

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Sixth Semester)

Branch – ELECTRONICS

MEDICAL ELECTRONICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 What is the resting membrane potential of a typical neuron?
(i) +30 mV (ii) -90 mV
(iii) 0 mV (iv) -70 mV
- 2 Which type of transducer converts linear displacement into an electrical signal?
(i) Pressure transducer (ii) Temperature transducer
(iii) Displacement transducer (iv) Photoelectric transducer
- 3 The device is commonly used for indirect measurement of blood pressure?
(i) Sphygmomanometer (ii) Stethoscope
(iii) Thermometer (iv) Plethysmograph
- 4 Which of the following is used to detect brain electrical activity?
(i) ECG (ii) EMG
(iii) EEG (iv) EKG
- 5 Identify the imaging technique that uses sound waves to produce images?
(i) X-ray (ii) MRI
(iii) Ultrasonic Imaging (iv) CAT

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Explain the concept of the threshold potential in action potential generation.
OR
b Describe the characteristics of an ideal electrode for biopotential measurements.
- 7 a Explain the principle of operation of a linear variable differential transformer (LVDT) as a displacement transducer.
OR
b Classify position transducer and motion transducer.
- 8 a Describe the methods used to measure respiration rate and their respective advantages.
OR
b Classify arterial and venous plethysmography in terms of methodology.
- 9 a Discuss the significance of different EEG wave patterns (alpha, beta, theta, delta) in neurological assessments.
OR
b Explain the principle behind microwave diathermy and its therapeutic applications in medicine.

Cont...

- 10 a Explain the basic principles of Computer Axial Tomography (CT) and its significance in medical imaging.
OR
b Describe the different types of echocardiography (transthoracic, transesophageal, and Doppler).

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Discuss the working principle of piezoelectric transducer with suitable diagram.
OR
b Discuss the different types of surface electrodes and their uses.
- 12 a Describe the working principle of a photoelectric sensor and its common applications in automation.
OR
b What are biosensors, and how do they differ from traditional sensors? Provide an example of a biosensor application.
- 13 a Describe how the Doppler ultrasound technique is used to measure blood flow.
OR
b Explain the significance of heart sounds and how they are recorded using a stethoscope.
- 14 a Explain the basic functioning of a cardiac pacemaker and its role in managing arrhythmias.
OR
b Discuss the uses of surgical diathermy in operative procedures and the benefits it offers to surgeons..
- 15 a Discuss the mechanism of X-ray production and how X-rays interact with human tissues.
OR
b Outline the basic principles of MRI, including the role of magnetic fields and radiofrequency pulses.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – ELECTRONICS

MAJOR ELECTIVE COURSE – I COMPUTER HARDWARE AND NETWORKING

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Who is the father of Computers?
a) James Gosling b) Charles Babbage
c) Dennis Ritchie d) Bjarne Stroustrup
- 2 Components that provide internal storage to the CPU are _____
a) Registers b) Program Counters
c) Controllers d) Internal chips
- 3 These devices provide a means of communication between a computer and outer world.
a) I/O b) Storage
c) Compact d) Drivers
- 4 What is internet?
a) A network of interconnected local area networks
b) A collection of unrelated computers
c) Interconnection of wide area networks
d) A single network
- 5 FTP stands for _____?
a) File Transmission program b) File Transmission protocol
c) File Transfer protocol d) File Transport process

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Discuss about motherboard.
 OR
b Write a short note about SMPS.
- 7 a Explain about memory packages.
 OR
b What is FDD? Briefly explain its operations.
- 8 a Write a short note about mouse and its functions.
 OR
b Briefly explain about printer, and its applications.

Cont....

- 9 a List out the different types of servers.
OR
b Classify the different types of networks.
- 10 a Explain about Bridges.
OR
b Discuss about firewalls.

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

- 11 a How do personal computers impact modern society?
OR
b What are the key components of a personal computer, and how do they work together?
- 12 a What are the different types of storage devices used in computers, and how do they differ?
OR
b How do storage devices impact computer performance?
- 13 a What are the primary functions of input and output devices in a computer system?
OR
b What is VGA, and how does it function as a display standard?
- 14 a What are network protocols, and why are they essential for computer networks?
OR
b Explain about characteristics of network.
- 15 a What are the challenges and considerations in application development for different platforms
OR
b Discuss about NIC and its applications.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch – ELECTRONICS

WEB DESIGNING USING JAVASCRIPT

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 How do you assign values to variables in JavaScript?
(i) Using the : operator (ii) Using the = operator
(iii) Using the -> operator (iv) Using the => operator
- 2 How many types of operators are there in JavaScript?
(i) 2 (ii) 3
(iii) 4 (iv) 5
- 3 What is the term used for naming an array in JavaScript?
(i) Identifier (ii) Variable
(iii) Index (iv) Element
- 4 What is the term used for naming a function in JavaScript?
(i) Variable (ii) Parameter
(iii) Identifier (iv) Argument
- 5 What method is used to change frames in JavaScript?
(i) navigateFrame() (ii) ChangeFrame()
(iii) SwitchFrame() (iv) SetFrame()

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Mention how to link java Script with a HTML Document.
OR
b What is a Variable? Mention the Rules for defining a Variable with example.
- 7 a Write the purpose of Enter Loop and Exit Loop.
OR
b Describe Switch case Statement in Java Script with example.
- 8 a Define Array and how to create arrays in JavaScript.
OR
b Analyze the concept of associative arrays in JavaScript.
- 9 a What are the functions in Java Script and how are they structured?
OR
b Differentiate call by value and call by reference.
- 10 a Describe the different types of Validation in Java Script.
OR
b How do you access and change frame in a website?

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Discuss the History of JavaScript and its uses.
OR
b Create a Framework for login page using HTML and JavaScript.
- 12 a Classify the Different Types of Operators in JavaScript.
OR
b Examine the syntax and functionality of conditional statements in JavaScript.
- 13 a Enumerate the process of accessing elements of an array in JavaScript with an example.
OR
b Enumerate the properties and methods of the array object in detail.
- 14 a Outline how to declare the code function in Java Script with an example.
OR
b Describe how to create HTML pages with Java Script using functions.
- 15 a Explain Form object in JavaScript with its properties and methods.
OR
b Discuss about String Handling in Java Script.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – ELECTRONICS

8051 MICROCONTROLLER

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 Which architecture is used by the 8051 microcontroller?
(i) Harvard Architecture (ii) Von Neumann Architecture
(iii) RISC Architecture (iv) CISC Architecture
- 2 What is the primary role of the Program Counter (PC) in 8051?
(i) To store data temporarily
(ii) To point to the next instruction to be executed
(iii) To control input/output ports
(iv) To store immediate data
- 3 Which out of the four ports of 8051 needs a pull-up resistor for using it as an input or an output port?
(i) PORT 0 (ii) PORT 1
(iii) PORT 2 (iv) PORT 3
- 4 An alternate function of port pin P3.1 in the 8051 is:
(i) serial port input (ii) serial port output
(iii) memory write strobe (iv) memory read strobe
- 5 What is the step angle of a typical 4-phase stepper motor?
(i) 0.9 degrees (ii) 1.8 degrees
(iii) 7.5 degrees (iv) 10 degrees

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Why is it called a microcontroller? List the key features of the 8051 microcontroller.
OR
b Define Embedded system. What are examples of embedded systems?
- 7 a Indicate the function of the PSW flag bits in 8051 microcontroller.
OR
b Explain the purpose and usage of LCALL and ACALL instructions with an example.
- 8 a Express the function of different modes of timer and counter in the 8051 microcontroller.
OR
b Write a C program to blink an LED connected to P1.0 of 8051 microcontroller.

Cont...

- 9 a Sketch the baud rate and its significance in serial communication.
OR
b Classify the different types of interrupts available in the 8051 microcontroller.
- 10 a List the commands required to initialize an LCD in 4-bit mode with the 8051 microcontroller.
OR
b Outline the steps required to interface a temperature sensor with the 8051 microcontroller.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Draw and explain the block diagram of the 8051 microcontroller.
OR
b Discuss the various addressing modes supported by the 8051 microcontroller. Provide examples for each mode.
- 12 a Explain the working of the Program Counter and how it interacts with ROM during program execution.
OR
b Describe the register bank organization of the 8051. How is the appropriate register bank selected during execution?
- 13 a Draw and point out the pin description of the 8051 microcontroller.
OR
b Write an 8051 C program to toggle only bit P1.5 continuously every 50ms. Use Time 0, 16-bit mode to generate the delay. $f=11.0592\text{Hz}$.
- 14 a Analyze the functions and bit contents of SCON and PCON registers.
OR
b Discuss the RS-232 hand shaking signals and specify the purpose of MAX – 232 while interfacing in 8051MC.
- 15 a Sketch the simple keyboard interface with port of 8051. Show the scanning and identifying the key pressed.
OR
b Design a circuits and working of stepper motor interface with 8051 microcontroller. Outline the 4 Step sequence, step angle and steps per revolution.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – ELECTRONICS

INDUSTRIAL AUTOMATION

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Which of the following contains programs in order to instructions to the control Unit?
(i) Memory Unit (ii) Input Module
(iii) Output Module (iv) Power Supply
- 2 What type of programming language is typically used to program a PLC?
(i) C++ (ii) Ladder Logic
(iii) Java (iv) Python
- 3 What is the function of a PLC's high-speed counter?
(i) To count the number of pulses from a sensor
(ii) To measure the speed of a motor
(iii) To monitor the frequency of a signal
(iv) All of the above
- 4 What is the use of JMP instruction in PLC?
(i) Cascading two programs (ii) Changing the program
(iii) Changing the instruction (iv) Causing PLC to skip over rungs
- 5 Which of the following is NOT a component of the SCADA system?
(i) Master terminal Unit (ii) Graphical terminal unit
(iii) Remote terminal unit (iv) Communication network

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a List the major classification of I/O modules
OR
b Differentiate between discrete and analog operations of a PLC.
- 7 a Give list of any four relay type instructions with their symbols.
OR
b Write short note on sensors.
- 8 a What is the time instructions of a PLC?
OR
b Define cascading timer.

Cont...

- 9 a What are subroutine functions in PLC?
OR
b List out are the four data transfer instructions with example.
- 10 a Describe the file arithmetic operators
OR
b List different editors used in SCADA.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Draw a neat block diagram of PLC and describe the working of its parts.
OR
b Explain the sinking and sourcing concept in PLC input output module.
- 12 a Write different PLC programming language, explain any one with suitable example.
OR
b Draw memory organization of PLC. Explain function of any two element of organization.
- 13 a Draw a symbol of OFF delay timer instruction.
OR
b Describe the working of Up counter with neat diagram and wave form.
- 14 a Write Jump instruction format and explain their function in detail.
OR
b Explain the data compare instruction and give an example.
- 15 a Describe the structure of control systems in detail.
OR
b Draw basic architecture of SCADA and explain in brief.

Z-Z-Z

END

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)**

Branch – **ELECTRONICS**

ELECTRONIC COMMUNICATION - II

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(5 x 1 = 5)

1. What is the word used by TV engineers for one complete scanning from left to right and top to bottom and then again to the top?

i) Picture frame	ii) Picture image
iii) Picture video	iv) Picture audio
2. What allow microwave to pass in only one direction ?

i) RF emitter	ii) Capacitor	iii) varactor	iv) Ferrite emitter
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3. The fundamental parameter of a single mode fiber is

i) core and cladding diameter	ii) Mode fiber diameter
iii) Cladding diameter	iv) Buffer coating diameter
4. The satellite communication has -----a number of components.

i) 1	ii) 2	iii) 3	iv) 4
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5. Which of the following is a type of wireless communication?

i) LAN	ii) WAN	iii) PAN	iv) All of the mentioned
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SECTION - B (15 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks

(5 x 3 = 15)

6. a) Describe the term "aspect ratio".
OR
b) State the concepts of composite video signal.
7. a) List out the advantages of wave guide.
OR
b) Explain the efficiency of helical antenna in detail.
8. a) Illustrate the application and benefits of fiber.
OR
b) Analyze the term passive optical network.
9. a) Explain the geo synchronous orbit in detail.
OR
b) Write about GPS.
10. a) Discuss about wireless LAN standards.
OR
b) Explain the IrDA system with diagrams.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 x 6 = 30)

11. a) Explain the 3 color theory in TV system.
OR
b) Discuss the HDTV with diagrams.
12. a) Enumerate about magnetron and its applications.
OR
b) Discuss in detail about parabolic antenna with diagrams.
13. a) Explain the principle and construction of fiber optic cable.
OR
b) Discuss about optical transmitters and receivers.
14. a) Explain the transmitter sub system with neat sketch.
OR
b) Discuss in detail about GPS receivers.
15. a) Explain the RFID architecture in detail.
OR
b) What is WiMAX and Wi-Fi? Explain with neat diagrams.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch – ELECTRONICS

PYTHON PROGRAMMING AND APPLICATIONS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Which is not a reserved keyword in Python?
(i) Insert (ii) Pass
(iii) Class (iv) Lambda
- 2 Which keyword is used to define the block of statement in the function?
(i) Function (ii) def
(iii) func (iv) pi
- 3 What will be the output of len ({ 4,5,7,9})
(i) 5 (ii) 4
(iii) 7 (iv) 9
- 4 Which of the following data types does not belong to Python?
(i) String (ii) Tuple
(iii) Dictionary (iv) Structure
- 5 Which of the following is incorrect when we use the binary files?
(i) Image files (ii) Text files
(iii) exe files (iv) Non-Text files

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a How can we distinguish between tuples and lists?
OR
b How will you create a dictionary in Python?
- 7 a Explain the advantages of using a function in Python.
OR
b How are parameters passed in Python?
- 8 a Analyze traversing of strings. Give one example.
OR
b How are the values of a list accessed?

Cont...

- 9 a How are the values in a tuple accessed?
OR
b Explain different operations performed on the dictionary.
- 10 a Explain the various attributes of the file object.
OR
b Explain the syntax for reading from a file?

SECTION -C (30 Marks)

Answer ALL questions
ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a Discuss operators in Python
OR
b Discuss string operations in Python.
- 12 a Write a function which accepts three numbers and returns their multiplication.
OR
b Explain the following: i. Function calls ii. Parameters and Arguments
- 13 a Write a Python program to reverse a list.
OR
b Discuss about string formatting operator with an example program.
- 14 a Examine built-in dictionary methods with examples.
OR
b Write a function called 'sumall' that takes any number of arguments and returns their sum
- 15 a Summarize the various directories in Python. Explain with examples.
OR
b Write a Python program to demonstrate exception handling.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch – ELECTRONICS

POWER ELECTRONICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

1. _____ is used in the rotating type UPS system to supply the mains.
 - a) DC motor
 - b) Self excited DC generator
 - c) Alternator
 - d) Battery bank
2. Which of the following can be easily be welded from flash butt welding process?
 - a) Tin
 - b) Lead
 - c) Cast irons
 - d) Carbon steel
3. Which of the following is the most popular method for measuring low resistance?
 - a) ducer ohmmeter method
 - b) kelvin double bridge method
 - c) ammeter-voltmeter method
 - d) potentiometer method
4. Inductive transduction involves _____
 - a) change in self inductance
 - b) change in capacitance
 - c) change in mutual inductance
 - d) change in resistance
5. Which type of PCB requires minimum soldering on component side in order to avoid replacement oriented difficulties?
 - a) Single-sided PCB
 - b) Double-sided PCB
 - c) Both a and b
 - d) None of the above

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Explain about Circuit breaker.
OR
b Discuss about static DC switch
- 7 a Describe the function about Resistance welding.
OR
b State the function about Sequence timer.
- 8 a Write a short note about application Ultrasonic waves.
OR
b Illustrate the function of Turbine.
- 9 a Classify the function of thermistor.
OR
b Discuss the function about Warehouse.
- 10 a Explain about Ink drawing.
OR
b Justify the term Etching.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a Draw & explain the characteristics of Static switches.
OR
b Classify the function of TRIAC.
- 12 a Describe the function of Ignitron contactor.
OR
b Design the circuit of Dielectric heating system and explain in details.
- 13 a Discuss about generation of Ultrasonic waves.
OR
b Explain about pressure gauge mamometer.
- 15 a Design the circuit of Layout preparation and explain.
OR
b Write a note on component mounting

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch - **ELECTRONICS**

ELECTRIC CIRCUITS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Relation between power, voltage and conductance is _____ a) $V = P^2 \cdot G$ b) $V = P^2 / G$ c) $P = v^2 / G$ d) $P = V^2 \cdot G$	K1	CO1
	2	In which of the following cases is Ohm's law not applicable? a) Electrolytes b) Arc lamps c) Insulators d) Vacuum ratio values	K2	CO1
2	3	In superposition theorem, when we consider the effect of one voltage source, all the other voltage sources are _____ a) Shorted b) Opened c) Removed d) Undisturbed	K1	CO2
	4	According to Millman's Theorem, if there are n voltage sources with n internal resistances respectively, are in parallel, then these sources are replaced by? a) single current source I' in series with R' b) single voltage source V' in series with R' c) single current source I' in parallel to R' d) single voltage source V' in parallel to R'	K2	CO2
3	5	The response of a second order system is? a) pulse b) saw tooth c) square d) sinusoid	K1	CO3
	6	The current in the R-L circuit at a time $t = 0^+$ is? a) V/R b) R/V c) V d) R	K2	CO3
4	7	What is the power factor in a pure resistive circuit? a) 0 b) -1 c) Infinity d) 1	K1	CO4
	8	Q-factor is also known as _____ magnification. a) Voltage b) Current c) Resistance d) Impedance	K2	CO4
5	9	A polyphase system is generated by _____ a) Having two or more generator windings separated by equal electrical angle. b) Having generator windings at equal distances c) None of the above d) a and c	K1	CO5
	10	The wattmeter method is used to measure power in a three-phase load. The wattmeter readings are 400W and -35W. Find the power factor. a) 0.43 b) 0.53 c) 0.63 d) 0.73	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the term "voltage" in detail.	K2	CO1
		(OR)		
	11.b.	Demonstrate the Ohm's law with an example.		
2	12.a.	Select mesh analysis method and compare with nodal analysis method and explain.	K3	CO2
		(OR)		
	12.b.	Apply Norton's theorem to a circuit give the output.		
3	13.a.	Construct a sine wave and explain its properties.	K3	CO3
		(OR)		
	13.b.	Build a parallel RL circuit and explain its working.		
4	14.a.	Compare apparent power and reactive power and list its differences.	K4	CO4
		(OR)		
	14.b.	Analyze the variation of impedance with frequency and explain.		
5	15.a.	List the advantages of 3 phase system.	K4	CO5
		(OR)		
	15.b.	Examine the power measurement in 3 phase circuits and list out its process.		

SECTION - C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Analyze the working of resistors when connected in series and parallel with examples.	K4	CO4
2	17	Examine the operation of Millman's theorem and write the important points.	K4	CO5
3	18	Compare the phase relation in pure resistor and inductor and list the similarities.	K4	CO4
4	19	Give a conclusion on the effects of bandwidth in Q-factor.	K4	CO5
5	20	Analyze and give a report on how to measure power in a single-phase circuit by wattmeter?	K4	CO4

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch- **ELECTRONICS**

SEMICONDUCTOR DEVICES

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	A Semiconductor is formed by _____ bonds. (i) Covalent (ii) Electrovalent (iii) Co-ordinate (iv) Silicon	K1	CO1
	2	An n-type semiconductor is _____. (i) Positively charged (ii) Negatively charged (iii) Electrically Neutral (iv) Both (i) and (ii)	K2	CO1
2	3	A pn junction acts as a _____. (i) Controlled switch (ii) Bidirectional Switch (iii) Unidirectional Switch (iv) None	K1	CO2
	4	Zener diodes are used primarily as _____. (i) Amplifiers (ii) Voltage regulators (iii) Rectifiers (iv) Oscillator	K2	CO2
3	5	A Transistor has _____. (i) One pn junction (ii) Two pn junction (iii) Three pn junction (iv) Four pn junction	K1	CO3
	6	A MOSFET has _____ terminal. (i) Two (ii) Five (iii) Four (iv) Three	K2	CO3
4	7	_____ is a diode that gives off visible light when forward biased. (i) LED (ii) LCD (iii) LDR (iv) Photo diode	K1	CO4
	8	A Photo-diode is normally (i) Forward biased (ii) Reverse biased (iii) Neither forward nor reverse biased (iv) Emitting light	K2	CO4
5	9	A junction diode which acts as a variable capacitor under chaging reverse bias _____. (i) Photo diode (ii) Tunnel diode (iii) Varactor diode (iv) Shockley diode	K1	CO5
	10	A diac is _____ switch. (i) AC (ii) DC (iii) A mechanical (iv) None	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the Energy band.	K2	CO1
		(OR)		
	11.b.	Discuss the Intrinsic semiconductor.		
2	12.a.	Explain the Ideal diode	K3	CO2
		(OR)		
	12.b.	Explain the Zener Diode as voltage regulator.		
3	13.a.	Comparison between CB,CC, CE Configurations.	K3	CO3
		(OR)		
	13.b.	Illustrate the Transistor as a switch.		
4	14.a.	Summaries the working function of Seven segment display.	K4	CO4
		(OR)		
	14.b.	Discuss the opto isolators.		
5	15.a.	Discuss the Varactor diode.	K4	CO5
		(OR)		
	15.b.	Analyze the DIAC operations.		

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Discuss about N-type semiconductor	K4	CO3
2	17	Explain the PN Junction diode and draw its V-I Characteristics.	K4	CO3
3	18	Discuss the Depletion type MOSFET.	K4	CO3
4	19	Analyze the characteristics of LED.	K4	CO3
5	20	Discuss the UJT and draw it's characteristics.	K4	CO3

Z-Z-Z END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch - **ELECTRONICS**

MATHEMATICS I FOR ELECTRONICS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Question No.	Question	K Level	CO
1	A square matrix A is said to be symmetric about the principal diagonal if _____. a) $a_{ij} = -a_{ji}$ b) $a_{ij} = a_{ji}$ c) All diagonal elements are equal to 1 d) All elements below the diagonal are zero	K1	CO2
2	In a square matrix $A = [a_{ij}]$ if $a_{ij} = \overline{a_{ji}}$ then that matrix A is called the _____. a) Hermitian matrix b) Skew-Hermitian matrix c) unitary matrix d) Orthogonal matrix	K2	CO2
3	What is the value of $\cosh^2 x - \sinh^2 x$? a) 0 b) $\cosh 2x$ c) $\sinh 2x$ d) 1	K1	CO1
4	What is the expansion of $\cos n\theta$? a) $\cos^n \theta + n_{C_2} \cos^{n-2} \theta \sin^2 \theta + \dots$ b) $\cos^n \theta - n_{C_2} \cos^{n-2} \theta \sin^2 \theta + \dots$ c) $-\cos^n \theta - n_{C_2} \cos^{n-2} \theta \sin^2 \theta - \dots$ d) $\cos^n \theta + n_{C_2} \cos^{n-3} \theta \sin^3 \theta + \dots$	K2	CO1
5	Identify the value of $\int_0^{\frac{\pi}{2}} \cos^7 x \, dx$? a) $\frac{48\pi}{105}$ b) $\frac{38\pi}{105}$ c) $\frac{48}{105}$ d) $\frac{38}{105}$	K1	CO4
6	If $f(x)$ is an even function then $\int_{-a}^a f(x) dx =$ _____. a) $2 \int_0^a f(x) dx$ b) 0 c) 1 d) $-2 \int_0^a f(x) dx$	K2	CO4
7	Identify the value of $\int_0^3 \int_0^2 \int_0^1 (x + y + z) dz \, dx \, dy$. a) 9 b) 10 c) 12 d) 18	K1	CO4
8	Which one of the following is the limit of x (x as constant limit) when evaluating $\iint (x + y)^2 \, dx \, dy$ over the area bounded by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$? a) $x = -a$ to $x = a$ b) $x = a$ to $x = 0$ c) $x = 0$ to $x = a$ d) $x = a$ to $x = b$	K2	CO4
9	Which of the following is the direct method? a) Gauss-Seidal method b) Gauss-Elimination method c) Gauss-Jacobi method d) both (b) and (c)	K1	CO5
10	The rate of convergence of Gauss-Seidal method is roughly _____ that of Gauss-Jacobi method. a) twice b) Equal to c) Faster than d) Half	K2	CO5

Cont....

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Question No.	Question	K Level	CO
11.a.	If $A = \begin{bmatrix} 3 & -4 \\ 1 & 1 \\ 2 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 1 & 2 \\ 1 & 3 & 4 \end{bmatrix}$, show that $(AB)' = B'A'$.	K3.	CO1
	(OR)		
11.b.	Find the eigenvalues and eigenvectors of the matrix $= \begin{bmatrix} 4 & 1 \\ 3 & 2 \end{bmatrix}$.		
12.a.	Show that $\frac{\sin 6\theta}{\sin \theta} = 32 \cos^5 \theta - 32 \cos^3 \theta + 6 \cos \theta$.	K4	CO2
	(OR)		
12.b.	If $\sin(A + iB) = x + iy$, prove that $\frac{x^2}{\cos^2 A} + \frac{y^2}{\sin^2 A} = 1$ and $\frac{x^2}{\cos^2 B} - \frac{y^2}{\sin^2 B} = 1$.		
13.a.	Evaluate $\int x^4 \cos 2x \, dx$ using reduction formula.	K4	CO4
	(OR)		
13.b.	Evaluate $\int_0^{\frac{\pi}{2}} \sin^m x \cos^n x \, dx$.		
14.a.	Evaluate $\int_0^a \int_0^{\sqrt{ax-x^2}} x^2 dy \, dx$.	K3	CO2
	(OR)		
14.b.	Evaluate $\int_0^a \int_0^x \int_0^{x+y} e^{x+y+z} dz \, dy \, dx$.		
15.a.	Solve the following equations by Gauss-Jordan method: $2x - 3y + z = -1$; $x + 4y + 5z = 25$; $3x - 4y + z = 2$.	K5	CO5
	(OR)		
15.b.	Solve by Gauss-elimination method the equations $2x + y + 4z = 12$; $8x - 3y + 2z = 20$; $4x + 11y - z = 33$.		

SECTION - C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Question No.	Question	K Level	CO
16	Verify Cayley-Hamilton theorem and hence find the inverse for $\begin{pmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1 \end{pmatrix}$.	K4	CO1
17	Prove that $\sin^8 \theta = \frac{1}{27} [\cos 8\theta - 8 \cos 6\theta + 28 \cos 4\theta - 56 \cos 2\theta + 35]$.	K5	CO1
18	(i) Evaluate $\int_0^{\frac{\pi}{2}} \frac{\sin^n x}{\sin^n x + \cos^n x} dx$ (ii) Evaluate $\int \tan^6 x \, dx$ using reduction formula.	K4	CO4
19	Change the order of integration and then evaluate $\int_0^1 \int_{x^2}^{2-x} xy \, dy \, dx$.	K4	CO4
20	Solve the following equations using Gauss-Jacobi method, correct to three decimal places: $x + 17y - 2z = 48$; $30x - 2y + 3z = 75$; $2x + 2y + 18z = 30$.	K5	CO5

Z-Z-Z END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Second Semester)

Branch - **ELECTRONICS**
ELECTRONIC CIRCUITS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	If input frequency is 50Hz then ripple frequency of half wave rectifier is _____ a) 100 Hz b) 50 Hz c) 25 Hz d) 500 Hz	K1	1
	2	What is IC 723? a) A voltage regulator b) A full-wave rectifier c) A half-wave rectifier d) A clipper	K2	1
2	3	BJT is biased to _____ a) Work as a switch b) Prevent thermal runaway c) Increase DC collector current d) Operate it in the saturation region	K1	2
	4	What is the purpose of RC or transformer coupling? a) To block a.c. b) To separate bias of one stage from another c) Increase Efficiency d) Increase thermal stability	K2	2
3	5	_____ is the efficiency of Class A amplifier. a) 30 or less b) 50 or less c) 100 d) 75	K1	3
	6	In _____ region the Q point lie for class B amplifier. a) Active b) Cut off c) Saturation d) all	K2	3
4	7	Voltage shunt feedback amplifier forms _____ feedback. a) A negative b) A positive c) Both (a) and (b) d) None	K1	4
	8	Negative feedback reduces _____ a) gain b) noise c) distortion d) all	K2	4
5	9	_____ is not an LC oscillator. a) Hartley Oscillator b) Colpitts oscillator c) Crystal oscillator d) Clapp oscillator	K1	5
	10	What happens if the threshold voltages are made longer than the noise voltages in schmitt trigger? a) All the mentioned b) Enhance the output signal c) Reduce the transition effect d) Eliminate false output transition	K2	5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

ALL questions carry EQUAL Marks (5 x 7 = 35)				
Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain about the working of half wave rectifier in detail.	K2	1
	(OR)			
	11.b.	Demonstrate the LC filter with example.		
2	12.a.	Select CE amplifier and compare with CB amplifier and explain.	K3	2
	(OR)			
	12.b.	Apply frequency to an amplifier circuit give its response.		
3	13.a.	Construct a class A amplifier and explain its properties.	K3	3
	(OR)			
	13.b.	Build a push pull amplifier circuit and explain its power relation.		
4	14.a.	Compare positive feedback and negative feedback and list its differences.	K4	4
	(OR)			
	14.b.	Analyze the variations in current and voltage feedback amplifier circuits.		
5	15.a.	List the advantages of Hartley oscillator.	K4	5
	(OR)			
	15.b.	Examine the operation of Bi-stable multivibrator and list out its process.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Analyze the working of LC filter with examples.	K4	1
2	17	Examine the operation of multistage amplifier and write the important points.	K4	2
3	18	Compare the class B and Class C amplifier and list the differences.	K4	3
4	19	Give a conclusion on the effects of distortion and noise in amplifier.	K4	4
5	20	Analyze and give a report on how UJT is used as relaxation oscillator?	K4	5

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Second Semester)

Branch - **ELECTRONICS**

MATHEMATICS - II

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	A function $f(x)$ is said to be even if _____ (a) $f(x) = 0$ (b) $f(x) = 1$ (c) $f(-x) = f(x)$ (d) $f(-x) = -f(x)$	K1	CO1
	2	$a_0 =$ _____ in the half – range cosine series in $(0, \pi)$ (a) $\frac{2}{\pi} \int_0^\pi f(x) dx$ (b) $\frac{1}{\pi} \int_0^\pi f(x) dx$ (c) $\frac{2}{\pi} \int_0^\pi f(x) \cos nx dx$ (d) $\frac{1}{\pi} \int_0^\pi f(x) \cos nx dx$	K2	CO1
2	3	The differential equation of all spheres whose center lie on the $x -$ axis is _____ (a) $x + yp = 0$ (b) $y + zq = 0$ (c) $yp + z = 0$ (d) $x + zq = 0$	K1	CO2
	4	The solution of $\frac{\partial z}{\partial y} = \sin x$ is (a) $\cos x + f(x)$ (b) $-\cos y + f(x)$ (c) $-\cos x + f(y)$ (d) $\cos y + f(x)$	K2	CO2
3	5	$L[e^{-7t}] =$ _____ (a) $\frac{1}{s-7}$ (b) $\frac{1}{s+7}$ (c) $\frac{1}{s^2+49}$ (d) $\frac{1}{s^2-49}$	K1	CO3
	6	$L^{-1}\left[\frac{1}{s^2}\right] =$ _____ (a) t (b) $\frac{1}{t}$ (c) t^2 (d) $\frac{1}{t^2}$	K2	CO3
4	7	If $\vec{r} = x\vec{i} + y\vec{j} + z\vec{k}$, then $\nabla \cdot \vec{r}$ is _____ (a) 0 (b) 1 (c) 2 (d) 3	K1	CO4
	8	If A is a constant vector, then $\text{div } \vec{A} =$ _____ (a) 0 (b) 1 (c) 2 (d) 3	K2	CO4
5	9	Which of the following is not an application of Green's theorem (a) Solving two-dimensional flow integrals (b) Area surveying (c) Volume of plane figures (d) Centroid of plane figures	K1	CO5
	10	If C is a closed curve, then $\int_C \vec{F} \cdot d\vec{r} =$ _____ (a) $\frac{1}{r}$ (b) $2r$ (c) 0 (d) r^2	K2	CO5

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Show that the Fourier series for $f(x) = x$, $-\pi < x < \pi$ is given by $f(x) = 2 \sum_{n=1}^{\infty} (-1)^{n+1} \frac{\sin nx}{n}$	K2	CO1

Cont...

1	(OR)		K2	CO1
	11.b.	Expand $f(x) = \cos x, 0 < x < \pi$ in a Fourier sine series		
2	12.a.	Find the PDE by eliminating the arbitrary constants a, b and c from $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$	K3	CO2
	(OR)			
	12.b.	Form the PDE by eliminating f, from $f(xy + z^2, x + y + z) = 0$		
3	13.a.	Find $L(\sin 8t \cos 4t + \cos^3 4t + 5)$	K3	CO3
	(OR)			
	13.b.	Find $L^{-1}\left[\frac{s-3}{s^2+4s+13}\right]$		
4	14.a.	Find the directional derivative of $\phi = x^2yz + 4xz^2$ at (1, 1, 1) in the direction of $\vec{i} + \vec{j} - \vec{k}$.	K4	CO4
	(OR)			
	14.b.	Show that $2xy\vec{i} + (x^2 + 2yz)\vec{j} + (y^2 + 1)\vec{k}$ is irrotational.		
5	15.a.	Find the work done by the force $\vec{F} = (2xy + z^3)\vec{i} + x^2\vec{j} + 3xz^2\vec{k}$ when it moves a particle from (1, -2, 1) to (3, 1, 4) along any path.	K5	CO5
	(OR)			
	15.b.	Use divergence theorem, evaluate $\iint_S \nabla r^2 \cdot \hat{n} \, ds$.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Expand $f(x) = (\pi - x)^2$ as a Fourier series of periodic 2π in the interval $0 < x < 2\pi$. Hence deduce the sum of the series $1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \dots$	K3	CO1
2	17	Solve $z = px + qy + \sqrt{1 + p^2 + q^2}$.	K5	CO2
3	18	Find (i) $L[t \cos^3 t]$. (ii) the Laplace transform of the periodic function $f(t) = \begin{cases} t & \text{for } 0 < t < 1 \\ 2 - t & \text{for } 1 < t < 2 \end{cases}$ and $f(t + 2) = f(t)$.	K3	CO3
4	19	Prove that $\text{curl curl } \vec{F} = \text{grad div } \vec{F} - \text{Laplacian } \vec{F}$.	K3	CO4
5	20	Verify Green's theorem in the XY plane for $\int_C ((xy + y^2) dx + x^2 dy)$, where C is the closed curve of the region bounded by $y = x$ and $y = x^2$.	K5	CO5

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)

Branch - **ELECTRONICS**

DIGITAL ELECTRONICS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	A three digit decimal number requires _____ for representation in the conventional BCD format. a) 3 bits b) 6 bits c) 12 bits d) 24 bits	K1	CO3
	2	Code is a symbolic representation of _____. a) Continuous b) Discrete c) Analog d) Both continuous and discrete	K2	CO1
2	3	The code where all successive numbers differ from their preceding number by single bit is _____. a) Alphanumeric Code b) BCD c) Excess 3 d) Gray	K1	CO3
	4	The NOR gate output will be high if the two inputs are _____. a) 00 b) 01 c) 10 d) 11	K2	CO2
3	5	What is a multiplexer? a) It is a type of decoder which decodes several inputs and gives one output b) A multiplexer is a device which converts many signals into one c) It takes one input and results into many output d) It is a type of encoder which decodes several inputs and gives one output	K1	CO3
	6	Which combinational circuit is renowned for selecting a single input from multiple inputs & directing the binary information to output line? a) Data Selector b) Data distributor c) Both data selector and data distributor d) DeMultiplexer	K2	CO3
4	7	UP-DOWN counter is a combination of _____. a) Latches b) Flip-flops c) UP counter d) Up counter & down counter	K1	CO2
	8	In 4-bit up-down counter, how many flip-flops are required? a) 2 b) 3 c) 4 d) 5	K2	CO3
5	9	How many control lines are present in analog to digital converter in addition to reference voltage? a) Three b) Two c) One d) None of the mentioned	K1	CO1
	10	Find out the integrating type analog to digital converter? a) Flash type converter b) Tracking converter c) Counter type converter d) Dual slope ADC	K2	CO1

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Determine the Binary number system.	K2	CO1
	(OR)			
	11.b	Explain the BCD Code.		
2	12.a.	Elaborate the Karnaugh's map.	K3	CO2
	(OR)			
	12.b.	Build a Boolean algebra with example.		
3	13.a.	Justify the Binary addition and Subtraction.	K3	CO3
	(OR)			
	13.b.	Evaluate the Encoder and Decoder.		
4	14.a.	Function the RS Flip flops.	K4	CO3
	(OR)			
	14.b.	Simplify the BCD Counter.		
5	15.a.	Explain about the Binary Ladder.	K4	CO1
	(OR)			
	15.b.	Analyze the function of Simultaneous Conversion.		

SECTION - C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Compare the Octal and Hexadecimal number systems.	K4	CO3
2	17	Formulate the De-Morgans Theorem.	K4	CO3
3	18	Compare the Half adder and Full adder with truth tables.	K4	CO3
4	19	Justify the synchronous and Asynchronous counters.	K4	CO3
5	20	Analyze Successive Approximation method A / D Converters.	K4	CO3

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)

Branch - **ELECTRONICS**

DIGITAL AND LINER ICs

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	_____ most often used for producing single crystal silicon ingots a). Epitaxial b). Czochralski c). Thermal d). Quartz	K1	CO1
	2	The value of the resistance depends upon the surface ____ a). Geometry b). Length c). width d). Area	K2	CO1
2	3	RTL circuits consist of resistors and _____ a). Diodes b). Capacitors c). Resistors d). Transistors	K1	CO2
	4	The maximum number of similar logic gates which can be driven by a logic gate is called a). Fan -in b). Coupled c). Fan-Out d). Tri-state logic	K2	CO2
3	5	How many pins in IC 741 Op-amp a). 7 b).16 c).9 d).8	K1	CO3
	6	Summing amplifier used to _____ inputs. a). Added b). Multiply c).Divider d).Integrator	K2	CO3
4	7	Voltage comparator compare with help of a). Input voltage b). Output voltage c).Reference voltage d).Feedback voltage	K1	CO4
	8	Zero crossing detector is also called a).Sinusoid generator b).Saw tooth generator c).Rectangle generator d).Square generator	K2	CO4
5	9	5 th pin of Timer IC 555 is _____ a). Control voltage b).Vcc c).Threshold d).Trigger	K1	CO5
	10	An important application of PLL is _____ a). PWM b). FSK c). PPM d).PAM	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	What are the steps used in silicon wafer preparation.	K2	CO1
		(OR)		
	11.b.	Discuss - PN junction Isolation.		
2	12.a.	Explain RTL Gate logic.	K3	CO2
		(OR)		
	12.b.	Write about current sourcing and sinking.		
3	13.a.	Explain the function of an Inverting Amplifier.	K3	CO2
		(OR)		
	13.b.	Draw and explain the Summing amplifier.		
4	14.a.	Describe How the Zero Crossing detector works.	K4	CO4
		(OR)		
	14.b.	With a neat diagram explain Wien bridge oscillator.		
5	15.a.	Explain the working of Digital Phase Detector.	K4	CO4
		(OR)		
	15.b.	Discuss how a PLL used as an AM detector.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Briefly Explain about Fabrication of Monolithic Resistor.	K4	CO4
2	17	Explain DCTL gate functions.	K4	CO4
3	18	Draw and write the working function of Differential amplifier	K4	CO4
4	19	With a neat diagram of 8038 Function Generator – Explain it's function.	K4	CO4
5	20	Write a notes on Voltage controlled oscillator with diagram.	K4	CO4

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)**

Branch - ELECTRONICS

C PROGRAMMING

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following is a major advantage of C programming? a) High-level language features b) Portability c) Automatic memory management d) Built-in support for object-oriented programming	K1	CO1
	2	What is the purpose of the #include directive in C? a) To define variables b) To include standard libraries or user-defined headers c) To declare functions d) To manage memory	K2	CO1
2	3	Which of the following has the highest precedence in C? a) + b) - c) * d) /	K1	CO2
	4	What will be the output of the following code? int a = 5, b = 10; if (a > b) printf("A"); else printf("B"); a) A b) B c) Error d) No Output	K2	CO2
3	5	What will be the output of the following code? for (int i = 0; i < 3; i++) printf("%d ", i); a) 0 1 2 b) 1 2 3 c) 0 1 2 3 d) 1 2	K1	CO3
	6	Which operator is used to increment the value of a variable by 1? a) ++ b) -- c) += d) +	K2	CO3
4	7	What is the purpose of the return statement in a function? a) To exit the function b) To return a value to the calling function c) To pass arguments to the function d) Both a and b	K1	CO4
	8	Which of the following correctly declares a pointer to an integer? a) int *ptr; b) ptr *int; c) int ptr*; d) *int ptr;	K2	CO4
5	9	How do you define a structure in C? a) struct name {}; b) structure name {}; c) struct name[] {}; d) structure name[] {};	K1	CO5
	10	Which function is used to open a file in C? a) open() b) fopen() c) fileopen() d) openfile();	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Interpret the three advantages of C programming language compared to other programming languages.	K2	CO1
		(OR)		
	11.b.	Illustrate the structure of a C program.		
2	12.a.	Demonstrate type conversion in C with examples of implicit and explicit conversion.	K2	CO2
		(OR)		
	12.b.	Write a program that uses if-else statements to determine if a number is positive, negative, or zero.		
3	13.a.	Identify the differences between do-while, while, and for loops with suitable example.	K3	CO3
		(OR)		
	13.b.	Identify the use of Incremental and Decremental operators in loops.		
4	14.a.	Define a function that calculates the sum of two integers and explain its components.	K4	CO4
		(OR)		
	14.b.	Analyze the advantages of using pointers in C.		
5	15.a.	Create a structure to represent a student with at least three attributes and write a program to display the student's details.	K3	CO5
		(OR)		
	15.b.	Solve how to read and write text files in C.		

SECTION - C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Compare the different data types available in C. Provide examples for each type and explain their uses.	K2	CO1
2	17	Demonstrate a program that uses a switch-case statement to display the name of the month based on a number input (1-12).	K2	CO2
3	18	Define and demonstrate one-dimensional and two-dimensional arrays in C. Explain how to initialize and access their values.	K3	CO3
4	19	Examine the use of functions to find the maximum of three numbers, passing the numbers by reference.	K4	CO4
5	20	Write a C program that uses a structure to store employee data and performs file I/O to save and read the data.	K3	CO5

Z-Z-Z

END

TOTAL PAGES: 2
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PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch -ELECTRONICS

ELECTRONIC COMMUNICATION – I

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. A carrier of peak voltage 15 V is used to transmit a message signal. If the modulation index is 70%, then what will be the peak voltage of the modulating signal?
(I) 25V (II) 24V
(III) 10.5V (IV) 15V
2. Which of the following is an advantage of SSB over DSB?
(I) No change in spectrum space (II) Power is not wasted on the carrier
(III) Carrier is suppressed (IV) Reduce in spectrum space
3. The amount of frequency deviation in FM signal depends on
(I) Amplitude of the modulating signal (II) Carrier frequency
(III) Transmitter amplifier (IV) Modulating frequency
4. In a receiver, noise is usually developed at _____
(I) Audio stage (II) RF stage
(III) Receiving antenna (IV) IF stage
5. FSK reception is
(I) Phase Coherent (II) Phase non coherent
(III) Phase Coherent & non coherent (IV) None of the mentioned

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

6. a. Bring out the characteristics of EM waves.
OR
b. Compare ground wave and space wave propagation.

Cont....

7. a. Narrate the merits of side band transmission
OR
b. Describe the power efficiency of SSB.
8. a. Bring out the applications of FM.
OR
b. How PLL is used for clock synchronization?
9. a. Distinguish super heterodyne and heterodyne receivers
OR
b. Describe the functions of IF amplifier.
10. a. Define pulse modulation.
OR
b. Describe the functions of delta modulation.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a. Classify the modulation technique.
OR
b. Elucidate the block diagram of AM transmitter.
12. a. Enumerate the different types of SSB modulated technique.
OR
b. Classify the phase shift method of SSB generation.
13. a. Differentiate pre-emphasis and de-emphasis
OR
b. Classify the generation of FM.
14. a. Identify the key advantages of PLL FM demodulator.
OR
b. Justify why AGC is needed for FM receiver.
15. a. Elucidate the function of BPSK.
OR
b. Enumerate the function of PAM with neat sketch.

Z-Z-Z

END