| Hall Ticket Number : | | | | | | | | | | |
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**R-17**

**Code: 7GC13**

I B.Tech. I Semester Supplementary Examinations May / June 2019

# Engineering Physics

( Common to EEE and ECE )

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT–I**

1. a) What is meant by acceptance angle for an optical fiber? Obtain mathematical expression for acceptance angle and numerical aperture. 8M

   b) Write some differences between step index fiber and graded index fiber. 6M

**OR**

2. a) Explain construction and working of He-Ne laser. 10M

   b) Write some differences between Spontaneous emission and Stimulated emission of radiation. 4M

**UNIT–II**

3. a) Describe with suitable diagram, the powder method for determination of crystal structure. 10M

   b) A beam of X-rays is incident on a NaCl crystal with lattice spacing 0.282nm. Calculate the maximum order of diffraction possible if wavelength of X-rays used is $0.841^0$A. 4M

**OR**

4. a) Discuss various non-destructive testing systems which are commonly adopted in industries using ultrasonics. 7M

   b) Explain the ultrasonic flaw detector. 7M

**UNIT–III**

5. a) Apply Schrodinger's wave equation to the case of particle confined in a box and show that the energies of particle are quantized. 10M

   b) The minimum energy for a particle entrapped in a one dimensional box is $3.2\times10^{-18}$ J. What are the next three energies in electron volts the particle can have.. 4M

**OR**

6. a) Describe the salient features of Kronig-Penny model. 8M

   b) Explain Fermi- Dirac distribution function of electron. 6M

**UNIT–IV**

7. a) Write a note on direct band gap and indirect band gap semiconductors. 8M

   b) Distinguish between intrinsic semiconductor and extrinsic semiconductor. 6M

**OR**

8. a) What are Cooper pairs? Explain 8M

   b) Write a note on the applications of superconductors. 6M

**UNIT–V**

9. a) Explain hysteresis loop observed in ferromagnetic materials. 10M

   b) A magnetic material has a magnetization of 3300 A/m and flux density of 0.0044 W/m$^2$. Calculate the magnetizing field strength. 4M

**OR**

10. a) Explain in detail various properties of nanomaterials. 8M

    b) Write some optical applications of nanomaterials. 6M

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| Hall Ticket Number : | | | | | | | | | | |
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**R-17**

**Code: 7G311**

I B.Tech. I Semester Supplementary Examinations May / June 2019

# Fundamentals of Electrical & Electronics Engineering

( Common to EEE & ECE)

Max. Marks: 70 Time: 4 Hours

Answer *all five* units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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## UNIT–I

1. a) Write note on different types of capacitors and inductors. 8M

   b) Write note on voltage and current relationship for capacitor, inductor and resistor when DC is applied with neat diagram. 6M

**OR**

2. a) Write note on different types of resistors. 6M

   b) Determine the color coding for the following resistors.
   i) 100Ω ii) 330Ω iii) 4.7KΩ iv) 100KΩ 8M

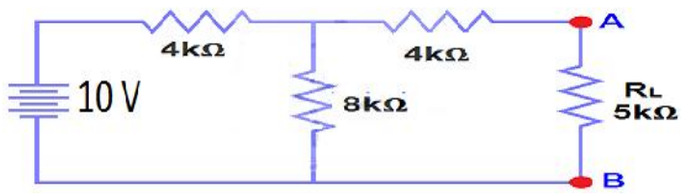
## UNIT–II

3. a) State and explain Kirchoff's laws. 8M

   b) State and explain Thevenin's Theorem. 6M

**OR**

4. a) Find $V_{TH}$, $R_{TH}$ and the load current flowing through the load resistor $R_L$ in the figure shown by using Thevenin's Theorem.




10M

   b) State and explain Superposition Theorem. 4M

## UNIT–III

5. a) Explain zener and avalanche break down. Which break down is dangerous? Why? 7M

   b) Construct zener diode voltage regulator which gives constant 3.6 Volts DC . 7M

**OR**

6. a) Explain V-I characteristics of P-N junction diode in forward and reverse bias conditions. 7M

   b) Explain energy band diagram of intrinsic and extrinsic semiconductors with neat diagram. 7M

## UNIT–IV

7. a) Explain the working of center tapped full wave rectifier with neat diagram. Derive the expression for ripple factor and efficiency. 8M

   b) Compare capacitor, LC and π filters and write down their merits and demerits 6M

**OR**

8. a) Compare half wave, full wave and bridge rectifiers in terms of ripple factor and efficiency. 6M

   b) Explain working principle of filters in AC to DC converter circuits. Explain their necessity. 8M

## UNIT–V

9. a) Explain construction on NPN transistor and write its current components. 7M

   b) Draw and explain input and output characteristics of transistor in CE configuration. 7M

**OR**

10. a) Write note on DSO 7M

    b) Draw and explain input and output characteristics of a transistor in CB configuration. 7M

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| Hall Ticket Number : | | | | | | | | | | |
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**R-17**

**Code: 7G111**

I B.Tech. I Semester Supplementary Examinations May / June 2019

**Problem Solving Techniques and C Programming**

( Common to All Branches )

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit ( 5 x 14 = 70 Marks )

*********

**UNIT–I**

| | | | |
|---|---|---|---|
| 1. | a) | Explain the various problem solving strategies with example. | 7M |
| | b) | Write an algorithm to find the greatest number among 3 numbers | 7M |

**OR**

| | | | |
|---|---|---|---|
| 2. | a) | Differentiate between high level and low level language with example | 7M |
| | b) | What do you mean by error in a program? Explain the strategies to handle the error. | 7M |

**UNIT–II**

| | | | |
|---|---|---|---|
| 3. | a) | Classify the operators in “C” with example. | 7M |
| | b) | Explain the structure of a C program with an example. | 7M |

**OR**

| | | | |
|---|---|---|---|
| 4. | a) | Explain the primitive data types of C with example. | 8M |
| | b) | Explain type conversion in c | 6M |

**UNIT–III**

| | | | |
|---|---|---|---|
| 5. | a) | Write a C program to illustrate the working of jump statements break and continue | 8M |
| | b) | Explain the “nested if “concept of C by an example. | 6M |

**OR**

| | | | |
|---|---|---|---|
| 6. | a) | Write a C Program to Display Fibonacci Sequence of 8 numbers | 7M |
| | b) | Write the concept of “do while” and “while”. When to use do while in a program explain with an appropriate example. | 7M |

**UNIT–IV**

| | | | |
|---|---|---|---|
| 7. | a) | Write a C Program to Find the Frequency of Characters in a String | 7M |
| | b) | Explain the applications of String with suitable example. | 7M |

**OR**

| | | | |
|---|---|---|---|
| 8. | a) | Write a program to find the smallest number of an integer array. A={34, 45,6, 7,89} | 7M |
| | b) | Write a C Program to Copy String Without Using strcpy() | 7M |

**UNIT–V**

| | | | |
|---|---|---|---|
| 9. | a) | Explain various type of qualifiers in C language. Write the importance of “Static” key word. | 7M |
| | b) | Write a program using function to design an arithmetical calculator. | 7M |

**OR**

| | | | |
|---|---|---|---|
| 10. | a) | Explain the concept of pre-processor commands. | 7M |
| | b) | Write a C Program to Find GCD Using Recursion. | 7M |

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| Hall Ticket Number : | | | | | | | | | | |
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**R-17**

**Code: 7GC11**

I B.Tech. I Semester Supplementary Examinations May / June 2019

# Technical English & Professional Communication

( Common to All Branches )

Max. Marks: 70 Time: 4 Hours

Answer *all five* units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT–I**

1. a) Why does E.F.Schumacherstate that modern technology does not enrich man but empties him?

   b) Fill in the blanks in the following sentences using the hints given in brackets.

   i. He was not happy with her decision. He may _____ with her. (a word with the prefix dis_)
   ii. He enjoys_____ his friends. (to meet/ meeting)
   iii. Good sleep is _____to health. (beneficial/benificial)
   iv. Rita _____ from the shock of her uncle's death. (Phrasal verb with 'get')
   v. Anything written in a letter after it is signed is known as _____. (postscript/postdiction)

**OR**

2. Discuss the different elements of human communication?

**UNIT–II**

3. a) What are the main ways in which human development has affected climate patterns on the earth?

   b) Write a letter of application in response to an advertisement for the post of Project Manager in a reputed software company.

**OR**

4. Discuss the different levels of communication.

**UNIT–III**

5. a) What are the two kinds of technologies currently used to generate solar power on a large scale?

   b) Complete the following sentences with appropriate words chosen from those in brackets:

   i. How many _____ are there in each character in MS Word? (bytes/bites)
   ii. Students are given an essay about the human _____ in the exam. (soul/sole)
   iii. We saw a_____ and a tiger when we visited the local zoo.( boar/bore)
   iv. Our _____took us through the Alps and then on to Italy. (route / root)
   v. When it's low _____ you have to walk a long way before you can swim. (tide/tied)

**OR**

6. Explain the different types of Non-verbal communication in brief?

**UNIT–IV**

7. a) What are the measures to be taken to prevent soil erosion?

   b) Correct the following sentences

   i. The second innings are going on now
   ii. Either Ramu or Somu might offer their services.
   iii. My friend sits besides me in the class
   iv. Each of the candidates were awarded a certificate.
   v. One must love his parents.

**OR**

8. Discuss the different types of listening.

**UNIT–V**

9. How the idea of 'samskara' is explained in the essay "The Secret of Work"?

**OR**

10. Write about Linear, Interactive and Transactional communications.

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