Write any two examples of resonance? 4M

UNIT – II

- 3 a. Explain the theory of Young's double slit experiment? 10M
b. In a Newton's rings experiment, the diameter of the 5th ring is 0.30cm and 15th ring is 0.62cm. Find the diameter of the 25th ring? 4M
(or)
4. a. Describe Fraunhofer diffraction due to Single slit? 10M
b. Write any four differences between interference and diffraction? 4M

UNIT – III

- 5 a. Explain the construction and working of He-Ne Laser? 10M
b. Derive the relation between various Einstein's coefficients? 4M
(or)
6. a. Explain the construction and working of Semiconductor diode Laser? 10M
b. Write any eight applications of Lasers? 4M

UNIT – IV

- 7 a. Derive Schrodinger's time independent wave equation. 10 M
b. Write about uncertainty principal? 4M
(or)
- 8 Describe the behavior of a particle in a one-dimensional infinite potential well in terms of its Eigen values and functions? 14M

UNIT – V

- 9 Describe the electrical conductivity in metals using classical free electron theory? 14M
(or)
- 10 a. Derive the expression for charge density due to drift and diffusion processes? 14M
b. Write about direct and indirect band gap semiconductors? 4M

K.S.R.M. COLLEGE OF ENGINEERING:: KADAPA

(Autonomous)

B.Tech I Sem (R18 - UG) Model Question Paper

(2021)

Sub: Engineering Physics

Time: 3 hrs.

(Common to CSE)

Max. Marks: 70

Answer any FIVE questions choosing *one* question from each unit.

UNIT – I

- 1 a. Explain the interference of light due to thin films by reflection? 10M
b. In a Newton's rings experiment, the diameter of the 5th ring is 0.30cm and 15th ring is 0.62cm. Find the diameter of the 25th ring? 4M
(or)
- 2 a. Describe Fraunhofer diffraction due to N slits? 14M

Unit-II

- 3 a. Explain the characteristics of laser? 6M
b. Derive the relation between various Einstein's coefficients? 8M
(or)
4. a. Explain the construction and working of Nd-YAG Laser? 10M
b. Write any eight applications of Lasers? 4M

Unit-III

5. Describe Kronig-Penny model to understand the behavior of electrons in a varying periodic potential field of a crystal? 14 M
(or)
6. a. Define effective mass and derive the expression for effective mass? 10M
b. Describe the types of electronic materials? 4M

Unit-IV

- 7 a. Define Intrinsic and Extrinsic semiconductors. Determine the conductivity of intrinsic semiconductors? 10M
b. Describe the dependence of Fermi level on temperature? 4M
(or)
- 8 a. Derive the expression for charge density due to drift and diffusion processes? 10M
b. Find the diffusion co-efficient of electron in 'si' at 300K. If μ_e is 0.19m²/V.sec? 4M

Unit-V

- 9 a. Write the properties of Nanomaterials? 6M
b. Describe the synthesis of nanomaterials by Ball-Milling method? 8M
(or)
- 10 a. Describe the synthesis of nanomaterials by sol-gel method? 10M
b. Mention the eight applications of nanomaterials? 4M

Subject Code: 1823102/R18

**K.S.R.M COLLEGE OF ENGINEERING, KADAPA
(AUTONOMOUS)
MODEL QUESTION PAPER
FOUR YEAR B. TECH DEGREE EXAMINATIONS
B.TECH I SEMESTER REGULAR EXAMINATION
SUB: ENGINEERING CHEMISTRY
(CIVIL & MEC and EEE)**

Time : 3hrs

Max marks :70

Answer any Five questions choosing one question from each unit.

UNIT-I

1. (a) Write notes on particle in one dimensional box.
(b) Explain crystal field theory and write notes on crystal field splitting in octahedral complexes.

Or

2. (a) Write short notes on LCAO method and explain with a simple example.
(b) Define doping and explain role of doping in silicon.

UNIT-II

3. (a) Write short notes on orbital energies of atoms.
(b) Explain in detail on electronic configuration.

Or

4. (a) Explain factors influencing Ionisation potential and Electronegativity.
(b) Explain hard soft acids & bases.

UNIT-III

5. (a) Define cell potential and derive Nernst equation.
(b) Write short notes on Boiler troubles.

Or

6. (a) Define corrosion and explain wet corrosion.
(b) Write short notes on (i) Ionic interactions (ii) Critical phenomenon.

UNIT-IV

7. (a) Define spectroscopy and explain the selection rules in spectroscopy.
(b) Write short notes on Fluorescence and its applications.

Or

8. Explain vibrational and rotational spectra of diatomic molecules.

UNIT-V

9. (a) Write short notes on structural isomers and stereoisomers.
(b) Explain Baeyer-villiger reaction.

Or

10. (a) Write short notes on enantiomers and diastomers.
(b) Explain addition reactions involving C=O (Grignard reagent).

K.S.R.M. COLLEGE OF ENGINEERING (Autonomous), KADAPA.
B. Tech I Sem (R18) Model Question paper November 2021
ENGLISH
(Common to CE, ME & EEE)

Time: 3 Hrs.

Max Marks : 70

Note: Answer any **FIVE** questions. **All** questions carry equal marks.

I. Correct any FOURTEEN of the following sentences if necessary **14x1=14**

- (1) He has two sister-in-laws
- (2) Your service to the society is greater than me
- (3) A.P.J. Abdul Kalam is one of the most greatest philanthropists
- (4) She is one of those who likes classical dance.
- (5) Ten projects were accepted and one rejected.
- (6) He behaved cowardly before his opponent.
- (7) He is always for his boss to get promotion.
- (8) He worked hard and failed.
- (9) He returned the book back to me.
- (10) You worked hard, Isn't it?
- (11) If you ask me I would oblige
- (12) I am going to school everyday
- (13) The teacher teached me a lesson
- (14) One of my book has been stolen.
- (15) South Indians prefer coffee than tea
- (16) I have not read the book from 2008
- (17) She is my cousin sister.

II. (A) What is word formation ? Discuss various types of word formation ? **1x7=7**
(B) i). Give antonyms of the following. **3x1=3**

- a) Creator b) important c) adversity

ii). Give synonyms of the following **4x1=4**

- a) Peace b) achieve c) abandon d) faith

III. A) Draft a dialogue between a student and a teacher about improving communication skills. **1x7=7**

B) Give the meaning of the idioms and phrases and use them in sentences of your own. **1x7=7**

- i) crocodile tears ii) give up iii) a snake in the grass iv) to break the ice
v) make up vi) die of vii) tooth and nail

IV. A) 1) Make five meaningful sentences on the following pattern. **1x5= 5**

Subject +	Verb +	Object +	To infinitive
He	helped	me	to push the car

2) Punctuate the following. **2M**

in the words of murphys law anything that can go wrong will become wrong

B. List out the principles of paragraph writing ? **7M**

V. A) Rewrite the following sentences as directed

1x7 = 7

- 1) I got invitation. (Rewrite the sentence by using 'invitation' as verb)
- 2) He was succeeded in the exams. (Rewrite the sentence by using 'succeeded' as an adjective)
- 3) She posted the letter. (change into passive voice)
- 4) My purse was stolen. (change into active voice)
- 5) Who taught you English? (change into passive voice)
- 6) Gita said, "the earth revolves around the sun". (change into indirect speech)
- 7) He requested me to help the poor. (change into indirect speech)

B) Rewrite the following sentences as directed

1x7 = 7

- 1) No other girl is so clever as Manasa. (change into Superlative Degree)
- 2) A deer runs faster than a horse. (change into Positive Degree)
- 3) Mumbai is one of the biggest cities in India (change into Comparative Degree)
- 4) He is poor but he is honest. (change into Complex sentence)
- 5) He saw a tiger. He ran away. (change into Simple sentence)
- 6) He is too weak to walk. (change into Compound sentence)
- 7) If you work hard, you will pass the exam. (change into Simple sentence)

VI. A) a) Fill in the blanks with suitable articles.

3x1= 3

- i) It is ----- one rupee note.
- ii) He is ----- honest man.
- iii) ----- Ganges is a holy river.

b) Fill in the blanks with suitable prepositions

4x1= 4

- i) It has been raining ----- 9 a.m
- ii) Sumanth is looking _____ the picture.
- iii) She prefers coffee _____ juice.
- iv) Raghu goes to college _____ foot.

B) a) Fill in the blanks with the right verb forms from the verbs given in brackets 5x1=5

- i) He always _____ (like) music.
- ii) Mokshith _____ (do, not) attend the college yesterday.
- iii) I _____ (be) ill since last Friday.
- iv) Before he reached the station, the train _____ already _____ (leave).
- v) They _____ (play) cricket next week.

b) Fill in the blanks with suitable conjunctions

2x1=2

- i) _____ he worked hard, he failed in the exam.
- ii) Gopal _____ Bhupal are brothers.

VII. A) Read the following passage and answer the questions:

The progress of a country, now-a-days is assessed in terms of economic development that has been achieved. And the measuring rod of economic development is Gross National Product. To Gandhi it was a foreign concept. GNP is rather a fraud upon the people. An increase in GNP in terms of money does not really mean an equitable distribution of money. He had experienced that even with an increase in national income the poor remain poor. Most of the poor live in villages, rather most of the people, in India, live in villages. Thus, according to Gandhian Economics the hub of production should be village, not city. Howsoever big the industries may be, due to mechanization, they just can't absorb the vast humanity in this country. Large-scale production, is, according to him, alien to the very spirit of rural development as it is capital oriented. Since the people are poor they can organize and run only cottage industries. It is realized by the prominent economists that this Gandhian way is the only solution for the mass unemployment in this country.

Questions :

7x1=7

- 1) How is the progress of a country measured?
- 2) Expand 'GNP'.
- 3) Why is GNP a fraud upon the people ?
- 4) Why should the hub of production be village?
- 5) Pick out the word from the passage which means 'trickery'.
- 6) Why did Gandhi consider large scale production alien to the spirit of rural development?
- 7) What is the solution for mass unemployment?

B) Write a précis of the following passage reducing it to one third of its length. 1x7=7

A great part of Arabia is desert. Here there is nothing but sand and rock. The sand is so hot that you cannot walk over it with your bare feet in the day-time. Here and there in the desert are springs of water that come from deep down under the ground- so deep that the sun cannot dry them up. These springs are few and far apart, but wherever there is one, green grass very soon covers the ground all around it. Soon fig trees and palm trees grow tall and graceful, making a cool, green shady place around the spring. Such a place is called an oasis.

VIII. A) write an essay of the following in about 250 words.

1x7= 7

- (a) Role of an Engineer in the development of nation

B) Expand the following into a paragraph.

1x7= 7

- (a) All that glitters is not gold
