

23/12/2021_Engineering Mathematics III _Electronics&Computer Engineering_sem III_R19

The question paper will have MCQs (for 20 marks) and subjective/descriptive questions (for 60 marks)

MCQ correct options and subjective questions answers to be written on papers. Scan all pages of answer papers of Q1 to Q4 and create single file in pdf format to upload in the link provided

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2. Enter your Name *

3. Enter Exam Seat number(as per Hall Ticket) *

4. Class Roll No *

5. GCR No *

Mark only one oval.

GCR 1

GCR 2

MCQ and Descriptive section

Question

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Laplace Transform of $\{e^{2t} + 4t^3 - 2\sin 3t + 3\cos 3t\}$ is
Option A:	$\frac{1}{s-2} + \frac{6}{s^4} + \frac{3s-2}{s^2+9}$
Option B:	$\frac{1}{s-2} + \frac{6}{s^3} + \frac{-2+3s}{s^2+9}$
Option C:	$\frac{1}{s-2} + \frac{24}{s^4} + \frac{s-2}{s^2+9}$
Option D:	$\frac{1}{s-2} + \frac{24}{s^4} + \frac{3(s-2)}{s^2+9}$
2.	If $L\{f(t)\} = \frac{s-3}{(s^2-6s+25)^2}$, then $L\{f(2t)\}$ is
Option A:	$\frac{4(s-6)}{(s^2-12s+100)^2}$
Option B:	$\frac{s-6}{(s^2-6s+100)^2}$
Option C:	$\frac{2(s-3)}{(s^2-12s+100)^2}$
Option D:	$\frac{4(s-3)}{(s^2-12s+100)^2}$
3.	Inverse Laplace Transform of $\frac{s}{4s^2-25}$ is
Option A:	$\frac{1}{4}\cosh\frac{5}{2}t$
Option B:	$\cosh\frac{5}{2}t$
Option C:	$\frac{1}{4}\sinh\frac{5}{2}t$
Option D:	$\sinh\frac{5}{2}t$
4.	Inverse Laplace Transform of $\log\left(\frac{s^2+1}{s^2}\right)$ is
Option A:	$\frac{2}{t}(1 + \cos t)$
Option B:	$\frac{2}{t}(1 - \sin t)$
Option C:	$\frac{2}{t}(1 - \cos t)$
Option D:	$\frac{2}{t}(1 + \sin t)$

Question

5.	If $f(z) = x^2 - y^2 + i2xy$ find $f^{-1}(z)$
Option A:	z
Option B:	$2z$
Option C:	$2z^2$
Option D:	z^2
6.	The value of m so that $2x - x^2 + my^2$ may be harmonic
Option A:	0
Option B:	1
Option C:	2
Option D:	3
7.	The matrix $A = \begin{bmatrix} 1 & 0 \\ 2 & 4 \end{bmatrix}$ is given. Find the eigenvalues of $4A^{-1} + 3A + 2I$
Option A:	9, 15
Option B:	6, 15
Option C:	9, 12
Option D:	7, 15
8.	The matrix $\begin{bmatrix} 1 & 2 & 1 \\ 2 & 1 & 1 \\ 1 & 2 & p \end{bmatrix}$ has one eigenvalue equal to 3. The sum of the other two eigen values is
Option A:	p
Option B:	$p - 1$
Option C:	$p - 2$
Option D:	$p - 3$
9.	The Fourier series to represent x^2 for $0 \leq x \leq 2\pi$ is given by $x^2 = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos nx + \sum_{n=1}^{\infty} b_n \sin nx$. The value of a_0 is
Option A:	$\frac{4\pi^2}{3}$
Option B:	$\frac{2\pi^3}{3}$
Option C:	$\frac{\pi^2}{3}$
Option D:	$\frac{8\pi^2}{3}$
10.	The value of λ so that the vector $\vec{u} = (x + 3y)\hat{i} + (y - 2z)\hat{j} + (x + \lambda z)\hat{k}$ is solenoidal vector is
Option A:	-2
Option B:	3
Option C:	1
Option D:	2

Question

Q2. (20 Marks)	Solve any Four out of Six	5 marks each
A	Find the Laplace transform of	$e^{-3t} \cosh 5t \sin 4t$
B	Using the convolution theorem, Find	$L^{-1}\left(\frac{1}{(s^2 + 9)^2}\right)$.
C	Find the Fourier series of	$f(x) = \frac{\pi^2}{12} - \frac{x^2}{4}$ in the interval $(-\pi, \pi)$
D	Find the constants a,b,c,d and e if the function	$f(z) = (ax^4 + bx^2y^2 + cy^4 + dx^2 - 2y^2) + i(4x^3y - exy^3 + 4xy)$ is analytic.
E	Show that the matrix	$A = \begin{bmatrix} 2 & -1 & 1 \\ 1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ is diagonalisable
F	Show that	$\vec{F} = (x^2 - yz)\hat{i} + (y^2 - zx)\hat{j} + (z^2 - xy)\hat{k}$ is a conservative force. Find the work done by the force \vec{F} on the particle from $(1,1,0)$ to $(2,0,1)$.

Q3. (20 Marks)	Solve any Four out of Six	5 marks each
A	Find the Laplace transform of	$e^{-4t} \int_0^t u \sin 3u \, du$
B	Obtain the inverse Laplace transform of	$\frac{78}{s^3(s-3)}$
C	Find the half - range cosine series of the function	$f(x) = -\frac{x}{l} + 1, 0 \leq x \leq l,$
D	Construct an analytic function whose imaginary part is	$e^{2x}(x \cos 2y - y \sin 2y)$.
E	Verify Cayley - Hamilton theorem for the matrix	$A = \begin{bmatrix} 1 & 2 & -2 \\ 1 & 1 & 1 \\ 1 & 3 & -1 \end{bmatrix}$
F	Find the directional derivative of the scalar function	$\phi(x,y,z) = xy + zy + zx$ at the point $(1,2,3)$ in the direction of $3\hat{i} + 4\hat{j} + 5\hat{k}$.

Question

Q4. (20 Marks)	Solve any Four out of Six 5 marks each
A	Find the Laplace transform of $f(t)$ where $f(t) = \begin{cases} \frac{t}{k}, & 0 < t < k \\ 1, & t > k \end{cases}$
B	Find $L^{-1}\left(\frac{s^2}{(s^2 + 5)(s^2 + 4)}\right)$
C	Obtain the Fourier series for the function $f(x) = \begin{cases} 1 + \frac{2x}{\pi}, & -\pi \leq x \leq 0 \\ 1 - \frac{2x}{\pi}, & 0 \leq x \leq \pi \end{cases}$
D	If $u = x^2 - y^2$, $v = \frac{-y}{x^2 + y^2}$ Show that both u and v are harmonic functions.
E	If $A = \begin{bmatrix} \frac{\pi}{2} & \pi \\ 0 & \frac{3\pi}{2} \end{bmatrix}$, find $\sin A$
F	Using Green's theorem evaluate $\int_C (x^2 + xy)dx + (x^2 + y^2)dy$ where C is the square bounded by the lines $x = 0, x = 1, y = 0$ and $y = 1$.

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Electronic Devices (ED)-_Electronics and Computer Science (ECS) _Sem III_R19

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MCQ correct options and subjective questions answers to be written on papers. Scan all pages of answer papers of Q1 to Q4 and create single file in pdf format to upload in the link provided

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GCR 1

GCR 2

MCQ and Descriptive section

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks (20 Marks – 02 Marks Each)
1.	How many P-N junction(s) does an ordinary diode have?
Option A:	0
Option B:	1
Option C:	2
Option D:	3
2.	During reverse bias, a small current flows across the P-N junction diode known as
Option A:	Forward Current
Option B:	Reverse Current
Option C:	Reverse Saturation Leakage Current
Option D:	Active Current
3.	The breakdown voltage of Zener diode is constant over a wide range of reverse bias currents. This makes Zener diode useful in a
Option A:	Filter
Option B:	Battery
Option C:	Voltage Regulator
Option D:	Amplifier
4.	Calculate the collector current for a transistor in the forward active mode, given that $\beta = 150$ and $I_B = 15 \mu A$
Option A:	0.5 mA
Option B:	1 mA
Option C:	5 mA
Option D:	2.25 mA
5.	If Base-Emitter junction is forward biased and Base-Collector junction is reverse biased, the transistor is working in -----
Option A:	Forward Active Mode
Option B:	Reverse Active Mode
Option C:	Cut off
Option D:	Saturation
6.	Identify the transistor biasing circuit shown in the figure given below
Option A:	Forward Biasing
Option B:	Reverse Biasing
Option C:	Single base resistor biasing
Option D:	Voltage divider Biasing

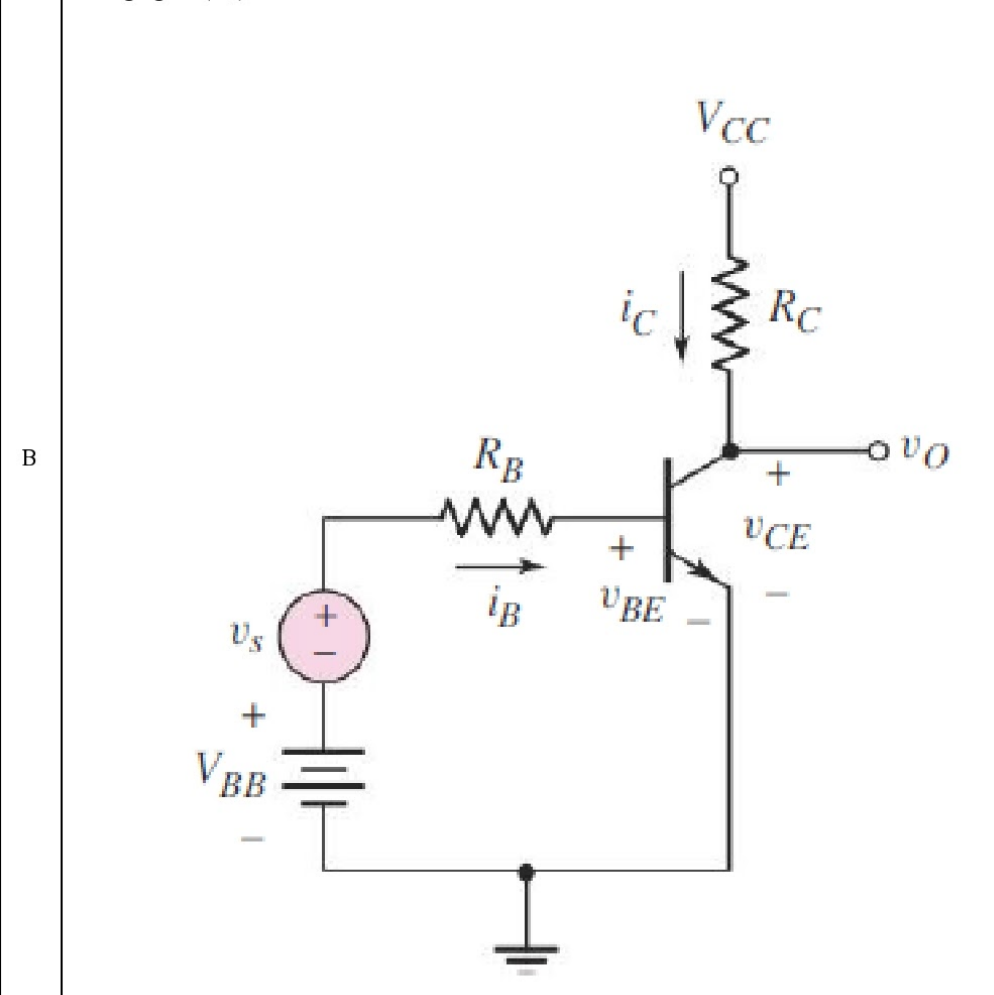
7.	Which of the following statements is true about FET?
Option A:	It has high output impedance
Option B:	It has high input impedance
Option C:	It has low input impedance
Option D:	It does not offer any impedance
8.	The Shockley's equation for JFET makes it to be also called as :-
Option A:	Square law device
Option B:	Cubic law device
Option C:	Quadratic law device
Option D:	Exponential law device
9.	What is the number of capacitors and inductors used in a CLC filter?
Option A:	1, 2 respectively
Option B:	2, 1 respectively
Option C:	1, 1 respectively
Option D:	2, 2 respectively
10.	Spintronic Devices are generally made of -----materials.
Option A:	Ferromagnetic
Option B:	Paramagnetic
Option C:	Diamagnetic
Option D:	Nonmagnetic

Q.2	Solve any Four out of Six(20 Marks – 05 Marks Each)
A	Explain the effect of temperature on the V-I characteristics of P-N junction diode.
B	Explain the difference between Zener breakdown and Avalanche breakdown.
C	What do you mean by Early Effect in bipolar junction transistor (BJT) ?
D	Explain the Common Source circuit configuration of MOSFET.
E	Explain the working of C filter. Draw appropriate diagrams.
F	Write a short note on spintronic devices.

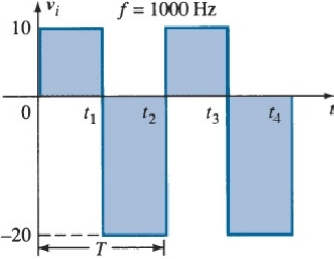
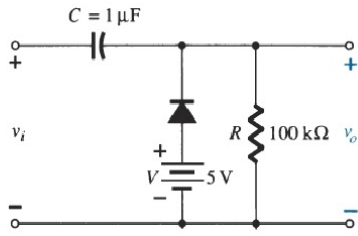
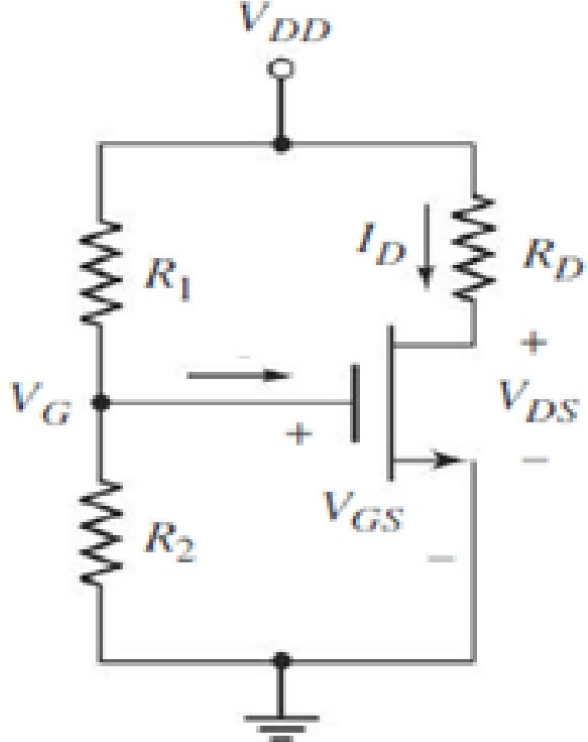
Q.3 Solve any Two Questions out of Three (20 Marks – 10 Marks Each)

A An AC 230 V, 50Hz voltage is applied to the primary of a 4: 1 step down transformer used in a bridge rectifier having a load resistance of 600Ω. Assume diodes to be ideal. Find (a) DC output voltage (b) DC power delivered to the load (c) PIV (d) Output frequency.

B For the figure given below, the transistor parameters are given as $\beta=100$, $V_{CC}=12V$, $V_{BB}=0.7 V$, $R_C= 6k\Omega$, $R_B= 50 k\Omega$ & $V_{BB}= 1.2V$. Find (a) I_{BQ} (b) I_{CQ} (c) r_x (d) g_m (e) small signal voltage gain (A_v)



C Explain operation, V-I & transfer characteristics of JFET. Explain the effect of pinch-off.

Q.4 Solve any Two Questions out of Three (20 Marks – 10 Marks Each)	
A	<p>Identify the circuit as shown below & explain its operation. Draw the waveform of output voltage V_o for the given network.</p>  
B	<p>With a neat sketch, explain the working of center-tapped full wave rectifier. Draw the input voltage & output voltage waveforms & mention the expression for the DC (average) output voltage (V_{dc}).</p>
C	<p>For the N-channel enhancement MOSFET (E-MOSFET) using the voltage divider biasing technique, calculate drain current (I_D), drain to source voltage (V_{DS}) & the power dissipated (P_D) in the transistor. Assume $R_1 = 30 \text{ k}\Omega$, $R_2 = 20 \text{ k}\Omega$, $R_D = 20 \text{ k}\Omega$, $V_{DD} = 5 \text{ V}$, $V_{GS(TH)} = 1 \text{ V}$ & $k_n = 0.1 \text{ mA/V}^2$</p> 

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29/12/2021_Digital Electronics_Electronics and Computer Science (ECS) _Sem III_R19

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GCR1

GCR 2

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MCQ and Descriptive section

Question

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which of the is the correct sequence of steps of Digital design with FPGA?
Option A:	Design Entry, Mapping, Place and route, Simulation, Bit stream generation, Synthesize
Option B:	Bit stream generation, Design Entry, Simulation, Synthesize, Mapping, Place and route
Option C:	Design Entry, Simulation, Synthesize, Mapping, Place and route, Bit stream generation
Option D:	Simulation, Synthesize, Design Entry, Place and route, Mapping, Bit stream generation
2.	In 2's complement signed number representation, 110001 represents which of the following decimal number?
Option A:	-49
Option B:	-14
Option C:	+49
Option D:	-15
3.	The hexadecimal number $(2D.31)_{16}$ is equivalent to which of the following the octal number?
Option A:	55.142
Option B:	45.174
Option C:	16.655
Option D:	61.424
4.	The canonical sum of product form of the function $y(A, B, C) = A' C' + BC$ is _____ .
Option A:	$A' B' C' + A' B C + A B C$
Option B:	$A' B C' + A' B' C' + A' B C + ABC$
Option C:	$AB' C + A' B C + A' B' C' + A' B' C$
Option D:	$A' B C' + AB' C + A B' C'$
5.	<p>The following circuit represents _____</p>
Option A:	Odd parity checker
Option B:	BCD to excess 3 converter
Option C:	Demultiplexer
Option D:	Binary to gray code converter

Question

6.	The even parity Hamming code received as 1100010 contains 1 bit error. The correct code is:																																				
Option A:	1100110																																				
Option B:	1000010																																				
Option C:	1100011																																				
Option D:	1101010																																				
7.	Which of the following statement is False ?																																				
Option A:	Power dissipation of CMOS logic family is minimum.																																				
Option B:	Fan out of CMOS family is maximum.																																				
Option C:	CMOS family has minimum propagation delay.																																				
Option D:	CMOS family has high noise margin.																																				
8.	The Verilog code given below is _____ modelling of _____. <pre> module unknown (input a , b , c , d , x , y , output out); assign out = x ? (y ? d : c) : (y ? b : a) ; endmodule </pre>																																				
Option A:	behavioral, demultiplexer																																				
Option B:	data flow, demultiplexer																																				
Option C:	behavioral, multiplexer																																				
Option D:	data flow, multiplexer																																				
9.	Truthtable of a function F is given below. The minimized POS equation of the function is F = _____																																				
	<table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> <th>F</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>X</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>X</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td></tr> </tbody> </table>	A	B	C	F	0	0	0	X	0	0	1	0	0	1	0	1	0	1	1	0	1	0	0	0	1	0	1	0	1	1	0	X	1	1	1	1
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Option C:	$(A' + C) (B + C')$																																				
Option D:	$(A + C') (B' + C)$																																				

Question

10.	Which of the following conditions is False for interfacing of ICs belonging to two different logic families?
Option A:	$V_{OH}(\text{driver}) > V_{IH}(\text{load})$
Option B:	$V_{OL}(\text{driver}) > V_{IL}(\text{load})$
Option C:	$ I_{OH}(\text{driver}) > N I_{IH}(\text{load}) $
Option D:	$ I_{OL}(\text{driver}) > N I_{IL}(\text{load}) $

Q2. (20 Marks)	Solve any Four out of Six (5 marks each).
A	Minimize the function $f1(P,Q,R,S) = \sum m(2, 5, 6, 9, 12, 13, 15) + d(7, 8)$ and implement using minimum number of only NAND gates.
B	Draw an 8 bit comparator using two 7485 ICs. In the diagram indicate the input data applied to the comparator for the comparison of two 8 bit numbers: A= 10010011, B = 01111101. Also indicate various output values in the same diagram.
C	Explain standard TTL NAND circuit operation with appropriate circuit diagram.
D	Draw Johnson counter circuit and neat wave forms. Specify the applications of the same.
E	Write a Verilog code for 2 : 4 Decoder with active low enable. Include appropriate comments in the code.
F	Perform the following conversions i) decimal number 49 to Excess 3 code1 mark ii) decimal number 72 to Gray code1 mark iii) Find Odd Parity Hamming code for the data 10113 marks

Question

Q3. (20 Marks)	Solve any Two Questions out of Three (10 marks each).															
A	<p>i) Explain what is Master Slave JK flipflop and its advantage.2 marks</p> <p>ii) Convert JK flipflop into MN flipflop. The truthtable of MN flipflop is given below:</p> <table data-bbox="587 546 778 779"> <thead> <tr> <th>M</th> <th>N</th> <th>Q_{n+1}</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>1</td> <td>0</td> <td>Q_n'</td> </tr> <tr> <td>1</td> <td>1</td> <td>Q_n</td> </tr> </tbody> </table> <p>Show all the conversion steps. 8 marks</p>	M	N	Q_{n+1}	0	0	0	0	1	1	1	0	Q_n'	1	1	Q_n
M	N	Q_{n+1}														
0	0	0														
0	1	1														
1	0	Q_n'														
1	1	Q_n														
B	Design a Mealy type sequential state machine which detects a sequence 1001 received at its serial input X. The output Y goes high for one clock pulse when the desired sequences is received; otherwise Y remains low.															
C	Explain FPGA architecture with neat diagrams.															

Q4. (20 Marks)	Solve any Four out of Six (5 marks each).																																							
A	Design Mod 60 counter using IC 7490. Explain the working.																																							
B	Explain how Universal shift register can be used as parallel to serial data converter.																																							
C	Identify equivalent states from the following table and draw a minimized state diagram. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Present State</th> <th colspan="2">Next State</th> <th colspan="2">Output</th> </tr> <tr> <th>x = 0</th> <th>x = 1</th> <th>x = 0</th> <th>x = 1</th> </tr> </thead> <tbody> <tr> <td><i>a</i></td> <td><i>c</i></td> <td><i>f</i></td> <td>1</td> <td>0</td> </tr> <tr> <td><i>b</i></td> <td><i>e</i></td> <td><i>d</i></td> <td>1</td> <td>0</td> </tr> <tr> <td><i>c</i></td> <td><i>a</i></td> <td><i>d</i></td> <td>1</td> <td>0</td> </tr> <tr> <td><i>d</i></td> <td><i>e</i></td> <td><i>d</i></td> <td>0</td> <td>1</td> </tr> <tr> <td><i>e</i></td> <td><i>a</i></td> <td><i>b</i></td> <td>0</td> <td>1</td> </tr> <tr> <td><i>f</i></td> <td><i>e</i></td> <td><i>f</i></td> <td>0</td> <td>1</td> </tr> </tbody> </table>	Present State	Next State		Output		x = 0	x = 1	x = 0	x = 1	<i>a</i>	<i>c</i>	<i>f</i>	1	0	<i>b</i>	<i>e</i>	<i>d</i>	1	0	<i>c</i>	<i>a</i>	<i>d</i>	1	0	<i>d</i>	<i>e</i>	<i>d</i>	0	1	<i>e</i>	<i>a</i>	<i>b</i>	0	1	<i>f</i>	<i>e</i>	<i>f</i>	0	1
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D	Write a Verilog code for a T flip flop.																																							
E	Explain the internal structure of PLA and show the implementation of following functions on PLA: $f1 = A'B + BC' + AB'D$ $f2 = (A + B)(C' + D')$																																							
F	Explain the working of BCD adder using IC 7483.																																							

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31/12/2021_Data Structures and Algorithms _Electronics and Computer Science (ECS) _Sem III_R19

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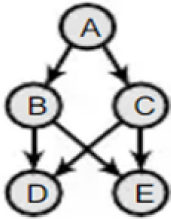
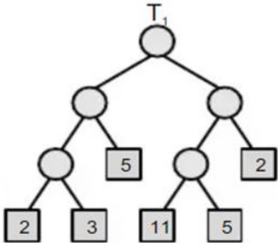
GCR 2

MCQ and Descriptive section

Question

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	It is a first-in, first-out (FIFO) data structure in which the element that is inserted first is the first one to be taken out.
Option A:	Arrays
Option B:	Linked list
Option C:	Stacks
Option D:	Queues
2.	What is the postfix equivalent for infix expression $(A * B) + (C / D) - (D + E)$
Option A:	AB*CD/+DE+-
Option B:	AB*CD/DE++-
Option C:	AB*CD/DE+--+
Option D:	AB*CD/+D+E-
3.	Total number on nodes at the nth level of a binary tree can be given as
Option A:	2^n
Option B:	$2^{(n+2)}$
Option C:	$2^{(n+1)}$
Option D:	$2^{(n-1)}$
4.	The circular queue will be full only when _____.
Option A:	FRONT = MAX - 1 and REAR = Max - 1
Option B:	FRONT = 0 and REAR = Max - 1
Option C:	FRONT = MAX - 1 and REAR = 0
Option D:	FRONT = 0 and REAR = 0
5.	The memory use of an adjacency matrix is
Option A:	$O(n)$
Option B:	$O(n^2)$
Option C:	$O(n^3)$
Option D:	$O(\log n)$
6.	A card game player arranges his cards and picks them one by one. With which sorting technique can you compare this example?
Option A:	Bubble sort.
Option B:	Selection sort.
Option C:	Merge sort.
Option D:	Insertion sort.
7.	What is the disadvantage of linked list?
Option A:	Must be declared to have some fixed size.
Option B:	Slow search operation and requires more memory space.
Option C:	Insertion and deletion of elements can be problematic because of shifting of elements from their positions.
Option D:	Complicated deletion algorithm.

Question

8.	<p>For the directed acyclic graph (DAG) given below, which of the topological sort is not correct?</p> 
Option A:	A, B, C, D, E
Option B:	A, B, C, E, D
Option C:	A, C, B, D, E
Option D:	A, D, E, B, C
9.	<p>What is the weighted external path length of tree T₁?</p> 
Option A:	67
Option B:	49
Option C:	77
Option D:	36
10.	<p>What is the appropriate location in the hash table for key 67890 if size of hash table is 1000?</p>
Option A:	617
Option B:	260
Option C:	0.37
Option D:	41958

Question

Q2.	Solve any Four out of Six (5 marks each)						
A	Define data structure. Differentiate linear and non-linear data structure with example.						
B	Convert the following infix expression to postfix equivalent. $(A - 2 * (B + C) / D * E) + F$						
C	Differentiate between Arrays and Linked Lists.						
D	What are the different ways to represent graphs in memory?						
E	Sort the elements in the following array using quick sort algorithm. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>25</td> <td>8</td> <td>37</td> <td>20</td> <td>23</td> <td>48</td> </tr> </table>	25	8	37	20	23	48
25	8	37	20	23	48		
F	Calculate the hash value for keys 1234 and 5642 using the mid-square method. The hash table has 100 memory locations.						

Q3.	Solve any Two Questions out of Three (10 marks each)
A	Write a program in C to check for balanced parentheses in an expression using stack.
B	Given the postorder and inorder traversal of a binary tree, construct the original tree: Post order: D H I E B J F G C A In-order: D B H E I A F J C G
C	<p>Consider the graph G given in Figure. Assume that G represents the daily flights between different cities and we want to fly from city A to I with minimum stops. Find the minimum path P from A to I using Breadth-First Search technique, given that every edge has a length of 1. Write a program in C to implement Breadth-First Search algorithm.</p>

Question

Q4.	Solve any Two Questions out of Three (10 marks each)					
A	Write a short note on Application of linked list – Polynomial addition.					
B	Given the frequency for the following symbols, Compute the Huffman code for each symbol.					
	Symbol	A	B	C	D	E
	Frequency	24	12	10	8	8
C	Consider a hash table of size 10. Using linear probing, insert the keys 72, 27, 36, 24, 63, 81, 92 and 101 into the table.					

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3/1/2022_Database Management Systems_Electronics and Computer Science (ECS)_Sem III_R19

The question paper will have MCQs (for 20 marks) and subjective/descriptive questions (for 60 marks)

MCQ correct options and subjective questions answers to be written on papers. Scan all pages of answer papers of Q1 to Q4 and create single file in pdf format to upload in the link provided

* Required

1. Email *

2. Enter your Name *

3. Enter Exam Seat number(as per Hall Ticket) *

4. Class Roll No: *

5. GCR No *

Mark only one oval.

GCR 1

GCR 2

MCQ and Descriptive section

Question

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The term "FAT" is stands for _____
Option A:	File Allocation Tree
Option B:	File Allocation Table
Option C:	File Allocation Graph
Option D:	All of the options
2.	A huge collection of the information or data accumulated form several different sources is known as _____:
Option A:	Data Management
Option B:	Data Mining
Option C:	Data Warehouse
Option D:	Data Double
3.	In ER model the details of the entities are hidden from the user. This process is called:
Option A:	generalization
Option B:	specialization
Option C:	abstraction
Option D:	Relation
4.	For select operation the _____ appear in the subscript and the _____ argument appears inthe paranthesis after the sigma.
Option A:	Predicates, relation
Option B:	Relation, Predicates
Option C:	Operation, Predicates
Option D:	Relation, Operation
5.	Which of the following is not a DDL command?
Option A:	TRUNCATE
Option B:	ALTER
Option C:	CREATE
Option D:	UPDATE
6.	Data Manipulation Language (DML) is not to
Option A:	Create information table in the Database
Option B:	Insertion of new information into the Database
Option C:	Deletion of information in the Database
Option D:	Modification of information in the Database
7.	A function that has no partial functional dependencies is in _____ form:
Option A:	3NF
Option B:	2NF
Option C:	4NF
Option D:	BCNF

Question

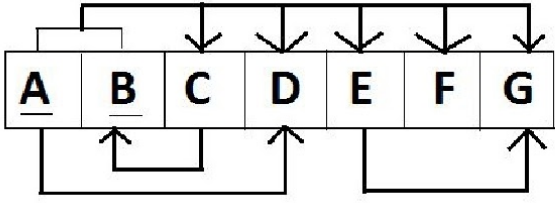
8.	Which data manipulation command is used to combines the records from one or more tables?
Option A:	SELECT
Option B:	PROJECT
Option C:	JOIN
Option D:	PRODUCT
9.	When a program is abnormally terminated, the equivalent of a _____ command occurs.
Option A:	COMMIT
Option B:	ROLLBACK
Option C:	QUIT
Option D:	EXIT
10.	The _____ statement is used to end a successful transaction.
Option A:	COMMIT
Option B:	DONE
Option C:	END
Option D:	QUIT

Q2	Solve any Four out of Six (5 marks each)
A	<i>Explain DBMS system architecture in detail.</i>
B	<i>Explain different types of Relational Algebra operations.</i>
C	<i>Explain the difference between File system model, Relational model and ER Model.</i>
D	<i>Define generalization and specialization and explain different keys in DBMS.</i>
E	<i>Define Transaction & Concurrency control</i>
F	Define the term Weak entity, Partial Participation, Total participation and Entity type

Question

Q3	Solve any Two Questions out of Three (10 marks each)
A	Draw ER Diagram for banking enterprise.
B	<p>Consider the following schema for College Library.</p> <p>Student (Roll_no, Name, Branch)</p> <p>Book (ISBN, Title, Author, Publisher)</p> <p>Issue (Roll_no, ISBN, Date_of_Issue)</p> <p>Write SQL queries for the following statements:</p> <p>i. List Roll Number and Name of all students of the branch IT.</p> <p>ii. Find the name of students who have issued a book published by 'XYZ' publisher.</p> <p>iii. List title of all books and their author issued by student 'Alice'</p> <p>iv. List title of all books issued on or before 31st DEC, 2019</p>
C	<p>Consider a relation R with five attributes ABCDE. You are given the following dependencies:</p> <p>$A \rightarrow B$ $BC \rightarrow E$ $ED \rightarrow A$</p> <p>i. List all keys for R</p> <p>ii. Is R in 3NF</p> <p>iii. Is R in BCNF</p>

Question

Q4	Solve any Two Questions out of Three (10 marks each)
A	<p>Solve all queries below using only select, project, Cartesian product, and natural join.</p> <p>First Schema Suppliers (sID, sName, address) Parts (pID, pName, colour) Catalog (sID, pID, price) Catalog[sID] ⊆ Suppliers[sID] Catalog[pID] ⊆ Parts[pID]</p> <ol style="list-style-type: none"> i. Find the names of all red parts. ii. Find all prices for parts that are red or green. (A part may have different prices from different manufacturers.) iii. Find the sIDs of all suppliers who supply a part that is red or green. iv. Find the sIDs of all suppliers who supply a part that is red and green. v. Find the names of all suppliers who supply a part that is red or green.
B	<p>Construct a dependency diagram of relation R and normalize it upto the BCNF Normal form.</p> 
C	<p>Define Normalization. Explain 1NF, 2NF and 3NF with suitable example.</p>

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