Rajshahi University of Engineering & Technology
Department of Computer Science & Engineering
Course No. CSE 2101 Marks: 17 CT:#4

1. Show that among any n+1 positive integers not exceeding 2n there must be an integer that divides one of the other integers. [5]
2. What is the solution of the recurrence relation $a_n = a_{n-1} + a_{n-2}$ with $a_0 = 0$ and $a_1 = 1$? [7]
3. Find the number of solutions of

$$e_1+e_2+e_3 = 17,$$

where e_1, e_2, and e_3 are nonnegative integers with $2 \leq e_1 \leq 5$, $3 \leq e_2 \leq 6$, and $4 \leq e_3 \leq 7$. [5]

Class Test: 01 **Course No: CSE 2103**

Dept. of CSE

Marks: 20 **Time: 30 min**

1. The function $x^3 - 2x^2 - 4x + 8$ has a double root at $x = 2$. Use (a) the stabdard Newton-Raphson Method, (b) the modified Newton-Raphson Method, and (c) the modified Newton Raphson Method to solve the root at $x = 2$.	12
2. Obtain, to four decimal places, the root between 1 and 2 of the equation $x^3 - 2x^2 + 3x - 5 = 0$ by Regula-Falsi method to accuracy of 0.0001.	05
3. What is Round-off error? Round-off the following numbers to two decimal places: 48.21416, 2.3742, 52.275, 2.375, 2.385, 81.255	03

Class Test: 03 **Course No: CSE 2103**

Dept. of CSE

Marks: 20 **Time: 30 min**

1. Prove that, 05

$$ma_0 + a_1 \sum_{i=1}^{m} x_i = \sum_{i=1}^{m} y_i$$

$$a_1 \sum_{i=1}^{m} x_i + a_2 \sum_{i=1}^{m} x_i^2 = \sum_{i=1}^{m} x_i y_i$$

$\ln y = \ln a + b \ln x$

$(\ln x)^2$ $(\ln y)(\ln x)$

2. Using the following table find $y(x)$ as a polynomial in x using Lagrange's formula. 08

x	-2	-1	2	3
$y(x)$	-12	-8	3	5

3. Fit a function of the form $y = ax^b$ to the following data: 07

x	2	4	7	10	20	40	60	80
y	43	25	18	13	8	5	3	2

Class Test #04

Course No: CSE 2103

Marks: 20 **Time: 30 min**

1) Derive Simpson's (3/8) rule $\int_{x_0}^{x_3} y\,dx = \frac{3}{8}h(y_0 + 3y_1 + 3y_2 + y_3)$. Using this rule, evaluate $I = \int_0^1 \frac{dx}{1+x}$ with h=1/6. Evaluate the integral by using Simpson's (1/3) - rule and compare the result. 10

2) From the following table, find x, correct to two decimal places, for which y is maximum and find this value of y. 10

x	1.2	1.3	1.4	1.5	1.6
y	0.9320	0.9636	0.9855	0.9975	0.9996

EEE- 2151 **CT-1** **Total Marks-20** **Time-20 minute**

Q1. Define (i) Drift current, (ii) Diffusion current, (iii) Reverse breakdown voltage & (iv) PIV.

Q2. Find current I for the circuit of figure 1.

Q3. Draw and explain input-output voltage waveform and input-output characteristics for the circuit of figure 2.

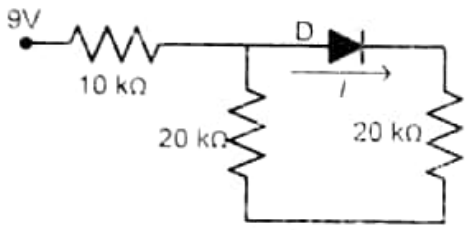


Figure:1

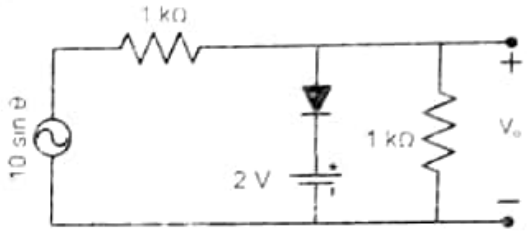
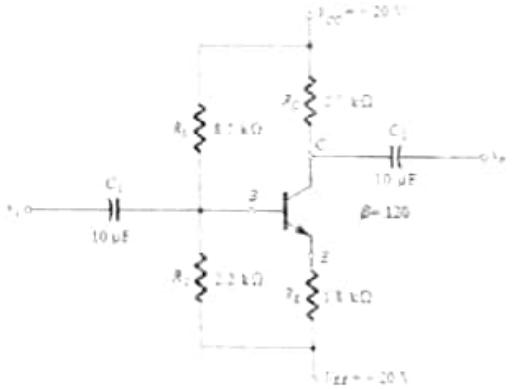


Figure:2

CT-2 **EEE-2151** **Time: 20 minutes**

Q1. Draw the voltage divider bias circuit and derive the expression of I_{CQ} and V_{CEQ}.

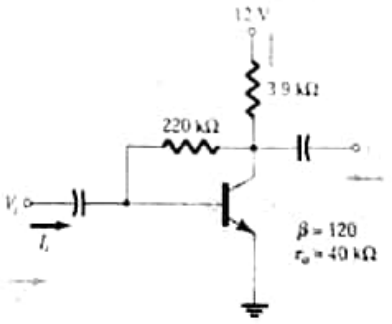
Q2. Determine V_{CE} for the given figure.



CT-3 **EEE 2151** **Time: 20 minutes** **2016 series**

Q1. Draw the r_e equivalent circuit of unbypassed circuit and derive the expression of (i) input impedance, (ii) output impedance and (iii) voltage gain.

Q2. For the given network, detemine (i) Determine Z_i and Z_o, (ii) Calculate A_v and (iii) Determine the effect of $r_o = 30k\Omega$.



Class Test-1 Dept. of CSE Time-30Mins Total Marks-20

Q1. In each case determine whether the vectors are linearly independent or dependent: [6]
(d) $\boldsymbol{A} = 2\boldsymbol{i} + \boldsymbol{j} - 3\boldsymbol{k},\ \boldsymbol{B} = \boldsymbol{i} - 4\boldsymbol{k},\ \boldsymbol{C} = 4\boldsymbol{i} + 3\boldsymbol{j} - \boldsymbol{k}$ (b) $\boldsymbol{A} = \boldsymbol{i} - 3\boldsymbol{j} + 2\boldsymbol{k},\ \boldsymbol{B} = 2\boldsymbol{i} - 4\boldsymbol{j} - \boldsymbol{k},\ \boldsymbol{C} = 3\boldsymbol{i} + 2\boldsymbol{j} - \boldsymbol{k}$
If dependent find the relation.

Q2. Find the projection of the vector $\boldsymbol{A} = \boldsymbol{i} - 2\boldsymbol{j} + \boldsymbol{k}$ on the vector, $\boldsymbol{B} = 4\boldsymbol{i} - 4\boldsymbol{j} + 7\boldsymbol{k}$. [3]

Q3. Given $x = t, y = t^2, z = \frac{2}{3}t^3$, find (i) the curvature κ, (ii) the torsion τ. [6]

Q4. If a particle has velocity **v** and acceleration **a** along a space curve. Show that $\rho = \frac{v^3}{|\mathbf{v}\times\mathbf{a}|}$. [5]

Class Test-2 Dept. of CSE (A) Time-30Mins Total Marks-20

Q1. Find the angle between the surfaces $x^2 + y^2 + z^2 = 9$ *and* $z = x^2 + y^2 - 3$ at the point (2, -1, 2) [4]

Q2. If $\boldsymbol{A} = (3x^2 + 6y)\boldsymbol{i} - 14yz\boldsymbol{j} + 20xz^2\boldsymbol{k}$, evaluate $\int_C \boldsymbol{A}\cdot d\boldsymbol{r}$ from (0, 0, 0) to (1, 1, 1) along the path C: $x = t, y = t^2, z = t^3$ [5]

Q3. Evaluate $\iint_S \boldsymbol{A}\cdot\boldsymbol{n}\,dS$, where $\boldsymbol{A} = z\boldsymbol{i} + x\boldsymbol{j} - 3y^2z\boldsymbol{k}$ and S is the surface of the cylinder $x^2 + y^2 = 16$ included in the first octant between $z = 0$ *and* $z = 5$. [6]

Q4. Find the volume of the region common to the intersecting cylinders $x^2 + y^2 = a^2$ *and* $x^2 + z^2 = a^2$ [5]

Dept.: CSE **Course Number: Math-2113** **Series: 16** **Section: A** **Class Test: 02** **Total Time: 30 min** **Total Marks: 20**

Q-1: Solve
$$\begin{aligned} 2x + 3y - z - w &= 0 \\ x - y - 2z - 4w &= 0 \\ 3x + y + 3z - 2w &= 0 \\ 6x + 2y + 9z - 7w &= 0 \end{aligned}$$

Q-2: Find all the eigen values and any **one** eigen vector of the following matrix: $A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$.

Department of Computer Science & Engineering
Course No: 2113; Class test -02

Time: 30 Minute **Marks: 20**

From the following Trail Balance of M/S Rahim & sons prepare a Trading A/C, Profit &Loss A/c for the year ended 31st December 2017 and a Balance sheet as on that date:

Dr	**Trial Balance**		Cr	
Particulars	Amount	Particulars	Amount	**Adjustments;**
Drawing	5,000	Sales	2,50,000	1. Closing stock was valued at TK 55000.
Buildings	150,000	Return out	4,000	2. Depreciate furniture by 10% & buildings by 5%
furniture	20,000	S/Creditors	25,000	3. Salaries due Tk1500 and rent prepaid Tk500
General expense	3,000	Interest	2,500	4. Make a reserve for bad debts 5% on S/debtors.
Stock(1-1-17)	25,000	Discount	2,500	
S/Debtors	20,000	Capital	170,000	
Cash in hand	5,000	10%Loan	40,000	
Cash at Bank	15,000	Bank overdraft	20,000	
Purchases	140,000	Commission	5,000	
Wages	15,000			
Advertisement	20,000			
Stationery	5,000			
Carriage in	5,000			
Rent	4,000			
Insurance	3,000			
salaries	10,000			
Investment	50,000			
Return in	2,000			
Bad debts	1,000			
Commission	1,000			
Good will	15,000			
Carriage out	1,500			
Import duty	3,500			
Total	**519,000**	**Total**	**519,000**	

Open Book Exam_CT-1_CSE-A _2016 Series_Marks: 10*2= 20_ Time: 30 Minutes

1. If you want to sustain employee loyalty and their cooperation, which principle you have to follow?
2. According to Henri Fayol, What factors are necessary to ensure discipline in an organization?
3. Give an example of a decision situation that is effective but not efficient.
4. Mention at least two names of physical, financial and information resources respectively.
5. What are the basic differences unity of command and unity of direction?
6. Mention the steps of controlling.
7. What is delegation of authority? Why is it important?
8. How can you claim that you have conceptual skills?
9. Is university vice chancellor a manager? Why or why not?
10. What are the main functions of a top level manager?

Department of Computer science and Engineering

Course No: Hum-2113; Class Test-01

Marks: 20 Time: 30 Minutes

1. What do you mean By Accounting? What are the principles of Accounting? 04

2. What is meant by Accounting Cycle? Discuss the each step of Accounting cycle. 03

3 "All the events must have a dual effects on the basic accounting equation"-Explain. 03

4. Journalize the Following Transactions in the books of Rahim&Brothers for the month of June 2017: 10

01-06-2017: Started business with cash Tk 500000 and Office equipments of Tk 100000.
05-06-2017: Purchased a Machinery of Tk 200000.
10-06-2017: Raw material purchased of Tk 50000.
15-06-2017: Sales of Tk 40000 to Mr.Zaman.
20-06-2017: Paid Rent of Tk 30000 by cheque.