Paper id 82101

Roll No. ..... AS-102N

B.Tech 2th Sem. June-2019

**Subject: Applied Physics- II**

Time : 3 Hrs Max.Marks : 75

**SECTION-A**

**Note:** Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

**Unit-I**

Q.1 a) What do you mean by point defects in solids? Derive an expression for concentration of Frenkel defects. (8 Marks)

b) What are Miller indices? Give their significance. How would you determine the Miller indices of a plane in a crystal. (7 Marks)

Q.2 a) Explain in details, bonding in solids. (8 Marks)

b) What do you mean by coordination number? Calculate coordination number for simple cubic, BCC and FCC lattices. (7 Marks)

**Unit-II**

Q.3 a) Explain group velocity and phase velocity. Derive expression for time independent Schrodinger's wave equation. (10 Marks)

b) Give physical significance of wave function. (5 Marks)

Q.4 Derive both the time independent and time dependent Schrodinger's wave equation. (15 Marks)

**Unit-III**

Q.5 a) What is thermionic Emission? Derive the relation for Richardsons equation. (10 Marks)

b) Discuss the Fermi distribution function graphically. (5Marks)

Q.6 a) Discuss the origin of energy bands in solids. How can you distinguish between metals, semiconductors and insulators on the basis of energy bands? (10 Marks)

b) Explain Brillouin Zone and E-K diagrams. (5 Marks)

**Unit-IV**

Q.7 a) What is meant by superconductivity? Derive the Londons equation and how it accounts for the Meissner effect. (12 Marks)

b) Discuss various applications of superconductors and its effects. (3 Marks)

Q.8 What do you mean by nanoparticles? Describe in detail the properties of nanomaterials. (15 Marks)

Paper I.D. 22106

**B.Tech Semester-II Examinations June-2018**

**Fundamentals of BioTechnology (BT-101N)**

**Max. Marks: 75** **Time: 03 Hours**

**Note: Attempt any five questions by selecting at least one question from each unit. All questions carry equal marks.**

## UNIT-I

**Q. 1** (a) Draw the diagram of a Plant cell. Differentiate between Plant and Animal Cell. **08**

(b) Illustrate ultra structure and functions of : (i) Mitocondria

(ii) Chloroplast **07**

**Q. 2** (a) Define Nucleic Acid. Describe the Watson and Crick model of double helix Structure of DNA. **10**

(b) Write a note on Proteins. Also give classification of Proteins. **05**

## UNIT-II

**Q.3** (a) Write short notes on: **08**

(i) Diabetes type I and II

(ii) Blood Groups

(b) Define Cell division. Differentiate between Mitosis and Meiosis. **07**

**Q.4** (a) Describe the various morphological features of Bacteria. Differentiate between Gram +ve and Gram -ve bacteria. **10**

(b) Write short note on any one out of two: **05**

(i) Role of Immune System in health (ii) Morphological features of Fungi

## UNIT- III

**Q.5** (a) Explain DNA recombinant Technology and give its various tools. **10**

(b) Give the role of Vectors as gene transfer vehicles. **05**

**Q.6** Write a detailed note on Transgenic Animals along with examples and give the various techniques used for introduction of genes into the animals. **15**

## UNIT-IV

**Q.7** Define Biotechnology. Discuss its various applications in Agriculture, Medicine and Industry. **15**

**Q.8** (a) What is Bioinformatics? Discuss its role in detail. **08**

(b) Write a detailed note on various Ethical issues related to Biotechnology. **07**

Paper Id 22107

B.Tech Semester- II June-2018 Examinations

Basics of Electronics Engg. (ECE-101N )

Time: 3 Hrs

Max Marks 75

**Note: Attempt Any 5 Questions, selecting at least one from each unit.**

## UNIT-I

Q1. What is PN junction? Describe the action of PN junction diode under forward bias and reverse bias condition.

Q2. Explain the action of half wave rectifier with the help of circuit diagram. Draw its output waveform if a sinusoidal waveform is given at its input. Also define ripple factor for it.

## UNIT-II

Q3 (a) Analyze the input and output characteristics of common Collector configuration. (10)

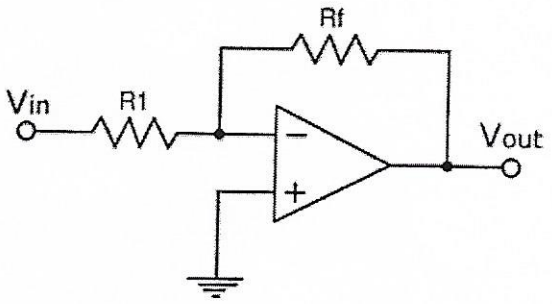
(b) In a common base connections, the emitter current $I_E$ is 6.28mA and the collector current $I_C$ is 6.20 mA. Determine the common base d.c. current gain. (5)

Q4. What is the purpose of biasing in the transistor circuits? Describe the fixed bias circuit with the help of a diagram.

## UNIT-III

Q5.(a) Give the characteristics of an Ideal Operational amplifier. (5)

(b) If in the following circuit diagram, $R_1$=100kΩ and $R_f$= 500 KΩ, then what will be the output voltage if input voltage of 2V is provided at $V_{in}$.




Q6. How the operational amplifier can be used as an integrator and a differentiator in an electronic circuit?

## UNIT-IV

Q7. Draw the basic construction diagram for n-channel depletion type MOSFET. Briefly explain its operation using its drain and transfer characteristics.

Q8. Briefly explain the characteristic, operation and application of UJT.

Paper ID 22104

**B.Tech Semester II Examination June-2018**

**ME-101N Manufacturing Technology and Processes**

**Time : 3 Hours** **Maximum Marks :75**

**Note :** Attempt five questions selecting at least one question from each unit.

**UNIT-I**

1. (a) What is an accident? Explain in brief the causes and common sources of Industrial accidents. 7

   (b) What do you mean by manufacturing process? Give the classification of Manufacturing processes. 8

2. (a) Explain in brief the general properties and applications of engineering materials. 7

   (b) Write Short notes on: 8
   i. Mild Steel
   ii. Medium carbon steel
   iii. High carbon steel

**UNIT –II**

3 (a) Describe various types of patterns. Discuss pattern materials and pattern allowance. 7

   (b) Explain the following characteristics of good moulding sand: 8
   i. Permeability
   ii. Thermal stability
   iii. Porosity.

4 (a) Describe the following casting defects with its causes and remedies: 8
   i. Blow holes
   ii. Hot tears.

   (b) Write short notes on core sands, core Making and core assembly. 7

**UNIT-III**

5 (a) Write short notes on: 8
   i. Punching
   ii. Blanking
   iii. Piercing
   iv. Forming

   (b) Explain the various methods of hot extrusion process with neat sketches. 7

6 (a) Describe the various types of plant layout. Also write the advantages of good plant layout. 8

   (b) Explain principles of Hot Working Processes 7

## UNIT –IV

7 (a) Show the nomenclature of a single point cutting tool with the help of neat sketch. 8

(b) Explain the Mechanics of Chips Formations and effect of coolant on chip formation. 7

8 (a) Explain in brief the welding defects and their remedies. 7

(b) Write short notes on: 8

i. Oxy Acetylene Welding
ii. TIG and MIG welding

Sr No. 22105

**B.Tech II Semester June-2018 Examination**

**Semester-**

**Time Allowed: - 3:00 Hours** **Max. Marks:-75**

**Instruction: -** Attempt any five Questions

1. How is general communication different from technical communication? 15
2. What do you mean by communication? Discuss different barriers to effective communication in detail. 15
3. Do you agree that listening is more important than speaking? Why or why not? 15
4. What are objectives and types of interview? Discuss. 15
5. Suppose you are Director of your institute. Write a letter to the Vice- Chancellor by following the format/structure regarding confirmation of change of syllabus of B.Tech 1st Year. 15
6. What do you mean by non-verbal communication? Discuss 15
7. Define technical article and describe the structure of a technical article. 15
8. Write dialogues between two friends on preparation of examination. 15