QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF SECOND SEMESTER – SECOND YEAR (4TH SEMESTER) 2022, 20-BATCH, B.E (ES)

SUBJECT: INTEGRATED ELECTRONICS

Dated: 25.11.2022 Maximum Marks: 20 Time Allowed: 01 Hour,

NOTE: ATTEMPT ANY TWO (02) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No		QUESTIONS	CLO	Taxonomy Level	PLO	Marks
01	(a)	What is an integrated circuit (IC)? How to Compare Integrated circuits over discrete circuits? Describe the types of IC's based on its manufacturing.	CLO_1	C_2	PLO_1	[05]
	(b)	Discuss Moore's Law and its relevance with respect to evolution of IC technology. Classify the types of IC's based on its applications.	CLO_1	C_2	PLO_1	[05]
02	(a)	Classify the various types of Logic Families. Identify digital logic families based on their characteristics.	CLO_1	C_2	PLO_1	[05]
	(b)	Explain the basic operation of Transistor Transistor Logic (TTL) and Direct Coupled Transistor logic (DCTL) with circuit diagram and truth table.	CLO_1	C_2	PLO_1	[05]
03	(a)	Identify the Various fabrication Steps of IC. Discuss Oxidation and Photo-lithography process.	CLO_1	C_2	PLO_1	[05]
	(b)	How ideal and practical Op-amp differ to each other? What is the use of differential amplifier at the input stage of Op-amp	CLO_1	C_2	PLO_1	[05]

The End

QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE AND TECHNOLOGY, NAWABSHAH

MID SEMESTER EXAMINATION 2021 OF FIRST SEMESTER THIRD YEAR (20-BATCH) OF B.E. (ELECTRONICS ENGINEERING)

SUBJECT: COMPLEX VARIABLE AND TRANSFORMS

Dated: 22-11-2022 **Time Allowed: 1 Hour (3 C.H)** **Max: Marks: 20**

NOTE: ATTEMPT ANY TWO QUESTIONS.

Q. No		CLO	Taxonomy Level	Marks
1(a)	State and Prove De Moivre's theorem. Using De Moivre's theorem convert the following in to polar form: $\left(\frac{1}{2}-\frac{\sqrt{3}}{2}i\right)^5$	1	C1	6
1(a)	Simplify: i) $\log(1+\sqrt{2}i)$ ii) $(1+i)^{(1-i)}$	1	C2	4
2	State and Prove Cauchy Riemann (C-R) Equation. Using C-R equation check the following functions are analytic or not. i) $f(z)=\sin(z)$ ii) $f(z)=\frac{z}{\lvert z\rvert}$	1	C1	10
3	Define Harmonic function and conjugate harmonic function. Let f(z)=u+iv is an analytic function then find the Harmonic Conjugate function v such that $u(x,y) = 2x(1-y)$.	1	C1	10

Name of Subject Teacher: Mr. Mehboob Ali Jatoi

---The End---

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID SEMESTER REGULAR EXAMINATION OF SECOND SEMESTER – SECOND YEAR 2022 OF 20 BATCH B.E (ES)

SUBJECT: ELECTRICAL MACHINES

Dated: 24.11.2022 **Maximum Marks: 20** **Time Allowed: 01 Hours.**

NOTE: ATTEMPT ANY TWO (02) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.	QUESTION	CLOs	Taxonomy Level	PLOs	Marks
Q. 01(a)	Why transformer rating in KVA? Also Explain an ideal transformer on No load condition.	C1	2	P1	05
Q. 01(b)	Derive an Expression of E.M.F equation of a transformer.	C2	4	P2	05
Q. 02(a)	Define the following 1. Mutual Induction 2. Magnet circuit 3. Reluctance. 4. D.C motor	C1	2	P1	04
Q. 02(b)	A 25KVA single phase transformer has 240 turns on the primary and 50 turns on the secondary winding. The primary is connected to 1500 Volts, 50Hz mains. Calculate i. primary and secondary current on full load ii. secondary e.m.f iii. maximum flux in the core.	C2	4	P2	06
Q.3(a)	Define working principle of D.C generator. With the help of sketch diagram, discuss the constructional parts of d.c Machines	C1	2	P1	05
Q.3(b)	A 4 pole lap wound d.c Generator has 400 conductors on its armature. The flux per pole is 0.03Wb. Calculate (I) The speed at which the Generator must be run to generate 200V. (2) What would be the speed if the Generator were Wave wound?	C2	4	P2	05

Good Luck

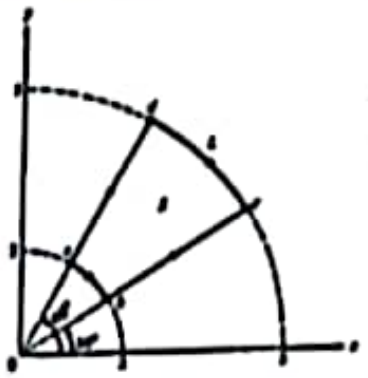
QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF SECOND SEMESTER - SECOND YEAR 2021 OF 20 BATCH B.E (ES)

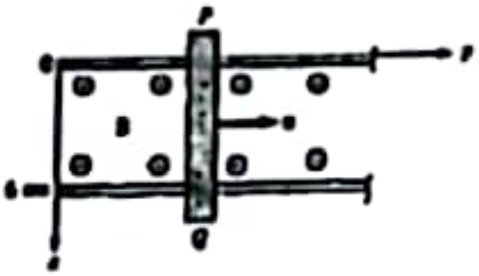
SUBJECT: ELECTROMAGNETIC FIELD THEORY

Dated: 16.01.2023 Maximum Marks: 60 Time Allowed: 3 Hours.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.		QUESTION	CLOs	Taxonomy Level	PLOs	Marks
Q. 01	(a)	Describe the concept of an electrostatic field as a conservative field.	1	2	1	5
	(b)	If $A = \rho \cos\varphi\, a_\rho + \sin\varphi\, a_\varphi$, solve to find $\oint A \cdot dl$ around the path shown in Figure. Confirm the result using Stokes's theorem. 	2	3	2	7
Q. 02		Consider a parallel plate capacitor having $d = 5$ mm, $S = 80$ cm^2, and $\varepsilon_R = 10$. Solve to: i. Find the capacitance. ii. If a dc source of 50 V is now placed across the capacitor, calculate E, D, Q and the total stored energy. iii. The source is now disconnected and the dielectric is carefully removed from between the plates. Find Q, D, E, and the total stored energy. iv. Find the new potential between the plates.	2	3	2	12
Q. 03	(a)	Explain Biot-Savart's law with an example of a straight current carrying filamentary conductor of finite length AB.	1	2	1	6
	(b)	A circular loop located on $x^2 + y^2 = 9$, $z = 0$ carries a direct current of 10 A along a_φ as shown in Figure. Solve to determine H at (0, 0, 4) and (0, 0, -4). Sketch the flux lines due to the circular current loop. 	2	3	2	6

P.T.O

Q. 04	(a)	The magnetostatic fields have no sources and sinks. Elaborate.	1	2	1	6
	(b)	A conducting bar can slide freely over two conducting rails as shown in the figure below. Calculate the induced voltage in the bar i. If the bar is stationed at $y = 8$ cm and $B = 4\cos 10^4 t\ a_z$ mWb/m² ii. If the bar slides at a velocity $u = 20\ a_y$ m/s and $B = 4\ a_z$ mWb/m² 	2	3	2	6
Q. 05	(a)	Explain the inadequacy of Ampere's law for time-varying conditions. How this inconsistency was addressed by Maxwell?	1	2	1	8
	(b)	In free space, $E = 20\cos(\omega t - 50z)\ a_y$ V/m. Solve to find: i. Displacement current density, J_d ii. Magnetic field intensity, H	2	3	2	4

The End

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF SECOND SEMESTER – SECOND YEAR 2021 OF 20-BATCH(B.E (ES)

SUBJECT: MICROPROCESSORS AND MICROCONTROLLERS

Dated: 09.01.2023 **Maximum Marks: 60** **Time Allowed: 3 Hrs**

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No		QUESTIONS	CLO	Taxonomy Level	PLO	Mark
01		Describe and draw the pin diagram of an 8085 microprocessor. Explain the functions of the following pins in detail 1. SID and SOD 2. INTR and INTA 3. RESET IN and RESET OUT 4. S0, S1 and IO/M' 5. HOLD and HLDA	CLO_1	C_2	PLO_1	12
02	(a)	Build a microprocessor program for 8085 MP to find the 2's complement of your ROLL NUMBER. Your roll number is already in hex format. Store the result at memory location $20F0_H$. Add 05_H to the result and store it in the next location $20F1_H$.	CLO_2	C_6	PLO_4	06
	(b)	Create a microprocessor program for 8085 MP that compares two numbers ($0F_H$ and 11_H), already stored at memory locations 2050_H and 2051_H respectively. Store the larger number at memory location 2080_H	CLO_2	C_6	PLO_4	06
03		Build a microprocessor program for 8085 MP, that sum the following series up to 9_D places. The series is available at memory locations starting from 2070_H. The series is given as follows 01_H, 02_H, 03_H, ... 09_H. Store the result at the memory location at 2050_H The program starts from 2150_H memory locations.	CLO_2	C_6	PLO_4	12
04	(a)	Build a microprocessor program that interchange (swap) the contents of two memory locations 20D0H and 20F1H.	CLO_2	C_6	PLO_4	06
	(b)	What is the machine cycle for the 8051 Microcontroller? Evaluate the Machine cycle for an 8051 microcontroller working at 28 MHz. What is the time required to execute multiplication instructions for this microcontroller? Multiplication instructions required 12 MC.	CLO_2	C_6	PLO_4	06
05	(a)	Describe and draw the pin diagram of the 8051 microcontroller. Explain the functions of the following pins in detail, 1. Port 1 and Port 3 2. PSEN' 3. EA' 4. ALE	CLO_1	C_2	PLO_1	06
	(b)	Explain the following addressing modes for the 8051 Microcontroller in detail with suitable examples, 1. Direct A.M 2. Register A.M 3. Indirect A.M 4. Immediate A.M	CLO_1	C_2	PLO_1	06

Best of Luck!

Mnemonic	Op code (hex)
ADD A	87
ADD B	80
ADD C	81
ADD D	82
ADD E	83
ADD H	84
ADD L	85
ADD M	86
ADI n	C6
ADC A	8F
ADC B	88
ADC C	89
ADC D	8A
ADC E	8B
ADC H	8C
ADC L	8D
ADC M	8E
ACI n	CE
ANA A	A7
ANA B	A0
ANA C	A1
ANA D	A2
ANA E	A3
ANA H	A4
ANA L	A5
ANA M	A6
ANI n	E6
CALL nn	CD
CZ nn	CC
CNZ nn	C4
CP nn	F4
CM nn	FC
CC nn	DC
CNC nn	D4
CPE nn	EC
CPO nn	E4
CMA	2F
CMC	3F
CMP A	BF
CMP B	B8
CMP C	B9
CMP D	BA
CMP E	BB
CMP H	BC
CMP L	BD
CMP M	BE
CPI n	FE
DAA	27
DAD B	09
DAD D	19
DAD H	29
DAD SP	39
DCR A	3D
DCR B	05
DCR C	0D
DCR D	15
DCR E	1D
DCR H	25
DCR L	2D
DCR M	35
DCX B	0B
DCX D	1B
DCX H	2B

	Mnemonic	Op code (hex)
D	DCX SP	3B
	DI	F3
E	EI	FB
H	HLT	76
	IN n	DB
I	INR A	3C
	INR B	04
	INR C	0C
	INR D	14
	INR E	1C
	INR H	24
	INR L	2C
	INR M	34
J	INX B	03
	INX D	13
	INX H	23
	INX SP	33
	JMP nn	C3
	JZ nn	CA
	JNZ nn	C2
	JP nn	F2
	JM nn	FA
	JC nn	DA
	JNC nn	D2
	JPE nn	EA
	JPO nn	E2
L	LDA nn	3A
	LDAX B	0A
	LDAX D	1A
	LHLD nn	2A
	LXI B,nn	01
	LXI D,nn	11
	LXI H,nn	21
	LXI SP,nn	31
M	MOV A,B	78
	MOV A,C	79
	MOV A,D	7A
	MOV A,E	7B
	MOV A,H	7C
	MOV A,L	7D
	MOV A,M	7E
	MOV B,A	47
	MOV B,C	41
	MOV B,D	42
	MOV B,E	43
	MOV B,H	44
	MOV B,L	45
	MOV B,M	46
	MOV C,A	4F
	MOV C,B	48
	MOV C,D	4A
	MOV C,E	4B
	MOV C,H	4C
	MOV C,L	4D
	MOV C,M	4E
	MOV D,A	57
	MOV D,B	50
	MOV D,C	51
	MOV D,E	53
	MOV D,H	54
	MOV D,L	55
	MOV D,M	56

	Mnemonic	Op code (hex)
M	MOV E,A	5F
	MOV E,B	58
	MOV E,C	59
	MOV E,D	5A
	MOV E,H	5C
	MOV E,L	5D
	MOV E,M	5E
	MOV H,A	67
	MOV H,B	60
	MOV H,C	61
	MOV H,D	62
	MOV H,E	63
	MOV H,L	65
	MOV H,M	66
	MOV L,A	6F
	MOV L,B	68
	MOV L,C	69
	MOV L,D	6A
	MOV L,E	6B
	MOV L,H	6C
	MOV L,M	6E
	MOV M,A	77
	MOV M,B	70
	MOV M,C	71
	MOV M,D	72
	MOV M,E	73
	MOV M,H	74
	MOV M,L	75
	MVI A,n	3E
	MVI B,n	06
	MVI C,n	0E
	MVI D,n	16
	MVI E,n	1E
	MVI H,n	26
	MVI L,n	2E
	MVI M,n	36
N	NOP	00
O	ORA A	B7
	ORA B	B0
	ORA C	B1
	ORA D	B2
	ORA E	B3
	ORA H	B4
	ORA L	B5
	ORA M	B6
	ORI n	F6
	OUT n	D3
P	PCHL	E9
	POP B	C1
	POP D	D1
	POP H	E1
	POP PSW	F1
	PUSH B	C5
	PUSH D	D5
	PUSH H	E5
	PUSH PSW	F5
R	RAL	17
	RAR	1F
	RLC	07
	RRC	0F
	RIM	20
	RET	C9
	RZ	C8

	Mnemonic	Op code (hex)
	RNZ	C0
	RP	F0
	RM	F8
	RC	D8
	RNC	D0
	RPE	E8
	RPO	E0
R	RST 0	C7
	RST 1	CF
	RST 2	D7
	RST 3	DF
	RST 4	E7
	RST 5	EF
	RST 6	F7
	RST 7	FF
S	SIM	30
	SPHL	F9
	SHLD nn	22
	STA nn	32
	STAX B	02
	STAX D	12
	STC	37
	SUB A	97
	SUB B	90
	SUB C	91
	SUB D	92
	SUB E	93
	SUB H	94
	SUB L	95
	SUB M	96
	SUI n	D6
	SBB A	9F
	SBB B	98
	SBB C	99
	SBB D	9A
	SBB E	9B
	SBB H	9C
	SBB L	9D
	SBB M	9E
	SBI n	DE
X	XCHG	EB
	XTHL	E3
	XRA A	AF
	XRA B	A8
	XRA C	A9
	XRA D	AA
	XRA E	AB
	XRA H	AC
	XRA L	AD
	XRA M	AE
	XRI n	EE

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF SECOND SEMESTER – SECOND YEAR 2021 OF 20 BATCH B.E (ES)

SUBJECT: ELECTRICAL MACHINES

Dated: 19.01.2023 Maximum Marks: 60 Time Allowed: 3 Hours.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.		QUESTION	CLOs	Taxonomy Level	PLOs	Marks
Q. 1	(a)	Define transformer. State and explain efficiency of transformer.	1	C2	1	06
	(b)	A 40 KVA transformer has iron loss of 400W and full load copper loss of 840W. If the power factor of the load is 0.8 lagging. Calculate (i) full load efficiency (ii) the load at which maximum efficiency occurs and (iii) the maximum efficiency.	2	C4	2	06
Q. 2	(a)	State and explain back E.M.F of DC motor. What is importance of back E.M.F.	1	C2	1	06
	(b)	Derive an expression of Armature Torque Equation of D.C. Motor.	2	C4	2	06
Q. 3	(a)	State and explain flux Speed Control method of D.C. Shunt Motor. Also enlist its advantages and disadvantages.	1	C2	1	06
	(b)	A 230V motor has an armature circuit resistance of 0.4Ω. If the full load armature current is 30A and no load armature current is 4A. Find the change in back e.m.f from no load to full load.	2	C4	2	06
Q. 4	(a)	Define synchronous speed. Discuss construction, Principle operation of three phase induction motor.	1	C2	1	06
	(b)	A 6-pole alternator running at 1000 r.p.m. supplies an 8- pole induction motor. Find the actual speed of the motor if the slip is 2.5%.	2	C4	2	06
Q. 5	(a)	Why synchronous motor is not self start? Discuss construction, operating principle of synchronous motor. What is difference between induction motor and synchronous motor?	1	C2	1	06
	(b)	A 3-phase synchronous motor has 4 poles and operates from 440V, 50HZ supply. Calculate its speed. If it takes a line current of 100A at 0.8 power factor. What torque the motor will be developing? Neglect losses.	2	C4	2	06

The End

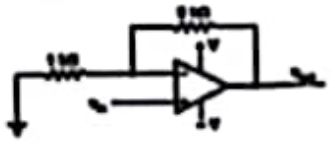
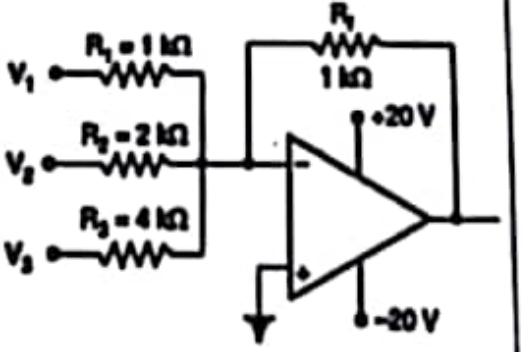
QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF SECOND SEMESTER – SECOND YEAR 2021 OF 20-BATCH B.E (ES)

SUBJECT: INTEGRATED ELECTRONICS

Dated: 12.01.2023 Maximum Marks: 60 Time Allowed: 3 Hours.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.	QUESTIONS	CLO	Taxonomy Level	PLO	Marks
Q:01 (a)	Describe i) Differential amplifier in DC conditions and its single ended operation. ii) CMOS logic and CMOS Inverter. iii) 555 Timer IC as an astable multivibrator. iv) Gain Bandwidth product.	1	C2	1	(08)
(b)	Calculate close loop gain and output voltage for applied 20mv peak input signal. 	3	C3	2	(04)
Q:02 (a)	Compare the op-amp connected in close loop as linear amplifier in Inverting and Non Inverting configurations. Derive the voltage gain expression of Inverting amplifier.	2	C4	4	(06)
(b)	Perform analysis of open loop frequency response of 741op-amp having open loop gain of 106dB. Show effect of Negative feedback on close loop bandwidth.	2	C4	4	(06)
Q:03 (a)	Perform the operational Analysis on Op-amp as Differentiator and Non zero level detector with the use of input and output waveforms of output voltage.	2	C4	4	(06)
(b)	Compare the application of op-amp as summer with its types. Show how the op amp is connected in 4 bit binary weighted Digital to Analog converter.	2	C4	4	(06)
Q:04 (a)	Consider an op-amp in inverting amplifier configuration having Rf=220KΩ, Ri=3.3KΩ, Aol= 100dB and Unity gain Bandwidth of 3Mhz. Solve the close loop BW (cl).	3	C3	2	(06)
(b)	Consider an op-amp integrator having a capacitor of 0.01uF and input resistor 10KΩ with applied square wave input of +2.5V for 100us and -2.5V for 100us. Determine ΔVout for applied square wave. Draw the output waveform which starts at 0V.	3	C3	2	(06)
Q:05 (a)	Consider a comparator with Hysteresis having both resistors of 2KΩ in positive feedback loop. Calculate V_{UTP} and V_{LTP} and V_{HYS}.	3	C3	2	(06)
(b)	Determine the weight of each input voltage for scaling adder and find the output voltage for the applied input voltages of V_1=1V, V_2=2V, and V_3=3V. 	3	C3	2	(06)

Good Luck