

PROGRAMMES



# B.Sc., Electronics Question Bank

## 2024-25

12/07/2024



**DEPARTMENT OF PHYSICS,  
Government College (A)  
RAJAHMUNDRY-AP-533103**



## COURSES OFFERED IN THE PROGRAM

S.No	SEM	COURSE CODE	COURSE TYPE	TITLE OF THE COURSE	CIA	SEE	Hours / Week				
							L	T	P	C	
1	I	124901	MAJOR	Essentials and Applications of Mathematical, Physical and Chemical Sciences	50	50	3	-	2	4	
		124902	MAJOR	Advances in Mathematical, Physical and Chemical Sciences	50	50	3	-	2	4	
2	II		MAJOR	FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS	50	50	3	-	-	3	
				FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS Practical Course	--	50	-	-	2	1	
			MAJOR	CIRCUIT THEORY AND ELECTRONIC DEVICES	50	50	3	-	-	3	
				CIRCUIT THEORY AND ELECTRONIC DEVICES Practical Course	--	50	-	-	2	1	
			MINOR	MINOR (COMPUTER SCIENCE)							
				MINOR PACTICALS		50	-	-	2	1	
3	III		MAJOR	SEMICONDUCTOR DEVICES AND MATERIALS	50	50	3	-	-	3	
				SEMICONDUCTOR DEVICES AND MATERIALS Practical Course	--	50	-	-	2	1	
			MAJOR	DIGITAL ELECTRONICS	50	50	3	-	-	3	
				DIGITAL ELECTRONICS Practical Course	--	50	-	-	2	1	
			MAJOR	ANALOG ELECTRONICS	50	50	3	-	-	3	
				ANALOG ELECTRONICS Practical Course	--	50	-	-	2	1	
			MAJOR	ELECTRONIC COMMUNICATION SYSTEMS	50	50	3	-	-	3	
				ELECTRONIC COMMUNICATION SYSTEMS Practical course	--	50	-	-	2	1	
			MINOR	Minor (Computer Science)	50	50	3	-	-	3	
				Minor (Computer Science) Practical course	--	50	-	-	2	1	

4	IV		MAJOR	ELECTRICAL AND ELECTRONIC INSTRUMENTATION	50	50	3	-	-	3
				ELECTRICAL AND ELECTRONIC INSTRUMENTATION Practical Course	--	50	-	-	2	1
			MAJOR	MICRO CONTROLLER SYSTEM	50	50	3	-	-	3
				MICRO CONTROLLER SYSTEM Practical Course	--	50	-	-	2	1
			MAJOR	MICROPROCESSOR SYSTEMS	50	50	3	-	-	3
				MICROPROCESSOR SYSTEMS Practical Course	--	50	-	-	2	1
			MINORS	<b>Minor 1</b> (Computer Science)	50	50	3	-	-	3
				<b>Minor 1</b> (Computer Science) Practical course	--	50	-	-	2	1
			MINORS	<b>Minor 2</b> (Computer Science)	50	50	3	-	-	3
				<b>Minor 2</b> (Computer Science) Practical course	--	50	-	-	2	1

## MOJOR – 1 QUESTION BANK

Govt (A) college

Essentials - Mathematics

Question Bank.

Essays:

1. If  $x + iy = \frac{1}{1 + \cos\theta + i\sin\theta}$  Then show that

$$4x^2 - 1 = 0.$$

2. If the points whose position vectors are  $3\bar{i} - 2\bar{j} - \bar{k}$ ,  $2\bar{i} + 3\bar{j} - 4\bar{k}$ ,  $-\bar{i} + \bar{j} + 2\bar{k}$ ,  $4\bar{i} + 5\bar{j} + \lambda\bar{k}$  are coplanar then show that  $\lambda = \frac{-146}{17}$

3. Find The Mean of The following distribution

K.I	60-62	63-65	66-68	69-71	72-74
Frequency	15	118	142	127	18.

V.Sa's

1. find  $\sin^{-1} 60^\circ + \cos^{-1} 60^\circ$

2. If  $\sec\theta + \tan\theta = 5$ , Then find  $\sec\theta - \tan\theta$

3. Find the multiplicative Inverse of  $3-5i$

4. find  $\cos 42^\circ + \cos 78^\circ + \cos 162^\circ$

5. find The Mean of 40, 50, 45, 35, 25

6. Find The Median of 11, 15, 16, 14, 11, 13, 12, 14, 15, 16

7. find The Mode of 1, 2, 3, 4, 4, 4, 5, 6, 7, 4

8. Write The formulae for median grouped data

9. If The vectors  $2\bar{i} + \lambda\bar{j} - \bar{k}$  and  $4\bar{i} - 2\bar{j} + 2\bar{k}$

are perpendicular to each other find the value of  $\lambda$ .

10. If  $4\vec{i} + \frac{2p}{3}\vec{j} + p\vec{k}$  is parallel to the vector  $\vec{i} + 2\vec{j} + 3\vec{k}$ , find the value of 'p'

I Matching:

- |                    |     |  |
|--------------------|-----|--|
| 1. $\sin 60^\circ$ | ( ) | a) $\frac{1 - \tan^2 A}{1 + \tan^2 A}$ |
| 2. $\tan 90^\circ$ | ( ) | (b) $\frac{2 \tan A}{1 + \tan^2 A}$    |
| 3. $\sin 2A$       | ( ) | (c) $\frac{1}{2}$                      |
| 4. $\cos 2A$       | ( ) | (d) $\infty$                           |
|                    |     | (e) $\frac{\sqrt{3}}{2}$               |

II

- |                                       |     |                      |
|---------------------------------------|-----|----------------------|
| 1. $2 + \sqrt{5}i$ additive inverse   | ( ) | (a) 30               |
| 2. $3 + 4i$ conjugate complex         | ( ) | (b) 4                |
| 3. The mode of 4, 4, 5, 4, 4, 6, 4, 1 | ( ) | (c) $-2 - \sqrt{5}i$ |
| 4. The mean of 30, 40, 20, 10, 50     | ( ) | (d) $3 - 4i$         |
|                                       |     | (e) $2 - \sqrt{5}i$  |

Application of maths

1. prove that (i)  $\sin A \sin(60+A) \sin(60-A) = \frac{1}{4} \sin 3A$  and hence deduce that  $\sin \frac{\pi}{9} \sin \frac{2\pi}{9} \sin \frac{3\pi}{9} \sin \frac{4\pi}{9} = \frac{3}{16}$

2. find the mode for the following data

C.I	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
f	5	8	7	12	28	20	10	10

## PHYSICS Unit-2

### Section A

#### Essay type answer Questions

1. State and explain Newton's Laws of motion
2. Explain about laws of thermodynamics and their significance
3. Explain various theories in understanding of Universe

### Section B

#### One Sentence answer type Questions

1. What are the basic units?
2. Write two main domains of physics
3. State first law of thermodynamics
4. Give significance of 2<sup>nd</sup> law of thermodynamics
5. Write failures of Newtonian Mechanics
6. Write a short note on Relativistic Mechanics
7. What are acoustic waves?
8. What are electromagnetic waves?
9. Define electromagnetic induction
10. State uncertainty principle

### Section C

#### Match the following

##### Column 1

1. Energy
2. Microscopic domain
3. Second Law of Thermodynamics
4. Electro-Magnetic Induction

##### Column 2

- ( ) a. Quantum Mechanics
- ( ) b. Generator
- ( ) c. Joule
- ( ) d. Refrigerator

Column 1	Column 2
5. Electron	( ) a. smallest unit of matter
6. Proton	( ) b. Negative
7. Neutron	( ) c. Neutral
8. Atom as a whole	( ) d. Positive

#### Unit-4

#### SECTION-A

1. How physics helps in environmental monitoring?
2. Write the applications of chemistry in Material Science.

#### SECTION-B

1. Integrated circuit industry is mainly based on which the principles ?  
Ans: Solid state Physics
2. Development of high-performance electronic components and Nano scale devices requires the essential knowledge on \_\_\_\_\_(Quantum Mechanics)
3. Which principles help in designing robots with the desired range of motion, speed, and accuracy?(Kinematics and Dynamics)
4. An Application of Physics in automotive industry is \_\_\_\_\_ (Braking systems for improved stability, handling, and safety)
5. An Application of Physics in aerospace industry is \_\_\_\_\_( To design aircraft that can take off, maneuver, and land safely and efficiently.)
6. Write two types of calculus.

Ans:1. Differential Calculus 2. Integral Calculus

7. If we take the derivative of a function and then take the integral of it, we get \_\_\_\_\_(The same given function)
8. Give one physics problem that involves the application of differential equations

Ans: Newton's laws of motions and laws of thermodynamics

9. Give two application of chemistry in material science

Ans: To synthesis and fabricate various new materials and Material design and modifications

10. Write one application of complex analysis

Ans:To analyze sound waves in in speech recogniti

## Unit III Chemistry

### Essays

1. what are the branches in chemistry & give its significance.
2. Define Carbohydrate & explain its classification.

### VSAQs

1. Give an example for physical change & chemical change.
2. What are Write the Electronic configuration of chromium.
3. What are water soluble & fat soluble vitamins.
4. Write any two functions of proteins.
5. Define Homogeneous & Heterogeneous mixtures.
6. Write the Structure of glucose.
7. What are Disaccharides.
8. What is peptide bond.
9. Write a note on vitamin B12.
10. Write a note on vitamin K.
11. Write any two application of food and beverages industries.
12. Write any two application of medicinal chemistry.

#### Column I

- i). Proteins
- ii). Carbohydrates
- iii). Lipids
- iv). Nucleic acids
- v) vitamin B1

#### Column II

- a. Monosaccharides ( d)
- b. Triglycerides ( a)
- c. Nucleotides ( b)
- d. Amino acids ( c)
- e. thiamine ( e)

2. Match the following

#### Column I

- (A) Vitamin B1
- (B) Vitamin B2
- (C) Vitamin B12
- (D) Vitamin B6
- (E) Vitamin E

#### Column II

- (i) Convulsions
- (ii) Pernicious anaemia
- (iii) Beri beri
- (iv) Cheilosis
- v) anemia

(A) → (iv), (B) → (iii), (C) → (i), (D) → (ii), (E) → v

## Major 1 : Computers

### Essay answer questions

1. Explain milestones of computer evolution
2. Explain the types of networks
3. Explain the basics of cryptography including the differences between symmetric and asymmetric encryption.

### One Word Question &Answers

1. what is VLSI ?
2. what is two example of 3<sup>rd</sup> generation of computer?
3. what is TCP ?
4. ICMP is used for communication
5. What is encryption?
6. what is firewalls
7. what is VPN
8. what type of firewall operates as an intermediary between two systems?
9. what is the system that translates human-readable domain names into numerical IP addresses?
10. What is IP address?

### Match The Following:

#### Matching - I

- |                      |     |                            |
|----------------------|-----|----------------------------|
| 1. First Generation  | (d) | a. Artificial Intelligence |
| 2. Second Generation | (c) | b. Magnetic Tapes          |
| 3. Third Generation  | (b) | c. Punched Cards           |
| 4. Fourth Generation | (e) | d. Machine Language        |
| 5. Fifth Generation  | (a) | e. Microprocessor          |

#### Matching – II

- |         |     |                                  |
|---------|-----|----------------------------------|
| 1. TCP  | (b) | a. Dynamic Host Control Protocol |
| 2. VPN  | (d) | b. Transmission Control Protocol |
| 3. DHCP | (a) | c. User Datagram Protocol        |
| 4. UDP  | (c) | d. Virtual Private Network       |

GOVERNMENT COLLEGE (A), RAJAHMUNDRY  
 PAPER;M : ADVANCES IN MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCE  
 QUESTION BANK  
 Section A  
 Mathematics major-2

Advances - maths  
 Question - Bank.

Essays

1. Show That  $2x - 3y - 2z = 0$ ,  $2x + y - 3z = 0$ ,  $3x + 2y - 2z = 0$   
 here are concurrent.
2. Evaluate  $\int \sqrt{1 - \sin 2x} \cdot dx$
3. Show That  $\begin{vmatrix} a+b+c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} = (a+b+c)^3$

v.s.a :-

1. Find  $\frac{d}{dx} (e^{3x})$
2. Find  $\frac{d}{dx} (\sin 2x)$
3. Find The  $\int (x^4 + \cos x) dx$
4. Evaluate  $\int \frac{dx}{9+x^2}$
5. Evaluate  $\lim_{x \rightarrow 0} \frac{\sin 2x}{x}$
6. Evaluate  $\lim_{x \rightarrow 1} \frac{x^4 - 1}{x^3 - 1}$
7. Evaluate  $\lim_{x \rightarrow 0} \frac{e^{7x} - 1}{x}$
8. slope intercept formulae
9. If  $A = \begin{bmatrix} 1 & 2 \\ 1 & 3 \end{bmatrix}$   $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  Then find  $AI$
10. If  $A = \begin{bmatrix} 1 & 2 \\ 1 & 3 \end{bmatrix}$  Then find  $A^{-1}$

www.solasmarine.com

are perpendicular to each other find the value of  $\lambda$ .

10. If  $4\vec{i} + \frac{2p}{3}\vec{j} + p\vec{k}$  is parallel to the vector  $\vec{i} + 2\vec{j} + 3\vec{k}$ , find the value of 'p'

I Matching:

- |                    |     |  |
|--------------------|-----|--|
| 1. $\sin 60^\circ$ | ( ) | a) $\frac{1 - \tan^2 A}{1 + \tan^2 A}$ |
| 2. $\tan 90^\circ$ | ( ) | (b) $\frac{2 \tan A}{1 + \tan^2 A}$    |
| 3. $\sin 2A$       | ( ) | (c) $\frac{1}{2}$                      |
| 4. $\cos 2A$       | ( ) | (d) $\infty$                           |
|                    |     | (e) $\frac{\sqrt{3}}{2}$               |

II

- |                                       |     |                      |
|---------------------------------------|-----|----------------------|
| 1. $2 + \sqrt{5}i$ additive inverse   | ( ) | (a) 30               |
| 2. $3 + 4i$ conjugate complex         | ( ) | (b) 4                |
| 3. The mode of 1, 4, 5, 4, 4, 6, 4, 1 | ( ) | (c) $-2 - \sqrt{5}i$ |
| 4. The mean of 30, 40, 20, 10, 50     | ( ) | (d) $3 - 4i$         |
|                                       |     | (e) $2 - \sqrt{5}i$  |

Application of maths

1. prove that (i)  $\sin A \sin(60+A) \sin(60-A) = \frac{1}{4} \sin 3A$  and hence deduce that  $\sin \frac{\pi}{9} \cdot \sin \frac{2\pi}{9} \cdot \sin \frac{3\pi}{9} \cdot \sin \frac{4\pi}{9} = \frac{3}{16}$

9. find the mode for the following data

C.I	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
f	5	8	7	12	28	20	10	10

## Physics major-2

### Essay type answer Questions

1. Write about different Renewable Energy resources and energy storage methods?
2. Explain about Quantum communication?
3. What are the recent advances in medical Physics?

### Section B

#### One Sentence answer type Questions

1. What is the primary advantage of solar photovoltaic technology in renewable energy?
2. How does a pumped hydro storage system function as an energy storage device?
3. What is nanotechnology?
4. What is the significance of quantum dots in nanotechnology?
5. What distinguishes quantum communication from classical methods?
6. What is the significance of artificial intelligence in medical physics applications?
7. In what way have radiation therapy techniques advanced in medical physics?
8. How has advanced fluorescence microscopy contributed to recent breakthroughs in biophysics?
9. What role does single-cell biophysics play in understanding cellular heterogeneity?
10. How do recent advancements in magnetic resonance techniques contribute to studying biological systems?

### Section C

#### Matching type Questions

I. Match the renewable energy technology with its application:

- |                        |  |
|------------------------|--|
| 1. Photovoltaic cells  | A. Heating buildings and water               |
| 2. Wind turbines       | B. Producing electricity in remote areas     |
| 3. Hydropower plants   | C. Generating electricity from sunlight      |
| 4. Solar water heaters | D. Harnessing wind energy                    |
| 5. Biomass generators  | E. Converting flowing water into electricity |

Ans: 1C, 2.D, 3.E 4.A , 5.B

II. Match the medical imaging technique with its description:

- |                                       |   |
|---------------------------------------|---|
| 1. Magnetic Resonance Imaging (MRI)   | A. Uses X-rays to create detailed cross- sectional images   |
| 2. Computed Tomography (CT)           | B. Utilizes strong magnetic fields and radio waves          |
| 3. Ultrasound                         | C. Provides real-time imaging using sound waves             |
| 4. Positron Emission Tomography (PET) | D. Visualizes metabolic activity in the body                |
| 5. Nuclear Medicine                   | E. Produces three-dimensional images of internal structures |

Ans : 1B, 2.A 3.C 4. E 5.D

### Unit -4

#### I. Essays questions

1. Explain nano medicine and write applications?
2. Write a note on solid waste management?
3. Write a note on environmental remediation?

#### II. One word Sentence answer type Questions

1. Energy \_\_\_\_\_ technologies play a crucial role in smoothing out fluctuations in renewable energy generation (Storage)

2. Grid \_\_\_\_\_ refers to the ability of a power system to accommodate and manage large amounts of renewable energy. (Integration)
3. \_\_\_\_\_ converters are used to convert DC power from solar panels or wind turbines into AC power for the grid.( Inverters )
4. \_\_\_\_\_ resources like batteries and pumped hydro storage can store excess energy for later use.( Energy)
5. Smart grids use advanced \_\_\_\_\_ and control systems to improve the efficiency and reliability of the electrical grid. (Technology)
7. \_\_\_\_\_ is a key aspect of a smart grid, allowing utilities to better respond to changes in supply and demand.(Demand response)
8. Nanomedicine involves the application of \_\_\_\_\_ and nanotechnology to the field of medicine.(Nano Particles)
9. Nanoparticles can be engineered to carry drugs directly to the \_\_\_\_\_ of disease. ( Site)
10. Fluorescence \_\_\_\_\_ is a method used to visualize cellular structures and molecules in living organisms. ( Microscopy)
11. Scanning \_\_\_\_\_ microscopy is a technique that allows for high-resolution imaging of surfaces. ( tunnelling)
12. The study of the mechanical aspects of living organisms is known as \_\_\_\_\_( bio mechanics)
13. In neurophysics, the \_\_\_\_\_ equation describes how electrical signals propagate along neurons. (cable)
14. \_\_\_\_\_ is the process by which neurons adjust their sensitivity to incoming signals based on the level of stimulation. (plasticity)
15. Radiation therapy may be used as a \_\_\_\_\_ treatment or in combination with other treatments like surgery or chemotherapy. ( primary)

-----

**III match the following**

- |                         |     |   |
|-------------------------|-----|---|
| 1. Smart Grid           | ( ) | a) A localized group of interconnected loads and distributed energy resources that can operate independently from the traditional grid. |
| 2. Frequency Regulation | ( ) | b) A system that allows utilities to communicate with and control various elements of the electrical grid in real-time.                 |
| 3. Energy Storage       | ( ) | c) The ability to change electricity usage in response to signals indicating a need to reduce demand.                                   |
| 4. Microgrid            | ( ) | d) The ability of a power system to match generation and consumption in real-time.  |

ANS) 1. c 2. B 3. D 4. A 5. E

- |   |     |   |
|---|-----|---|
| 1. Demand Response                        | ( ) | a) Real-time monitoring and control devices that provide synchronized measurements of the power grid.                                   |
| 2. Advanced Metering Infrastructure (AMI) | ( ) | b) Technology that allows utilities to adjust electricity usage in response to grid conditions or pricing signals.                      |
| 3. Distribution Automation                | ( ) | c) A system that enables two-way communication between utilities and customers, providing detailed information about electricity usage. |
| 4. Energy Efficiency                      | ( ) | d) Implementing technologies to improve the use of electricity, reduce waste, and conserve energy.                                      |
| 5. Phasor Measurement Units (PMUs)        | ( ) | e) Automation of the distribution system, including devices that can automatically re-route power and isolate faults.                   |

Ans) 1) B 2). C 3). E 4). D )5. A

**Advances in Chemistry**

**Unit III & IV**

**MAJOR-2**

**10M Essays**

1. What is Computer aided drug design and Delivery?
2. What are Nano sensors?
3. Explain the impact of Chemical pollutants on human health
4. Explain the impact of Chemical pollutants on ecosystem
5. what is chemical biology?

**VSAQs. 1M**

1. What is QSAR?
2. What is Pharmacophore modelling ?
3. What are the types of Nano sensors include?
4. What is Chemical Biology?
5. What is Chemical Genetics?
6. What is Chemical pollutants on Ecosystem?
7. What is Heterogeneous Catalysis?
8. Explain Biodiversity loss Impact of Chemical pollutants on Ecosystem?
9. Write any two Applications of Nano sensors ?
10. Write advantages for dye removal?
11. What is bio orthogonal chemistry?
12. What is Fenton's Reaction?

**1. Match the following**

**Part A**

1. Particle size of Nano sensor
2. Semiconductor of CNT
3. Rolled of carbon lattice
4. Carbon bonding in CNT
5. Gaseous chemicals

**part B**

- a) nickel ( e )
- b) CO<sub>2</sub> ( a )
- c) covalent ( b )
- d) SWCNT ( c )
- e) 10- 200nm ( d )

**2. Match the following**

**Part A**

1. CADD ( C )
2. intradermal ( e )
3. Nano sensors development ( a )
4. Emil fisher proposed by ( b )
5. catalyst ( d )

**part B**

- a) tiny particles of 10- 100nm
- b) lock and key model
- c) applied to the majority Of drug
- d) rate of reaction
- e) drugs and injected into the top layer of the skin

## Major 2 : Computers

### Essay answer questions

1. Classification of number system
2. Explain the transmission media
3. Explain the network devices

### Short answer questions

1. Which number system is foundational for computer science and digital electronics?  
A. Binary
2. Conversion of Octal number (540)<sub>8</sub> to binary number ?  
A. (101100000)<sub>2</sub>
3. what Speed of data transmission in 4G network of telecom ?  
A. 100 mbps to 1 gbps.
4. what is the primary function of a modem ?  
A. Converting analog signals to digital signals
5. What is the primary function of a codec ?  
A. multiplexing and demultiplexing signals
6. what is the purpose of the parity bit in parity check ?  
A. to indicate the presence of errors in the data
7. what types of errors can parity check detect ?  
A. both single-bit and burst errors
8. what is the primary purpose of a repeater?  
A. Signal amplification and extension
9. what is the primary function of a gateway ?  
A. Protocol translation and network interconnectivity
10. what do routers use to determine the best path for data packets to travel ?  
A. internet protocol (IP) addresses

### Following Matchings

#### Matching - I

- |                   |     |                                     |
|-------------------|-----|-------------------------------------|
| 1. Modem          | (c) | a. continuity                       |
| 2. Analog         | (a) | b. Bluetooth                        |
| 3. Codec          | (d) | c. modulation-demodulation          |
| 4. Wireless media | (b) | d. multiplexing and de multiplexing |

#### Matching – II

- |        |     |                                 |
|--------|-----|---------------------------------|
| 1. MAC | (c) | a. Local area network           |
| 2. LAN | (a) | b. Internet protocol            |
| 3. WWW | (d) | c. media access control address |
| 4. IP  | (b) | d. world wide web               |

**GOVERNMENT COLLEGE (A), RAJAHMUNDRY**  
**I B.Sc Honors – I SEM (Dec 2023)**  
**CourseII: Advances in Mathematical, Physical and Chemical Sciences**  
**Model Paper**

---

**Time: 2 Hr. 30 Min.**

**MAX MARKS: 50M**

**SECTION - A**

**Answer any Three of the following Essays**

**3x10= 30M**

Transform  $x + y - 2 = 0$

1. i) Slope Intercept form ii) Normal form
2. Write about different Renewable Energy resources and energy storage methods?
3. What is Computer aided drug design and Delivery?
4. Write a note on solid waste management?
5. Explain the network devices?

**SECTION - B**

**Answer All of the following Very Short Answers questions**

**12x1= 12M**

1. Find  $\frac{d}{dx} e^x =$
2. Find  $\frac{d}{dx} \sin 3x$
3. If  $A = \begin{bmatrix} 1 & 2 \\ 1 & 3 \end{bmatrix}$  Then find out  $A^{-1}$
4. write the slope intercept formula?
5. Energy \_\_\_\_\_ technologies play a crucial role in smoothing out fluctuations in renewable energy generation
6. \_\_\_\_\_ resources like batteries and pumped hydro storage can store excess energy for later use.
7. Nanoparticles can be engineered to carry drugs directly to the \_\_\_\_\_ of disease.
8. \_\_\_\_\_ is the process by which neurons adjust their sensitivity to incoming signals based on the level of simulation.
9. What is QSAR
10. What is Chemical Biology?
11. Write any two Applications of Nano sensors ?
12. What is Fenton's Reaction?

**SECTION - C**

**Answer All of the following Matching questions**

**2x4=8M**

**1. Match the following**

- |                        |     |  |
|------------------------|-----|--|
| 1. Photovoltaic cells  | ( ) | a. Heating buildings and water               |
| 2. Wind turbines       | ( ) | b. Converting flowing water into electricity |
| 3. Hydropower plants   | ( ) | c. Generating electricity from sunlight      |
| 4. Solar water heaters | ( ) | d. Harnessing wind energy                    |

**2. Match the following**

- |                   |     |                                     |
|-------------------|-----|-------------------------------------|
| 1. Modem          | ( ) | a. continuity                       |
| 2. Analog         | ( ) | b. Bluetooth                        |
| 3. Codec          | ( ) | c. modulation-demodulation          |
| 4. Wireless media | ( ) | d. multiplexing and de multiplexing |

## **Fundamental of Electricity and Electronics QUESTION BANK**

### **UNIT-I: Electrostatics**

#### **Essay Questions:**

1. Explain Coulomb's law and derive the expression for the electric field due to a point charge. (Understanding - Level 2)
2. Derive an expression for electric intensity and potential due to a uniformly charged conducting sphere at a point outside, on, and inside the conductor. (Applying - Level 3)
3. State and prove Gauss's law. Discuss its application to a uniformly charged solid sphere. (Analyzing - Level 4)
4. Define an electric dipole. Derive expressions for the electric field and potential due to a dipole at any point. (Applying - Level 3)

#### **Short Answer Questions:**

1. State Coulomb's law and its significance. (Remembering - Level 1)
2. Define electric potential and its unit. (Remembering - Level 1)
3. What are the properties of a conductor in electrostatic equilibrium? (Understanding - Level 2)
4. Write a short note on the concept of electric field intensity. (Understanding - Level 2)

### **UNIT-II: Capacitors**

#### **Essay Questions:**

1. Derive the expression for the capacitance of a parallel plate capacitor with and without a dielectric medium. (Applying - Level 3)
2. Discuss the energy stored in a capacitor and derive an expression for energy loss when two capacitors share charge. (Analyzing - Level 4)
3. Explain the working and applications of a Kelvin's attracted disc electrometer. (Understanding - Level 2)
4. Compare different types of capacitors and their applications in electrical circuits. (Analyzing - Level 4)

#### **Short Answer Questions:**

1. Define capacitance and give its SI unit. (Remembering - Level 1)
2. What is the effect of a dielectric on capacitance? (Understanding - Level 2)
3. Differentiate between capacitors connected in series and parallel. (Understanding - Level 2)
4. What is the principle behind an electrolytic capacitor? (Understanding - Level 2)

### **UNIT-III: Electrical Measurements & Magnetic Effects of Current**

#### **Essay Questions:**

1. Explain Carey-Foster bridge and describe its application in determining specific resistance. (Applying - Level 3)
2. Derive the Biot-Savart's law and explain its application in determining the magnetic field due to a current-carrying conductor. (Applying - Level 3)
3. Explain the principle, construction, and working of a ballistic galvanometer. (Understanding - Level 2)
4. How is the figure of merit of a ballistic galvanometer measured? Explain the process in detail. (Applying - Level 3)

#### **Short Answer Questions:**

1. What is a potentiometer? How is it used for calibration? (Understanding - Level 2)
2. State Biot-Savart's law. (Remembering - Level 1)
3. Define the figure of merit of a ballistic galvanometer. (Remembering - Level 1)

4. What is the force experienced by a current-carrying conductor in a magnetic field?  
(Understanding - Level 2)

#### **UNIT-IV: Diode Circuits and Power Supplies**

##### **Essay Questions:**

1. Explain the working of a half-wave and full-wave rectifier with diagrams and derive the expressions for efficiency and ripple factor. (Applying - Level 3)
2. Describe the characteristics of a Zener diode and explain how it is used in voltage regulation. (Understanding - Level 2)
3. Explain the working of a bridge rectifier and discuss the importance of filter circuits. (Applying - Level 3)
4. What are clipper and clamper circuits? Discuss their operation using circuit diagrams. (Analyzing - Level 4)

##### **Short Answer Questions:**

1. What is the function of a rectifier? (Remembering - Level 1)
2. What are the advantages of a bridge rectifier over a half-wave rectifier?  
(Understanding - Level 2)
3. Define ripple factor and efficiency of a rectifier. (Remembering - Level 1)
4. What are the differences between a clipper and a clamper circuit? (Understanding - Level 2)

#### **UNIT-V: Transistor Circuits and Logic Gates**

##### **Essay Questions:**

1. Explain the working of a transistor in CB and CE configurations with input and output characteristics. (Applying - Level 3)
2. Describe the construction and working of an RC coupled single-stage amplifier. (Applying - Level 3)
3. Explain Thevenin's and Norton's theorems with examples. (Understanding - Level 2)
4. How are basic logic gates constructed using diodes and transistors? Explain with circuit diagrams. (Applying - Level 3)

##### **Short Answer Questions:**

1. What are the differences between CB and CE configurations? (Understanding - Level 2)
2. Define h-parameters in a transistor. (Remembering - Level 1)
3. What is the significance of a frequency response curve in an amplifier?  
(Understanding - Level 2)
4. Draw the truth tables for AND, OR, and NOT gates. (Remembering - Level 1)

**CIRCUIT THEORY AND ELECTRONIC DEVICES**  
**QUESTION BANK**  
**ESSAYS**

**UNIT-1**

1. Define alternating current? And explain average value, effective (R.M.S) values.?(BT1)
2. Explain about Phase relation of R,L and C in alternating current?

**UNIT-2**

1. State and prove Superposition Theorem? (BT1)
2. State and prove Thevenin's Theorem? (BT1)
3. State and prove Norton's Theorem? (BT1)
4. State and prove Maximum Power? (BT1)
5. State and prove Milliman and Reciprocity theorems? (BT1)

**UNIT-3**

1. 1.Explain LCR series resonance circuit and derive the resonating frequency of it? (BT2)
2. Explain LCR parallel resonance circuit and derive the resonating frequency of it? (BT2)

**UNIT-4**

1. Explain the Construction, working, of BJT? (BT1)
2. Explain characteristics of CE Configurations of BJT? (BT1)
3. Explain the Construction, working, of JFET? (BT2)
4. Explain the Construction, working, of MOSFET? (BT2)
5. Explain about UJT as relaxation oscillator? (BT2)

**UNIT-5**

1. Explain construction and working of Half wave rectifier and derive the expression for its efficiency? (BT2)
2. Explain construction and working of Fullwave rectifier and derive the expression for its efficiency? (BT2)
3. Explain construction and working about I.C. regulators 78XX? (BT3)
4. Explain construction and working about I.C. regulators 79XX? (BT3)

## Short answer questions

### UNIT-1

1. Write any 3 differences between A.C & D.C? (BT3)
2. Write the advantages of Alternating current? (BT3)
3. Define Voltage and current with their units? (BT1)

### UNIT-2

1. Explain star to delta conversion? (BT1)
2. Explain about delta to star conversion? (BT1)
3. Write the differences between star and delta conversion? (BT3)

### UNIT-3

1. Write the difference between Integrator and differentiator circuits? (BT3)
2. Define Q – Factor and write the expression for Q- factor of LCR Series circuit?(BT3)
3. Distinguish LCR Series and parallel resonance? (BT3)
4. Explain the Frequency response of RC circuits? (BT2)
5. Explain the Frequency response of LR circuits? (BT1)
6. Explain Passive differentiating circuits? (BT3)
7. Explain about integrating circuits? (BT2)

### UNIT-4

1. Write the Advantages of FET over BJT? (BT3)
2. Explain Hybrid parameters of transistor? (BT1)
3. Explain about hybrid equivalent circuit of CE Transistor?

### UNIT-5

1. Distinguish Half and full wave rectifier? (BT3)
2. Define ripple factor and write the values of ripple factors of full and half wave rectifier? (BT1)
3. Explain L section filters? (BT2)
4. Explain  $\pi$  section filters? (BT3)
5. Explain Light Emitting Diode? (BT1)
6. Explain about Photo diode? (BT2)
7. Explain about and LDR? (BT 3)

Government College (A) Rajahmundry  
II B.Sc Electronics (H)..... Semester -3  
Course- 5-Semiconductor materials and devices-2024-25  
Question Bank (w.e.f 2024-25)

**Essays Questions**

1. Explain briefly about energy bands in a semiconductor with a neat diagram. (BL2)
2. Describe briefly about the injection and recombination of the excess carriers?.(BL2)
3. What are high speed effects in semiconducting materials?(BL2)
4. Write about the metal semiconductor contact rectifiers and non rectifiers in semiconductors?  
(BL1)
5. Explain about MESFET structure and working?(BL3)
6. Explain about Metal Insulator Semiconductor (MIS) structures ?(BL2)
7. Explain about the ideal MOS capacitors with diagrams?(BL2)
8. Explain about MOSFET construction, classification and working?.(BL2)
9. How semiconductor material works as charge coupled devices(CCD)?(BL3). 10. Describe about the working, construction and applications of laser diode? (BL2)
11. Write a note on Quantum dots? (BL1)
12. Explain how carbon nano tubes(CNT) are working and constructed? (BL3)
13. Derive an expression for the frequency response of the RC coupled amplifiers.(BL2)
14. Write a note on carbon nanotube?.(BL1)

**SAQs**

1. 15. The intrinsic carrier density is  $1.5 \times 10^{16} \text{ m}^{-3}$ . If the mobility of electron and hole are  $0.13$  and  $0.05 \text{ m}^2 \text{ V}^{-1} \text{ s}^{-1}$ , calculate the conductivity.(BL3)
2. 16. Explain avalanche breakdown in a semiconductor? (BL1)
3. 17. Draw IV characteristics of MIS structures?(BL2)
4. Draw C-V characteristics of MIS structures?(BL2)
5. Write about short channel effects in MIS structure?.(BL2)
6. Write the applications of MOSFET in VLSI?(BL3)
7. 21. Semiconductor diode laser has a peak emission wavelength of  $1.55 \mu\text{m}$ . Find its band gap in eV.(BL3)
8. 22.. Write a short note on solar cell?(BL1)
9. Explain how photo diode works as photo detector?(BL3)
10. 24 explain about the working of LED with a neat diagram?(BL2)
11. 25.. Explain about the working of BJT in high frequencies? (BL2)
12. 26. Describe briefly about nano rods (BL4)

**II B.Sc. SEMESTER – III**  
**(MAJOR) COURSE 5: DIGITAL ELECTRONICS**  
**{for 2023-2027 Batch (w.e.f. 2024-2025)}**  
**QUESTION BANK**

Time: 21/2 Hrs.

Max. Marks: 50

**UNIT-I**

**ESSAY QUESTIONS:**

1. Explain in detail about BCD Code?
2. Explain the conversion of Decimal to Binary and binary to decimal with an example.
3. Explain 1's & 2's Complement of a number in binary system with example. Explain 2's complement method of subtraction by suitable example

**SHORT ANSWER QUESTIONS:**

4. Explain Excess-3 code with an example.
5. Subtract 11001 from 10101 using 2's complement method
6. Explain the process of converting BCD to Excess-3 code

**UNIT-II**

**ESSAY QUESTIONS:**

7. State and prove De-Morgan's laws
8. Explain in detail about 3 variable karnaugh map method to simplify logic Expression.

**SHORT ANSWER QUESTIONS:**

9. Prove the Boolean identity  $(AB + C)(AB + D) = AB + CD$
10. Explain how AND, OR and NOT gates are realized from NAND & NOR gates.
11. Explain SOP?

**UNIT-III**

**ESSAY QUESTIONS:**

12. Explain the operation of a full adder circuit with its truth table.
13. Explain the working of TTL NAND Gate circuit with its truth table.
14. Design 4: 1 Multiplexer & explain it with diagram.

**SHORT ANSWER QUESTIONS:**

15. Write down differences between CMOS and TTL logic families.
16. Explain the working of Demultiplexer (1:4) with its truth table.
17. Explain Encoder.

**UNIT-IV**

**ESSAY QUESTIONS:**

18. Describe the working of Master slave JK flip-flop with its truth table.
19. Draw the circuit diagram of decade counter and explain its operation. Draw its timing diagram.
20. Define counter? Explain Differences between Asynchronous and Synchronous counter.

**SHORT ANSWER QUESTIONS:**

21. Explain the operation of RS flip – flop with truth table
22. Design and explain Mod-8 counter
23. Explain Synchronous 4-bit counter

**UNIT-V**

**ESSAY QUESTIONS:**

24. Explain the operation of ROM
25. Explain the operation of Dynamic RAM

**SHORT ANSWER QUESTIONS:**

26. Distinguish between RAM and ROM
27. Write a note on PROM
28. Write a note on EPROM

**DEPARTMENT OF PHYSICS**

**II B.Sc, ELECTRONICS (HONS) – SEM III (COURSE-8)**

**TITLE OF THE PAPER: ELECTRONIC COMMUNICATION SYSTEM**

**QUESTION BANK**

**Unit-I: Antennas**

**Essay Questions:**

1. Describe the characteristics and applications of different types of antennas (dipole, folded dipole, Yagi-Uda, helical, discone, parabolic dish).
2. Explain the concepts of directive gain, beam width, and polarization in antennas.
3. Discuss the propagation mechanisms of ground waves, sky waves, and space waves.
4. Describe the working principle of an Array antenna.
5. Describe the working principle of a Yagi-Uda antenna.

**Short Questions:**

1. Define antenna gain and directivity.
2. What is the difference between beam width and bandwidth?
3. Explain polarization in antennas.
4. What is skip distance in radio propagation?

**Unit-II: Modulation**

**Essay Questions:**

1. Explain the need for modulation and its types.
2. Describe the generation and detection circuits for Amplitude Modulation.
3. Compare and contrast DSB/SC, SSB, and VSB modulation techniques.
4. Discuss the block diagram and working principle of an AM radio transmitter and superheterodyne receiver.

**Short Questions:**

1. Define modulation index and its significance.
2. What is the difference between balanced and unbalanced modulation?
3. Explain the working principle of a balanced modulator.
4. Describe the advantages of SSB modulation.
5. What is the purpose of the mixer stage in a superheterodyne receiver?

**Unit-III: Frequency Modulation**

**Essay Questions:**

1. Derive the expression for the modulated wave in Frequency Modulation.
2. Describe the generation of FM using varactor diodes and reactance tubes.
3. Explain the working principle of FM detectors (balanced slope, Foster Seeley, ratio).
4. Discuss the block diagram and working principle of an FM transmitter and receiver.

**Short Questions:**

1. Define frequency deviation and its significance.
2. What is the difference between narrowband and wideband FM?
3. Explain the working principle of a varactor diode modulator.
4. Describe the advantages of FM over AM.
5. What is the purpose of the limiter stage in an FM receiver?

#### **Unit-IV: Pulse Modulation**

##### **Essay Questions:**

1. Explain the sampling theorem and its significance in Pulse Modulation.
2. Describe the principles of PAM, PWM, and PCM.
3. Discuss quantizing, sampling, coding, and decoding in PCM.
4. Compare and contrast delta modulation and adaptive delta modulation.

##### **Short Questions:**

1. Define sampling rate and its significance.
2. What is the difference between PAM and PWM?
3. Explain quantization error in PCM.
4. Describe the working principle of a delta modulator.
5. What is the purpose of coding in PCM?

#### **Unit-V: Multiplexing and Communication Systems**

##### **Essay Questions:**

1. Explain the principles of FDM, TDM, and CDMA.
2. Describe the advantages of digital communication over analog.
3. Discuss the basics of microwave, fiber optic, and satellite communications.
4. Explain the working principle of RADAR and its range equation.

##### **Short Questions:**

1. Define multiplexing and its types.
2. What is the difference between ASK, FSK, and PSK?
3. Explain the concept of bandwidth in communication systems.
4. Describe the working principle of a satellite transponder.
5. What is the purpose of the mixer stage in a microwave receiver?

II B.Sc -(electronics)- Semester-IV  
Electrical and electronic instrumentation 2024-25

Question bank

**Unit 1**

**Essays**

1. Explain the types of errors?(BT-1)
2. Explain pMMc galvanometer?(BT-2)
3. Explain how to convert the galvanometer into voltmeter by using shunt resistance?(BT-1)
4. Explain how to convert the galvanometer into ammeter by using shunt resistance?(BT-2)
5. Explain how to convert galvanometer into shunt type ohmmeter?(BT-3)

**Unit -2**

1. .Derive the balancing condition of kelvin's bridge?(BT-12)
2. Derive balancing condition for maxwells bridge?(BT-3)
3. Derive the balancing condition for Schering bridge?(BT-2)
4. Derive an expression for the balancing condition of weins bridge?(BT-2)
5. Derive an expression resonating frequency of weins bridge?(BT-2)

**Unit-3**

1. Explain the working of oscilloscope using block diagram?(BT-1)
2. Explain measurement of frequency, time intervals and phase differences using oscilloscope?(BT-3)
3. Explain the construction and working of digital storage oscilloscope? (BT-2)

**Unit4**

1. Explain the working of multimeter with a neat block diagram?(BT-2)
2. Explain the construction and working of a function generator?(BT-2)
3. What is a digital voltmeter explain its working with the help of block diagram?(BT-1)

**Unit5**

1. Explain the working of a LVDT with the help of block diagram?(BT-2)
2. What is seven segment display and explain its working?(BT-2)
3. What is a resistance thermometer and how it is used to measure temperature? (BT-3)

SAQ

**Unit 1.**

1. Define accuracy and precision ?.(BT-1)
2. Distinguish voltmeter and ammeter(BT-3)
3. Write a short note on multimeter?(BT-1)

**Unit2**

1. Differentiate between DC and ac bridges?(BT-2)
2. Derive the Balance in condition of wheatstone bridge? (BT-2)

**Unit-3**

1. Write a short note on sampling oscilloscope?(BT-2)
2. Explain deflection sensitivity?(BT-1)
3. Write applications of oscilloscope?(BT-1)
4. Write a short note on electrostatic focusing?(BT-2)

**Unit-4**

1. Write the applications of spectrum analyser?(BT-3)
2. Write the applications of multimeter? (BT-3)

**Unit-5**

1. Write the applications of 7 segment display?(BT-2)
2. Write a short note on photoelectric transducer?(BT-1)
3. Explain about audio tape recorders briefly?(BT-2)
4. Write a short note on LCD?(BT-2)

Government college(A), Rajahmundry  
II B.Sc -(elctronics)- Semester-IV  
MICRO CONTROLLER SYSTEMS

2024-25

**Question bank**

**ESSAY ANSWER TYPE QUESTIONS**

**UNIT-I**

1. Give the differences between microprocessor and micro controller.
2. Write a short note on assembler, compiler and simulator/debugger in 8051.
3. Explain Evolution of Microcontroller.

**UNIT-II**

1. Draw and explain the architecture of 8051.
2. Explain pin diagram of 8051
3. Explain memory organization, register banks and stack in 8051.

**UNIT-III:**

1. Write about addressing modes and accessing memory using various addressing modes in 8051.
2. Explain instruction set and their usage in 8051.
3. Explain in detail about timer/counter programming in 8051.

**UNIT-IV**

1. Explain addition, multiplication, subtraction, division each with an example.
2. Write a program to arrange given set of numbers in largest order.

**UNIT-V**

1. Draw and explain the interfacing of Seven segment displays
2. Draw and explain the interfacing of DAC with 8051
3. explain control of a stepper Motor.

**SHORT ANSWER TYPE QUESTIONS**

**UNIT-I**

1. Explain 8-bit Microcontrollers in 8051.
2. Write a note on .development tools
3. Describe compiler and simulator/debugger in 8051.

**UNIT-II**

1. Explain Data types and directives.
2. Explain in detail PSW register.
3. Draw the pin diagram of 8051.
4. Explain about interrupts in 8051.

### **UNIT-III**

1. What are the Addressing modes present in 8051 and explain them.
2. How to access the memory using various addressing modes?
3. Explain the jump, loop and call instructions.
4. What is Counter Programming in 8051?

### **UNIT-IV**

1. Write a program on smallest of an array of four 8-bit numbers.
2. Write a program on subtraction of two 8-bit numbers.
3. Write a program on Multiplication of two 8-bit numbers.

### **UNIT-V:**

1. Write LCD advantages over LED.
2. Write a note on LM34?
3. Draw the diagram of interfacing LCD with 8051
4. Write timing diagram of read and write LCD.

Government college(A), Rajahmundry  
II B.Sc -(electronics)- Semester-IV  
**Microprocessor systems 2024-25**  
Question bank

**Essay Questions**

**Unit-I**

1. Draw the block diagram of 8085 microprocessors and explain terms in it
2. Explain the pin configuration of 8085 microprocessor
3. Draw and Explain the architecture of 8086 microprocessors in detail.

**Unit-II**

1. Explain data transfer and logical instruction set of 8085 with examples?
2. Explain Arithmetic and Branch instruction set of 8085 with examples?
3. Explain Machine control instruction set of 8085 with examples?

**Unit-III**

1. Write an ALP for BCD to ASCII in 8085.
2. Write an Assembly language program for Addition of Two 16 bits numbers
3. write an assembly programming in find a largest number in array of 8bit numbers

**Unit-IV**

1. Explain the Serial Communication interfaces.
2. Explain minimum mode and maximum mode of 8086 microprocessors.

**Unit-V**

1. Explain the Arm architecture with the help of neat diagram.
2. Explain about ARM processor instruction set.

**Short Answer Questions**

**Unit-I**

1. Write a short note on Register organization of 8085 microprocessors.
2. Write a note on Addressing modes 8086 Microprocessor

**Unit-II**

1. Discuss about arithmetic set of instructions.
2. Discuss about Logical set of instructions

**Unit-III**

1. Write an ALP for subtraction of two 8 bit numbers.
2. Write an ALP for Multiplication of two 8 bit numbers

**Unit-IV**

1. write a short note on addressing modes of 8086 microprocessors.
2. Discuss about parallel communication.

**Unit-V**

1. Explain about ARM based MCUs.
2. Write a short note on ARM Processor.

**EMBEDDED SYSTEMS**  
**III B Sc(MPE), VI th Semester**

**QUESTION BANK:**

**Unit1:-**

- Essays: 1. Explain Design Technology  
2. Explain Processor Technology.  
3. Explain IC Technology

- Short Answers: 1. Explain and briefly about Embedded Systems.  
2. Explain Design Challenge.

**Unit2:-**

- Essays: 1. Explain Custom Single Purpose Processor Design.  
2. Explain R T Level Custom Single Purpose Processor.

- Short Answers: 1. Explain Combinational logic circuits.  
2. Explain Sequential Logic circuits.

**Unit3:-**

- Essays: 1. Explain Debugging Techniques.  
2. Explain General Purpose Processor Software Development Environment.

- Short Answers: 1. Explain Linker/Locators for Embedded Systems.  
2. Explain Instruction set Simulators.  
3. Explain Host and Target Machines.

**Unit4:-**

- Essays: 1. Explain UART  
2. Explain Pulse Width Modulation.  
3. Explain Analog to Digital Converters.

- Short Answers: 1. Explain Counters Watchdog Timers.  
2. Explain Stepper Motor Controllers.  
3. Explain Real Time Clocks.

**Unit5:-**

- Essays: 1. Explain Serial Protocols  
2. Explain Parallel Protocols.  
3. Explain Wireless Protocols.

- Short Answers: 1. Explain Firewire.  
2. Explain IrDA & Bluetooth.

## **Question Bank**

### **Unit-I**

#### **ESSAY QUESTIONS**

1. Explain the block diagram of microwave oven
2. Sketch and explain the LCD timer with alarm.
3. Explain Wiring and Safety instructions of microwave oven.

#### **SHORT ANSWER QUESTIONS**

4. Explain Types of Microwave oven.
5. Explain Care and Cleaning.
6. Explain Single-Chip Controllers with the help of diagrams.
7. Discuss about the ranges that are used in Microwave ovens.

### **Unit-II**

#### **ESSAY QUESTIONS**

1. Explain the block diagram of electronic controller for washing machines.
2. Discuss about washing machine hardware and software.
3. Explain Fuzzy logic washing machines.

#### **SHORT ANSWER QUESTIONS**

4. Explain types of washing machines.
5. Describe the features of washing machines.

### **Unit-III**

#### **ESSAY QUESTIONS**

1. Describe various components of air conditioning systems.
2. Explain All water air conditioning systems.
3. Explain All air conditioning systems.

#### **SHORT ANSWER QUESTIONS**

4. Explain Modularly and central air conditioning systems.
5. Describe Split air conditioners.

#### **Unit-IV**

##### **ESSAY QUESTIONS**

1. Describe Calculator? Explain the structure of a calculator
2. Explain Internal Organization of a calculator.
3. Draw the Block diagram of a digital clock. Explain each block.

##### **SHORT ANSWER QUESTIONS**

4. Describe Xerographic copier.
5. Explain Facsimile machine.
6. Discuss about Digital clock.
7. Describe how electronic calculators can be serviced.

#### **Unit-V**

##### **ESSAY QUESTIONS**

1. Discuss about Digital computer in detail.
2. Describe about the Barcode scanner and decoder.
3. Explain how electronic fund transfer can be done.
4. Illustrate online ticket reservation.

##### **SHORT ANSWER QUESTIONS**

5. Illustrate Automated Teller Machines (ATMs).
6. Explain Set-Top boxes.
7. Explain Digital cable TV and Video on demand.
8. Describe how to access Internet.

Dr.P.V.S.S.S.N.REDDY

