

Shri Vile Parle Kelavani Mandal's  
**Shri Bhagubhai Mafatlal Polytechnic**

TIME ALLOWED : **3 HOURS**

PROGRAMME: **Diploma in Computer Engineering**

MAXIMUM MARKS : **70**  
COURSE NAME : **Fundamentals of Scripting Language**

SEMESTER : **II**  
COURSE CODE: **FSL230803**

DATE: **15 MAY 2024**  
SEAT NO.: \_\_\_\_\_

TIME: **09.00 AM to 12.00 PM**

**Instructions:**

1. All the answers should be written in the single answer book.
2. All questions are compulsory.
3. Use of mathematical tables and non-programmable calculator is permissible.
4. Illustrate your answers with neat sketches, where necessary.
5. Figures to right indicates marks.
6. Assume suitable data, if necessary.

- Q.1 Attempt any SIX of the following:** **12M**  
**(6\*2)** **CO**
- a) Enlist any two general rules for constructing names for variables. CO1
  - b) State the importance of javascript 'const' with example CO1
  - c) Write JavaScript to print addition of any two numbers using onclick event. CO2
  - d) Write a javascript to open a new browser window. CO3
  - e) Define frameworks with respect to javascript. CO4
  - f) State use of status bar with one example. CO4
  - g) Write javascript to print length of an array. CO2
  - h) Write a syntax to delete cookie with all parameters. CO3
- Q.2 Attempt any THREE of the following:** **12 M**  
**(3\*4)** **CO**
- a) Write a javascript to print following pattern. CO1  

```
*****  
  
*****  
  
*****  
  
*****  
  
*****
```
  - b) Write javascript to compute the sum of each element of an array using for each. CO2
  - c) Write javascript event to concatenate the input of first and second text box and display the result in third text box using double click event. CO2

	d) Explain any four quantifiers with example.		CO4
	e) Explain any two keyboard event using example.		CO2
<b>Q.3</b>	<b>Attempt any THREE of the following:</b>	<b>12 M (3*4)</b>	<b>CO</b>
	a) Describe any 2 frontend and any 2 backend frameworks with respect to javascript.		CO4
	b) Explain any for comparison operators with example.		CO1
	c) Write a javascript to Check whether new window has closed or not		CO3
	d) Write a javascript to demonstrate settimetype and cleartimetype.		CO3
	e) Explain any 2 modifier of regular expression with the help of example.		CO4
<b>Q.4</b>	<b>Attempt any THREE of the following:</b>	<b>18M (3*6)</b>	<b>CO</b>
	a) Write a javascript for 1) Factorial of a given number (number should be from text box) 2) Reverse a given number (number should be from text box)		CO1
	b) Explain following string functions with example. 1) Slice 2) substring 3) charAt		CO2
	c) Write java script to Create rollover effect which involves text and images. When the user places his or her mouse pointer over a book title, the corresponding book image appears.		CO4
	d) Design a webpage using javascript to demonstrate slide show.		CO4
<b>Q.5</b>	<b>Attempt any TWO of the following:</b>	<b>16M (2*8)</b>	<b>CO</b>
	a) Write a javascript to sort a number array in descending and ascending manner.		CO2
	b) Write a JavaScript to 1) Text box accept a text which should start and end with capital letter 2) Phone number text box should accept only digits between 0-5		CO4
	c) Explain the following events with the help of example 1) Onchange - onselect Event 2) Onmouseenter- onmouseleave Event		CO2

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TIME ALLOWED : **03 HOURS** PROGRAMME: **Diploma in Computer Engg**

MAXIMUM MARKS : **70** SEMESTER : **II**  
COURSE NAME : **Programming in C** COURSE CODE: **PRC238912**

DATE: **13 MAY 2024** TIME: **09.00 AM to 12.00 PM**  
SEAT NO.: \_\_\_\_\_

**Instructions:**

1. All the answers should be written in the single answer book.
2. All questions are compulsory.
3. Use of mathematical tables and non-programmable calculator is permissible.
4. Illustrate your answers with neat sketches, where necessary.
5. Figures to right indicates marks.
6. Assume suitable data, if necessary.

<b>Q.1</b>	<b>Attempt any SIX of the following:</b>	<b>12M (6*2)</b>	<b>CO</b>
	a) Write syntax of i)conditional operator ii)typecast operator		CO2
	b) Define pointer variable and write the syntax of pointer variable with example.		CO6
	c) Define array? Enlist any 2 advantages of array		CO5
	d) Write syntax of strlen() function with code snippet		CO5
	e) Define recursion. Write any 2 advantages of recursion		CO4
	f) Distinguish between break and continue statement based on any 4 parameters.		CO3
	g) Write syntax of pre increment operator with an example program		CO2
	h) Enlist any 4 datatypes in C with suitable example.		CO1
<b>Q.2</b>	<b>Attempt any THREE of the following:</b>	<b>12 M (3*4)</b>	<b>CO</b>
	a) Write the syntax of compile time initialization with code snippet example for the following. i) One dimensional Array ii) Two dimensional array		CO5
	b) Define global variables and local variables. Write a Program to demonstrate the difference between global variables and local variables.		CO4
	c) Write syntax of 'while' loop. Write a program to print the factorial of a user input number using while loop		CO3
	d) Write a Program to print the minimum of 3 unequal numbers using relational and Logical operator		CO2

	e) Write algorithm for checking whether the user input number is a multiple of 4 and draw the flowchart for same.	CO1
<b>Q.3</b>	<b>Attempt any THREE of the following:</b>	<b>12 M (3*4) CO</b>
	a) i) Define the following i) & operator ii) * operator ii) Write a program in C to swap two numbers using Call by reference	CO6
	b) Classify and explain Storage classes in C Programming	CO1
	c) Define nesting of functions? Explain with an example program	CO4
	d) Create structure "Student" with data members Sname, Srollno, Smarks, Sgender. Write a program to scan data for 3 students and print the data. (use concept of structure array).	CO6
	e) Write syntax of "for" loop Write a program to display multiplication table (up to 10) for a user entered number using "for" loop.	CO3
<b>Q.4</b>	<b>Attempt any THREE of the following:</b>	<b>18M (3*6) CO</b>
	a) Write the syntax and function of following string functions with appropriate code snippet- i) strcmp () ii) strcpy () iii) strcat ()	CO5
	b) i) Write the syntax of array of pointers ii) Write a program to calculate the sum of array elements using array of pointers	CO6
	c) Describe the following operators with syntax and example programs i) shorthand assignment operator ii) Bitwise AND operator	CO2
	d) Write the syntax of switch case structure. Write A Program to read the weekday no and print week day using switch case (eg: 1=Monday 2= Tuesday etc.)	CO3
<b>Q.5</b>	<b>Attempt any TWO of the following:</b>	<b>16M (2*8) CO</b>
	a) Explain the following category of user defined Functions with diagram and example programs i) Functions with one return value and having arguments ii) Functions with no return value and no arguments	CO4
	b) i) Distinguish between array and structure based on any 4 parameters ii) Write a program in C to find the maximum and minimum in the following array. {2, 45, 34, 67, 21} Use compile time initialization of array.	CO5
	c) i) Define nested structure and classify its types with code snippet. ii) Write a program to perform arithmetic operations on two numbers using pointer variables.	CO6

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e) Find  $\frac{dy}{dx}$  if  $y = \log\left(\sin\left(\frac{x}{2}\right)\right)$ . CO1

**Q.3** Attempt any **THREE** of the following: **12 M** CO  
**(3\*4)**

a) Find  $\int_0^3 \frac{\sqrt{3-x}}{\sqrt{x}+\sqrt{3-x}} dx$  CO3

b) On average, one telephone out of 10 telephones is found busy. Six telephone numbers are selected at random. Find the probability that a) two of them will be busy b) at least two of them will be busy. CO1

c) Find  $\int \frac{(\tan^{-1} x)^2}{1+x^2} dx$  CO3

d) Simplify using De Moivre's Theorem  $\frac{(\cos 5\theta - i \sin 5\theta)^2 (\cos \theta + i \sin \theta)^5}{(\cos 7\theta - i \sin 7\theta)^3 (\cos 4\theta - i \sin 4\theta)^2}$  CO4

e) Find the mean deviation from mean for the following distribution: CO2

Marks	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	4	6	10	18	9	3

**Q.4** Attempt any **THREE** of the following: **18M** CO  
**(3\*6)**

a) Find the radius of curvature of the curve  $y^2 = 4ax$  at the point  $(a, 2a)$ . CO1

b) Find the value  $(1 + i\sqrt{3})^6 + (1 - i\sqrt{3})^6$  using De Moivre's theorem. CO4

c) Find  $\int \frac{1}{(x-3)(2x+1)} dx$ . CO3

d) A manufacturer produces light-bulbs that are packed into boxes of 100. If quality control studies indicate that 0.5% of the light-bulbs produced are defective, what percentage of the boxes will contain: (a) no defective (b) 2 or more defectives. CO1

**Q.5** Attempt any **TWO** of the following: **16M** CO  
**(2\*8)**

a) If  $y = 2\cos(\log x) + 3\sin(\log x)$  show that  $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} + y = 0$  CO1

b) Find  $\int \sin^{-1} 2x dx$  CO3

c) Calculate variance, Coefficient of variance & range of the following table: CO2

Class Interval	55-65	65-75	75-85	85-95	95-105	105-115	115-125
Frequency	10	12	15	20	14	7	2

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TIME ALLOWED : **3 HOURS**

PROGRAMME: **Diploma in Computer Engineering**

MAXIMUM MARKS : **70**  
COURSE NAME : **BASIC ELECTRONICS**

SEMESTER : **II**  
COURSE CODE: **BEX238911**

DATE: **1 8 MAY 2024**  
SEAT NO.: \_\_\_\_\_

TIME: **09.00 AM to 12.00 PM**

**Instructions:**

1. All the answers should be written in the single answer book.
2. All questions are compulsory.
3. Use of mathematical tables and non-programmable calculator is permissible.
4. Illustrate your answers with neat sketches, where necessary.
5. Figures to right indicates marks.
6. Assume suitable data, if necessary.

- Q.1 Attempt any SIX of the following:** **12M** **CO**  
**(6\*2)**
- a) Define i) Peak Inverse voltage (PIV) ii) Reverse saturation current **CO1**
- b) Draw the diagram of Photodiode. **CO2**
- c) Define i) Rectifier efficiency ii) Ripple factor **CO2**
- d) Write the expression which relate  $\alpha, \beta$  and  $\gamma$  .  
where,  $\alpha, \beta$  and  $\gamma$  are Current amplification factors for common base, common emitter, and common collector configuration respectively. **CO3**
- e) Write 9's and 10's complement of the number  $(121)_{10}$  **CO4**
- f) Differentiate between combinational and sequential circuit. **CO5**
- g) State De Morgan's Theorem. **CO5**
- h) Write the names of all Possible modes of operations of registers **CO6**
- Q.2 Attempt any THREE of the following:** **12 M** **CO**  
**(3\*4)**
- a) Design a 3 bit asynchronous up counter. **CO6**
- b) Explain the working of pnp transistor. **CO3**
- c) Describe the performance of transistor amplifier **CO3**
- d) Illustrate the working Photovoltaic cell, with the help of neat diagram. **CO2**
- e) Describe the effect of temperature on semiconductors. **CO1**

<b>Q.3</b>	<b>Attempt any THREE of the following:</b>	<b>12 M</b>	<b>CO</b>
		<b>(3*4)</b>	
a)	Convert the expression $Y = (A + B)(A + C)(B + \bar{C})$ into the canonical POS form.		<b>CO5</b>
b)	Perform the following binary subtraction using 2's Complement method, if necessary convert into required number system		<b>CO4</b>
	i) $(10110)_2 - (10001)_2$		
	ii) $(63)_{10} - (19)_{10}$		
c)	In a transistor circuit, collector load is $4\text{ k}\Omega$ whereas quiescent current (zero signal collector current) is $1\text{ mA}$ .		<b>CO3</b>
	(i) Find the operating point if $V_{CC} = 10\text{ V}$ . and		
	(ii) Calculate the operating point if collector load changed to $5\text{ k}\Omega$ (i.e. $R_C = 5\text{ k}\Omega$ ).		
d)	Explain the working principle of $\pi$ Filter.		<b>CO2</b>
e)	Differentiate between n-type and p-type semiconductors.		<b>CO1</b>
<b>Q.4</b>	<b>Attempt any THREE of the following:</b>	<b>18M</b>	<b>CO</b>
		<b>(3*6)</b>	
a)	Design full adder circuit using K-map technique		<b>CO5</b>
b)	Convert the following numbers into its equivalent number system.		<b>CO4</b>
	i) $(25.45)_{10} = ( \quad )_2$ ii) $(B689D)_{16} = ( \quad )_8$ iii) $(37)_{10} = ( \quad )_{X3}$		
c)	With the help of neat diagrams, explain the input and output characteristics of CE connection.		<b>CO3</b>
d)	Illustrate the working of Zener diode as voltage regulator.		<b>CO1</b>
<b>Q.5</b>	<b>Attempt any TWO of the following:</b>	<b>16M</b>	<b>CO</b>
		<b>(2*8)</b>	
a)	Describe the working of Full-wave bridge rectifier with neat diagram.		<b>CO2</b>
b)	Explain the working of NOR as a Universal Gate.		<b>CO5</b>
c)	Explain the working of Positive Edge triggered JK flip flop.		<b>CO6</b>

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TIME ALLOWED : **3 HOURS**

PROGRAMME: **Diploma in COMPUTER ENGG**

MAXIMUM MARKS : **70**  
COURSE NAME : **FUNDAMENTALS OF COMPUTER NETWORK**

SEMESTER : **II**  
COURSE CODE: **FCN230802**

DATE: **- 8 MAY 2024**  
SEAT NO.: \_\_\_\_\_

TIME: **09.00 AM to 12.00 PM**

**Instructions:**

1. All the answers should be written in the single answer book.
2. All questions are compulsory.
3. Use of mathematical tables and non-programmable calculator is permissible.
4. Illustrate your answers with neat sketches, where necessary.
5. Figures to right indicates marks.
6. Assume suitable data, if necessary.

- Q.1 Attempt any SIX of the following:** **12M** **CO**  
**(6\*2)**
- a) Compare hub and switch (min 4 points) CO2
  - b) Explain components of data communication CO1
  - c) List four services of data link layer CO1
  - d) Define the following term: a) ARP b) RARP CO6
  - e) Compare TCP and UDP(min 4 points) CO6
  - f) Explain features of DNS CO6
  - g) Elaborate the word "Networking devices". list its types CO2
  - h) Define the term multiplexing. CO3
- Q.2 Attempt any THREE of the following:** **12 M** **CO**  
**(3\*4)**
- a) Explain transmission impairments with appropriate types and diagram CO2
  - b) Explain Mac address, IP address, port address & Socket address CO1
  - c) Compare STP and UTP cable(min 4 points) CO3
  - d) Describe layered structure of TCP/IP model CO6
  - e) Explain even and odd parity bits with an example CO4
- Q.3 Attempt any THREE of the following:** **12 M** **CO**  
**(3\*4)**
- a) Write any four advantages and disadvantages of Mesh topology CO2
  - b) Elaborate Address Mapping. Explain any one protocol CO5
  - c) Explain the working of fiber optic cable with diagram CO3

- d) Describe classful addressing in detail CO5
- e) Explain the packet-switching network with example CO3

**Q.4 Attempt any THREE of the following: 18M CO (3\*6)**

- a) Explain stop and wait ARQ protocol CO4
- b) Explain IPv4 header format with diagram CO5
- c) Describe checksum error detection method with suitable example CO4
- d) Explain Guided transmission media in detail CO3

**Q.5 Attempt any TWO of the following: 16M CO (2\*8)**

- a) Explain LAN, MAN, and WAN with proper diagram and suitable example CO1
- b) Describe the Cyclic Redundancy check process and also find the CRC for 100100 with the divisor  $x^3+x^2+1$  CO4
- c) Explain UDP protocol in detail with its header format CO6

