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

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – THIRD YEAR (5TH SEMESTER) 2023, 20-BATCH, B.E (ES)

SUBJECT: NUMERICAL ANALYSIS WITH COMPUTER APPLICATIONS

Dated: 09.03.2023 Maximum Marks: 20 Time Allowed: 01 Hour.

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

Q. No.		Questions	CLOs	Taxonomy Level	Marks
Q. 01		How is a real root of non-linear equation $F(x)=0$ located in $[a,b]$ Derive the Regula-Falsi scheme to find an approximate real root. The resistance R in the electrical network varies with the current I according to $R = A + BI^{1/2}$, by Ohm's law, $V = IR$. Determine I, using N-R method correct to 2% accuracy, given that $V = 5$, $A = 100$, and $B = 10$.	1	C1	10
Q. 02		Write and discuss the algorithms and convergence criteria of direct methods for solving the system of linear equations. Compute the solution of following linear system arising from U-phone network system by direct method. $4x_1 + 5x_2 - 2x_3 = 5.6,\ 2x_1 + 3x_2 + x_3 = 1.3,\ 2x_1 + 4x_2 + 4x_3 = 9.5$	2	C2	10
Q. 03	(a)	Define the convergence criteria of the indirect methods for solving $AX = B$. Solve the following developed relationship between the various mobile network systems by Gauss-Seidal method, results correct to $2dp$ accuracy. $4x + y - z = 13,\ 3x + 5y + 2z = 21,\ 2x + y + 6z = 14$	2	C2	07
	(b)	Find the Largest Eigen value and its corresponding Eigen vectors of $2x + 2y + z = 0,\ x + 3y + 3z = 0,\ x + 2y + 2z = 0$.	2	C2	03

The End

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

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – THIRD YEAR (5TH) 2023, 20-BATCH, B.E (ES)

SUBJECT: EMBEDDED SYSTEM DESIGN

Dated: 08.03.2023 Maximum Marks: 20 Time Allowed: 01 Hour

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

Q. No.		Question	CLO	Taxonomy Level	PLO
Q. 01	(a)	Discuss any FIVE design challenges for an embedded system designer.	01	C2	01
	(b)	Design a combinational circuit having 3 inputs (a,b,c) and 2 outputs (x,y,z) with the following problem description. • The output x is 'high' if inputs a and b are 'high' or b and c are 'high' • The output y is 'high' if inputs a or c are 'high' The output z is 'high' if inputs b and c are 'high', or a or c are "high"	02	C4	05
Q. 02	(a)	Explain the basic architecture of a microprocessor.	01	C2	01
	(b)	Differentiate Princeton architecture and Harvard architecture.	02	C4	05
Q. 03	(a)	Discuss watchdog timer.	01	C2	01
	(b)	What is cache memory. Differentiate the three levels cache memory in terms of size, speed and cost.	02	C4	05

The End

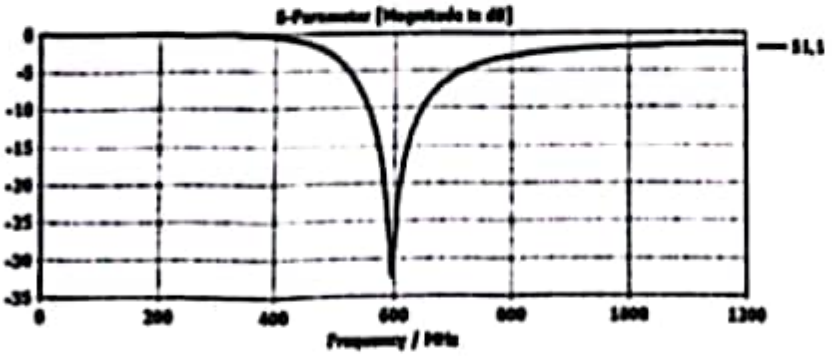
QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHA

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – THIRD YEAR (5TH SEMESTER) 2023, 20 PATCH, B.E (ES)

SUBJECT: WAVE PROPAGATION AND ANTENNAS

Dated: 13.03.2023 Maximum Marks: 20 Time Allowed: 1 Ho

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

Q. No.		QUESTION	CLO	Level	PLO	M
Q. 01		What is an antenna? In addition, Describe the various important antenna parameters/terms used to understand and analysis the functionality of transmitting or radiating systems	1	2	1	
Q. 02	(a)	Discuss the basics of a dipole antenna? In addition, briefly explain the basic principle using the Maxwell's equation how an antenna receives and transmit the signal in the air or free space	1	2	1	
	(b)	Explain the basics of a Friis equation? In addition, also calculate how much power at the mobile receiver would arrive at a distance of 500 meters away from a transmitter if it is emitting a 100 watt power at a frequency of 900 MHz? Given that receiver antenna has a gain factor of 1.6 and transmitter antenna has a gain factor of 1.6.	1	2	1	
Q. 03	(a)	Discuss the near and far field regions of an antenna. In addition, calculate the distance of these regions for a dipole antenna working at 600 MHz frequency.	1	2	1	
	(b)	Explain the term reflection coefficient S_{11}. Furthermore, explain what does following curve is describing. 	1	2	1	

The End

SUBJECT: SIGNALS AND SYSTEMS

Dated: 06.03.2023 Maximum Marks: 20 Time Allowed: 01 Hour

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

Q. No.		Question	CLOs	Taxonomy Level	PLOs	M
Q. 01	(a)	Use Euler theorem to prove that cos(x) is an even signal.	2	C_4	2	
	(b)	Figure Q1: shows a signal  Figure Q1: A signal that is neither even nor odd a) Determine its mathematical expression. b) Demonstrate mathematically that this signal is neither even nor odd. c) Determine mathematically its even and odd parts. d) Plots its even and odd parts determined in (c).	2	C_4	2	
Q. 02	(a)	State, explain, and differentiate between the Generalized Fourier series and the standard Fourier series. Define the term orthogonality and state its advantages as applied to the approximation of a signal using basis signals.	2	C_4	2	
	(b)	Derive the cosine Fourier series from the complex exponential Fourier series.	2	C_4	2	
Q. 03	(a)	Determine the convolution of the following signals $(a)\ x(t) = \begin{bmatrix} 1 & for\ t \geq 4 \\ 0 & for\ t < 4 \end{bmatrix}$ $(b)\ h(t) \begin{bmatrix} 0.5e^{-0.5t} & for\ t \geq 0 \\ 0 & for\ t < 0 \end{bmatrix}$	2	C_4	2	
	(b)	Mathematically express the convolution properties.	2	C_4	2	

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

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – THIRD YEAR (5TH SEMESTER) 2023, 20-BATCH, B.E (ES)

SUBJECT: ECONOMICS AND ENGINEERING MANAGEMENT

Dated: 10.03.2023 Maximum Marks: 10 Time Allowed: 45 Minu

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

Q. No.	QUESTION	CLO	Taxonomy Level	PLO	Mar
Q. 01	Briefly describe engineering economics with its basic principles. Identify problems of financial scarcity.	1	C-2	6	05
Q. 02	Describe business organization and types of ownership.	1	C-2	6	05
Q. 03	Discuss research funding and list types of grants and funding organizations available in Pakistan.	1	C-2	6	05

"GOOD LUCK"

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

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – FIRST YEAR 2023 OF 22 BATCH, B.E (BME)

SUBJECT: INTRODUCTION TO COMPUTERS

Dated: 15.05.2023 Maximum Marks: 30 Time Allowed: 02 Hou

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

Q. No.	QUESTION	CLOs	Taxonomy Level	PLOs	Mark
Q. 01	Differentiate between following. a. RAM vs ROM b. Input Device vs Output Device c. Compiler vs Interpreter	01	02	01	05
	An Interface is window through which user communicate with the computer. Describe the types of interfaces available to communicate with computer.	01	02	01	05
Q. 02	A group of computers which are connected is called a Network. What are possible types of Networks based on Area they cover.	01	02	01	05
	Network Topology is a way in which nodes of a network are arranged. Describe Network topologies, discuss advantages and disadvantages of each topology. Draw diagram wherever necessary.	01	02	01	05
Q. 03	Write a program in PYTHON, which prompt user to take input as number and checks whether the number is prime number or Not. Sample Output 1: Enter a Number: 12 12 is not a prime number. Sample Output2: Enter a Number:13 13 is a prime Number	02	03	01	05
	You are asked to create a program in PYTHON, which ask user to input marks for subject English, Math, GK and Islamiat on runtime, calculates the percentage and grade and print on screen. (*Hint:* Use elif conditional statements) Sample Output: English: 78 Math: 78 GK: 78 Islamiat: 78 Percentage Calculated: 78.00 Grade: A	02	03	01	05

Good Luck

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

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – THIRD YEAR 2021 OF 20 BATCH B.E (E

SUBJECT: NUMERICAL ANALYSIS WITH COMPUTER APPLICATIONS

Dated: 05.06.2023 Maximum Marks: 60 Time Allowed: 3 H

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

Q. No.		Questions	CLO	Taxonomy Level	PLO	M
Q. 01	(a)	Flow of current (I) at time is given by $I = 2T - \ln(T) - 7$, estimate the time with 5% accuracy required for the current to be between 4 to 5 amperes by Bisection method.	1	C2	2	
	(b)	By Cholesky's method find the inverse matrix of the coefficient matrix of the following system of linear equations, which obtained from the computer network. $x + 2y + 3z = 3.7$, $2x + 5y + 2z = 4.9$ and $3x + 2y + 5z = 6.8$.	1	C2	2	
Q. 02		Briefly discuss various types of the interpolation schemes. Derive the Newton's Forward Difference interpolation formula. The relation between the saving of power energy (P) in megawatts by electricity load shading at time in hours (T) is given on the following table.	2	C5	3	

Load Shading in hours.	2	3	4	6
Power Energy	14	17	21	30

Using suitable interpolation technique to interpolate the saving power energy in megawatts, whenever load shading has 5 hours.

Q. 03		Derive first and second orders numerical differentiation schemes on initial point. Evaluate the velocity and acceleration when $t = 4$, from the following dataset.	2	C5	3	1

T(sec)	4	5	6	7	8
S (m)	16.6	17.1	18.2	18.99	19.4

Q. 04		Derive local Trapezoidal rule to find the area under the curve $y = f(x)$ in $[a, b]$. The current I in a circuit is given by $I = \sin t$, where t is time in seconds. For $t = 1$ second with intervals $n = 10$, estimate total charge, using i) Analytical method, ii) Trapezoidal rule and iii) Simpson's 3/8th rule, and analysis the solutions with comparisons to each other's.	2	C5	3	1
Q. 05		Using 4th Runge-Kutta method to solve $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}$, given $y(0) = 1$ at $x = 0.2$.	3	C3	3	1

The End

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

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – THIRD YEAR, 2023 OF 20-BATCH, B.E (ES)

SUBJECT: WAVE PROPAGATION AND ANTENNAS

Dated: 12.06.2023 Maximum Marks: 60 Time Allowed: 3 Hou

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

Q. No.		QUESTION	CLO	Level	PLO	Mar
Q.01	(a)	Discuss the detail of the microstrip transmission line?	1	2	1	06
	(b)	Describe the detail of a coaxial cable? Furthermore, calculate the characteristic impedance of a coaxial cable filled with a material, ε_r =2.3, μ_r=1, and having inner and outer diameters of 1 mm and 3 mm respectively.	1	2	1	06
Q.02	(a)	Explain the term VSWR. In addition, given that, if a transmission line of 100 ohm is connected with 50 load impedance value. Calculate the reflection coefficient and VSWR value.	1	2	1	06
	(b)	What are the ionospheric layers? Discuss its various types and applications.	1	2	1	06
Q.03		Give the detail of a wave guide transmission line? Calculate the TE_{01} and TE_{11} modes cutoff frequencies for the rectangular waveguide having dimensions a = 10 cm and b = 20 cm.	1	2	1	12
Q.04		Describe the basics of a microstrip patch antenna and Yagi antenna with a schematic diagram	1	2	1	12
Q.05		Differentiate the radiation patterns of any of following two antenna types; i. Dipole antenna and slot antenna ii. Dipole and Yagi antenna iii. Dipole and patch antenna And also mention which other antenna parameters are different with each other. Support your answer with a neat and clear diagram.	4	2	2	12

The End

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

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – THIRD YEAR, 2023 OF 20-BATCH, B.E (ES)

SUBJECT: ECONOMICS AND ENGINEERING MANAGEMENT

Dated: 08.06.2023 Maximum Marks: 30 Time Allowed: 02 H

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

Q. No.	QUESTION	CLOs	Taxonomy Level	PLOs	
Q. 01	Sketch the stages of team development and Henry Mintzberg's contemporary model of management. Interpret the basic factors that are reshaping and redefining the manager's job.	2	C_3	11	
Q. 02	Demonstrate the importance of human resource management (HRM) and its process. Also Interpret the external influences that affect the HRM process.	2	C_3	11	
Q. 03	Use Straight Line depreciation method to: i) calculate the annual SL depreciation and plot the yearly book value, if an asset has a first cost of 50,000 with a 10,000 estimated salvage value after 5 years. ii) compute the annual depreciation allowances and the resulting book values by considering the following data on an equipment: Cost basis of the asset(I) = 10,000 Useful life (N) = 5 years Estimated salvage value (S) = 2000	3	C_3	2	

Good Luck

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

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – THIRD YEAR, 2023 OF 20-BATCH, B.E (ES)

SUBJECT: EMBEDDED SYSTEM DESIGN

Dated: 01.06.2023 Maximum Marks: 60 Time Allowed: 3 H

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

Q. No.		QUESTIONS	CLO	Taxonomy Level	PLO	M
01		Describe the various communication protocols used in Embedded systems with neat and clean diagrams. Also, explain the advantages and disadvantages of each protocol.	1	C_2	PLO_1	1
02	(a)	Describe the architecture of the PIC microcontroller with a neat and clean diagram. Also, address some important features of the PIC microcontroller.	1	C_2	PLO_1	
	(b)	Design a PIC microcontroller program that, a) Clear the contents of WREG b) Add your roll number (in decimal) to WREG 15 times and place the result in the SFR of Port B.	2	C_4	PLO_4	
03	(a)	Describe the purpose and parameters used in the following commands of the PIC microcontroller 1. INCFSZ f, d, a 2. MOVFF f_s, f_d 3. IORWF f, d, a 4. MOVWF f, a 5. BCF f, d, a	1	C_2	PLO_1	
	(b)	Design a PIC microcontroller program to determine the content of the 0x50 location. If the content is "00", store your Roll Number (in decimal) in it.	2	C_4	PLO_4	