





PUNJAB ENGINEERING COLLEGE End-Term Examination 2019

Programme: B.E (ELECTRICAL)

Course Name: Engineering Analysis and Design

Maximum Marks: 100

Year/Semester: 4th Semester Course Code: EEN- 206
Time allowed: 3 Hours

- All questions are compulsory.

 Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.

 The candidates, before starting to write the solutions, should please check the question paper for any discrepancy, and also ensure that they have been delivered the question paper of right course code.

Q. N	6.	Marks
1a.)	Draw the analogous electrical circuit of system as shown in the figure using f-v, f-i analogy. Write all equations	12
	R_1 R_2 R_3 R_4 R_3 R_4 R_5	
1b.)	A capacitor of capacitance Cis charged to a voltage V _o and is allowed to discharge through a resistance R while charging a capacitor of capacitance a.C. Determine steady state voltage across terminals a-b.	8
2a.)	Let the following data, x and y are subject to error of same order of magnitude. x: 2, 3, 4, 5, 6, 7, 8, 9 y: 4, 4, 5, 6, 6, 7, 7, 8 Find a straight line approximation using the least square method.	10
2b.)	What happens to the speed when the flux is reduced by 10% in a 200V dc shunt motor having an armature resistance of 0.2 ohms, carrying a current of 50 A and running at 960rpm prior to weakening of field? The total torque may be assumed to be constant and iron and friction losses may be neglected.	7
2c.)	Briefly explain flux control method for speed control of a dc series motor?	3
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A library charges a fine for every book returned late. For first 5 days the fine is two rupees, for 6-10 days fine is three rupees, for 10-30 days fine is four rupees and above 30 days fine is ten rupees. If you return the book after 50 days from the due date. Write a MATLAB program to find out the total amount of fine for this.

Write a MATLAB Program to find y(x) for x = 1 to 100

if
$$y(x) = \begin{cases} x^3 + 3x + 1 & for & x \le 10 \\ x^2 + 8x + 18 & for & 10 < x \le 20 \\ x^2 + 6x + 15 & for & 20 < x \le 80 \\ x^2 + 9x + 25 & for & x > 80 \end{cases}$$

Solve initial value problem y=xy+y²-y(0)=1. Using Euler's improved method find y for x=0.1,0.2 and 0.3. Apply Milne's method to find y for for x=0.4.

Solve the following system of equations by Gauss -Siedel method (three iterations).

$$28x - 3y + 2z = 20$$

 $4x + 11y - z = 33$
 $6x + 3y + 12z = 35$

Explain continuous and discrete- event simulation with example.

Solve by N-R method following system of equations

$$x=2(y+1)$$

$$y^2 = 3xy-7 \text{ (two iterations)}$$

Use Runge Kutta fourth order to solve for y(0.1) and y(0.2) correct to two decimal places

$$y = (2xy + e^x)/(x^2 + e^x), y(0) = 0$$
 $\longrightarrow y(0) = 1$

What are the requirements for description and analysis of circuit in Pspice. What is the function of probe.

A solid of revolution is formed by rotating about the x-axis the co-ordinatesthe points with the following

Estimate the volume of solid formed giving the answer upto three decimal places. If V is the volume of the solid formed $\int y^{\wedge} 2dx$. Find the volume by Simpson's one third rule.

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PUNJAB ENGINEERING COLLEGE (DEEMED TO BE UNIVERSITY), CHANDIGARH

Programme: B,E (ELECTRICAL) Course Name:Power Electronics Course Code: EEN 207

Semester:4th Session 2018-19 (18192)

Maximum Marks: 100 Time allowed: 3 Hours

Marks

Notes:

An questions are compulsory.

Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.

The candidates, before starting to write the solutions, should please check the question paper for any discrepancy, and also ensure that they have been delivered the question paper of right course code.

Q.No		Marks
1.a)	Describe any two popular devices which have controlled turn on and turn off characteristics.	(5)
(b)	In an ac circuit using a thyristor having a dv/dt rating of 25V/µs the source inductance is 0.2mH. The rms value of supply voltage is 230V, if the damping factor is 0.65, find the values of R and C of snubber circuit.	(5)
(c)	What are the turns on methods of SCR. Describe any two.	(5)
(d)	Explain single phase dual converter.	(5)
2.a)	The voltage and current rating in a particular circuit are $3kV$ and $750A.SCRs$ with a rating of $800V$ and $175A$ are available. The recommended minimum derating factor is 15 percent. Calculate the number of series and parallel units required. Also obtain the required values of R and C to be used in the static and dynamic equalizing circuits if the maximum forward leakage current for $SCRs$ is $10mA$ and ΔQ = $20\mu C$.	
(b)	A single phase one pulse SCR controlled converter with RL1 load has the following data: supply voltage =230 V at 50 Hz, R=22, L=1mH, E=120V, Extinction angle β = 220°, Firing angle α = 25° Calculate the circuit turn off time average output voltage and average load current. Draw the necessary waveforms.	(8)

















(c)	A 6 pulse converter is connected to a 3 phase AC supply of 400V 50Hz and operates with a firing angle of $\pi/4$ radians. The load current is maintained constant at 10A and load voltage is 360V. Calculate source inductance and overlap angle.	(6)
3.a)	Explain the chopper which operates in motoring and regenerative braking mode.	(6)
(b)	A buck regulator has an input voltage of 12V. The required average output voltage is $Vo=5V$ at $R=500\Omega$. The switching frequency is 25KHz. If the peak to peak ripple current of inductor is limited to 0.8A determine the duty cycle and filter inductance L.	(6)
(c)	Explain class B commutation with relevant waveforms.	(8)
4.a)	What is the difference between 120° and 180° scheme in 3 phase thyristorized bridge inverter. Explain180° scheme in detail with relevant waveforms.	(10)
(b)	What do you understand by PWM. Explain SPWM technique to reduce the harmonics.	(5)
(c)	Design a boost convertor for input voltage of 5V and average output voltage, current of 15V & 0.5A, the switching frequency is 25 KHz. If L=150 μ H and C=220 μ F, determine duty cycle, ripple current of inductance, peak current of inductor, ripple voltage of filter capacitor.	(5)
5.a)	What is an AC Regulator? Give its major application? An ac voltage controller has a resistive load of $R=10$ and the root mean-square (rms) input voltage is $Vs=120V$, $60Hz$. The thyristors switch is on for $n=25$ cycles and is off for $m=75$ cycles. Determine (a) the rms output voltage V_o , (b) the input power factor (PF)	(6)
(b)	What is the difference between AC regulator and cycloconverter. Explain single phase to single phase cycloconverter.	(6)
(c)	Draw the output voltage waveforms of three phase full bridge converter and derive the expression for output voltage with firing angle of 60° .	(8)

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PUNJAB ENGINEERING COLLEGE, CHANDIGARH End Semester Examination (2019)

Programme: B.E (ELECTRICAL)
Course Name: Microprocessor and interfacing
Course Code: EEN- 208 Maximum Marks: 100

Roll No 171040 70

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Semester:4th

Time allowed: 3 Hours

- Note:
 All questions are compulsory.
 Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.
 The candidates, before starting to write the solutions, should please check the question paper for any discrepancy, and also ensure that they have been delivered the question paper of right course code.

Q.No.		F.M.
1.(A)	Explain which registers of 8086 are designated as general purpose registers and what are typical applications of these registers.	5
(B)	Discuss the concept of segmented memory in 8086. What are the advantages of segmented memory? Explain how BHE and A0 are used in transferring 16 bit data into odd and even memory banks.	5
(C)	Explain the EXTERN and PUBLIC directives.	5
(D)	Write a program to move a byte string, 16-bytes long from the offset 0500H to 0700H in the segment 4000H using string instructions. Use auto-increment mode	5
2.(4)	Write a program to find the square root of a two-digit number. Include comments against each instruction. (Use of assembler directives is optional).	10
(B)	Design and draw a suitable hardware schematic a seconds counter that count from 0 to 9 using 74LS373 output ports and seven segment display. Write an ALP for the problem including a delay of 1 second after each count. Select the port address as 0450H.	
8.(A)	Design and draw the schematic of a memory system around 8086, that has a total of 64 K Bytes EPROM and 64K Bytes RAM. The EPROM and RAM chips are available in modules of 32K Bytes. The starting address of EPROM chips is F0000H and that of RAM chips is D0000H. Show the complete memory map	1
(B)	How do you set or clear the interrupt flag? Describe the importance of IF in the interrupt structure of 8086.	ne /

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4.(A)	Design and draw the schematic to maintain the temperature of a room using 8086, 8255 and an analog to digital convertor. Assume temperature sensor provides the 8255 and an analog to digital convertor. Assume temperature sensor provides the 8255 and an analog to digital convertor. Assume temperature at conditioner is necessary input at channel no. 4 of the ADC 809 and the air conditioner can be switched ON/OFF to maintain the temperature at 25°C. The air conditioner can be switched ON and OFF using a switch interfaced with 8086 using 8255. Write the switched ON and OFF using a switch interfaced with 8086 using 8255. Write the control word assuming Port A & Port C upper as input port and Port B and Port C lower as output port. The address of port A of 8255 is 80H. Write the required assembly language program.	15
(B)	Interface a stepper motor with 8086 using 8255 to rotate the shaft at a speed of 10ms in clockwise direction. The 8255 port A address is 0740H. Assume that the delay of 10ms is available as a DELAY subroutine. Write an ALP to implement the same.	5
5.(A)	Explain how 8253/8254 is used as a timing and delay generation peripheral	5*4 =20
(B)	Draw the architectural block diagram of 8259 and explain the function of various registers	
(C)	Explain the different modes of data transmission in 8251. Explain the signal description of TXC, TXD, TXRDY, TXE and DTR.	
(D)	With the help of a block diagram explain the DMA process using 8237/8257.	

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PUNJAB ENGINEERING COLLEGE, CHANDIGARH

EXPLORE INNOVATE EXCEL

End-Term Examination 30/04/2019 (E)

Programme: B.Tech. (Electrical Engineering) Course Name: Electrical Machines-II

Maximum Marks: 100

Year/Semester: 2018-19/2nd

Course Code: EEN 209 Time Allowed: 3 Hours

Notes:

(1) All questions are compulsory.

- (2) Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.
- (3) The candidates, before starting to write the solutions, should please check the question paper for any discrepancy, and also ensure that they have been delivered the question paper of right course code.

(4) Attempt the questions in sequence only.

Q. No			Ques	tions			Marks
1 (a)	Using vector diagram, of	Using vector diagram, derive the expression for active power developed by					10
T(b)	A 3-phase, 400 V, star- 1 ohm/phase. The exci emf/phase is 270 V. Cowhen taking 40 kW from	connected ting currer alculate the	nt is adjuste e power fac	ed to such a	value that	the generated	10
2,(a)	A 6600 V alternator gav	ve the follo	wing test re	sults: 3 Ø	5		15
	O.C. Voltage (V)	3100	4900	6600	7500	8300	
	Field Current (A)	16	25	37.5	50	70	1
	A field current of 2						
2(6)	regulation at 0.8 power Derive the expressions	factor lag	ging.				05

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3 (b)	With the help of double revolving field theory explain why single phase motor is not self starting.	10
4 (a)	A 3-phase , 400 V , 4 pole star connected induction motor gave the following test results:	10
	No load test: 400V, 3 A, wattmeter readings : 900 Wand -100 W	
	Blocked rotor test: 80V 30 A, wattmeter readings: 600W and 320 W	
	DC test: 8Vdc across stator terminals and current 20A.	
	If ratio of ac to dc resistance is 1.2, calculate the equivalent circuit parameters of the induction motor.	
4 (b)	Clearly explain why starter is required for a 3-phase Induction motor. Describe the star-delta starting of a 3 phase squirrel cage induction motor. Illustrate your answer with the help of a relevant diagram.	10
5 (a)	With the help of phasor diagram, analyse the effect of varying field current and power factor of a cylindrical -rotor synchronous motor connected to infinite bus under the condition of constant power input. Neglect armature reaction.	10
8 (b)	A 3 –phase star connected alternator has the following data: Voltage required to be generated=4000v at power frequency, speed 500 rpm, stator slots/phase = 3 and conductors per slot=12. Calculate (a) number of poles (b) useful flux per pole. Assume all conductors per phase to be connected in series and coils to be full pitched.	10

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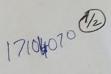












Year/Semester: 201819/4th

Course Code: EEN 210 Time Allowed: 3 Hours

Punjab Engineering College (Deemed to be University), Chandigarh End-Term Examination

Programme: B.E. (Electrical Engineering) Course Name: Control Systems

Maximum Marks: 100

Notes

(1) All questions are compulsory.

- (2) Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.
- (3) The candidates, before starting to write the solutions, should please check the question paper for any discrepancy, and also ensure that they have been delivered the question paper of right course code.
- (4) All parts of a question should be attempted in continuity.

(5)

Q. No		Questions	Marks
1.	(a)	Compare open loop and closed loop control systems.	4
	(b)	Define transfer function. Derive transfer function of a circuit given below. Determine initial and final values of the capacitor voltage. When the state of the capacitor voltage in the capacitor voltage.	10
	(c)	What is necessity of compensation? Draw pole-zero plot of lag and lead compensators.	6
2.	(a)	Use the root locus to select K so that the closed-loop poles have 0.707 damping for a unity feedback system having open loop transfer function as $G(s) = K/(s(s+4))$. Find the natural frequency of closed-loop poles. Use your value of K to find the percentage overshoot and rise time for the unit step input.	8
	(b)	Repeat 2 (a) if a compensator $(G_c = (s + 8))$ is connected in cascade with $G(s)$.	8
	(c)	Comment on the results obtained in 2 (a) & 2 (b).	4
3	(a)	For a unity feedback system, a forward path transmittance is given as $G(s) = 100(s + 20)/(s(s + 5)(s + 40))$. Draw Bode plot of it.	12
	(b)	From the Bode plot of 3 (a), find the gain and phase margin.	4
	(c)	Comment on the stability of the system given in 3 (a).	4

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Punjab Engineering College (Deemed to be University), Chandigarh End-Term Examination

1	(a)	Draw a polar plot of a function $G(s) = 5/(s(s+1)(s+2))$	4
	(b)	Apply Nyquist criterion for the evaluation of the stability of a feedback system whose open loop transfer function is given as $5/(s^2(s+1))$.	12
	(c)	Validate analytically results obtained in 4 (b).	4
5	(a)	Consider a vector matrix differential equation as $\dot{X} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} X$ Generate the state transition matrix by Laplace transform method.	5
	(b)	Analyze Controllability and Observability of a system having following coefficient matrices. $A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -6 & -11 & -6 \end{bmatrix}, B = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix} \text{ and } C = \begin{bmatrix} 10 & 5 & 1 \end{bmatrix}$	5
	(c)	Apply direct and cascade decomposing method to obtain state space representation of the transfer function given as, $G(s) = \frac{s^2 + 8s + 6}{(s+3)(s^2 + 2s + 5)}$	10

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PUNJAB ENGINEERING COLLEGE (Deemed to be University) Mid-Term Examination

(Session 2019-20, Semester 19202)

Programme: B.Tech (CSE)

Course Name: Machine Learnnig

Maximum Marks: 30

Year/Semester: 2nd/4th Course Code: CSN-211 Time allowed: 1.5 Hours

Notes:

- All questions are compulsory.
- The candidates, before starting to write the solutions, should please check the question paper for any discrepancy, and also ensure that they have been delivered the question paper of right course code.

Q. No.	A second converted the question paper of right course code.	Marks
1,00	Assume you are preparing a data frame for a supervised learning task and you notice that the target label classes are highly imbalanced and multiple feature columns contain missing values. The proportion of missing values across the entire data frame is less than 5%. Which is best option from following to minimize bias due to missing values? Give comment for each option. (i) Replace each missing value by the mean or median across non-missing values in same row. (ii) Delete observations that contain missing values because these represent less than 5% of the data. (iii) Replace each missing value by the mean or median across non-missing values in the same column. (iv) For each feature, approximate the missing values using supervised learning based on other features.	04
26)	What is a hyperparameter and why is it needed in training and learning process? What is the risk with tuning hyperparameters using a test dataset?	04
2. a)	Assume you are given data $\{(x^i, y^i), \dots, (x^n, y^n)\}$ and you are planning to train an SVM. You define a kernel k and obtain a kernel matrix K presented in figure below, where $K_{ij} = k$ (x^i, x^i) . 1200 1000 800 600 400 2200 0 (i) What is the issue here? (ii) How can we address this issue? (iii) Why is it important to scale the inputs when using SVMs?	06
M	A data scientist runs a principal component analysis on given data and observes that the percentage of variance explained by the first 3 components is 80%. How this percentage of variance explained is computed? Outline a broader process for same.	04
3.	Given regression (linear or logistic) and naïve bayes classifier, differentiate the purpose of using these classifiers for a given dataset. Which of these two is considered to be high bias/low variance classifier? Justify with appropriate reason.	06
<i>f.</i>	With respect to different feature subset selection strategies, answer following precisely: (i) State the feature subset selection problem mathematically. (ii) How do the objective function in <i>filters</i> and <i>wrappers</i> differ? (iii) Analyze the primary motivation behind Bidirectional search.	06

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11 Feb · 🚱





