



Subject code:

Rajiv Gandhi University of Knowledge Technologies, Ongole Campus
E21SEM2 MID2 EXAMINATIONS, September 2021

SUBJECT: OOP DATE: 14-09-2021(FN)

Time: 120 min BRANCH: ECE Max. 40 Marks

Instructions: Answer any four questions from following 4×10= 40

- 1) What is type casting? Explain in detail. 10M
- 2) What is an exception? Describe some standard exceptions. 10M
- 3) What is template? Write a program on class template. 10M
- 4) What is file? Explain some handling functions. 10M
- 5) Write a c++ program to demonstrate type casting. 10M
- 6) Write a program on exception handling. 10M
- 7) What is STL? Write the types and operations that are performed on them. 10M
- 8) Write a program on Function template generic type. 10M

OOP MID-2



Rajiv Gandhi University of Knowledge Technologies,
Ongole Campus

E1 (2018 BATCH) SEM2 MID2 EXAMINATIONS, September 2021

SUBJECT: ELECTRONIC DEVICES & CIRCUITS

DATE: 14-09-2021 (AN)

Time : 120 min

BRANCH: ECE

Max. 40

Marks

Instructions: Answer any four questions from the following

4X10=40 Marks

- 1) Implement the following using diodes
 - a) AND & OR gates
 - b) voltage doubler
- 2) Discuss L section filter for a rectifier. Calculate its ripple factor and define critical inductance
- 3) Write about BJT current components with diagram and derive its current equation
- 4) Discuss BJT CB input & output characteristics. If α is 0.9, find corresponding β , γ
- 5) Explain the construction and operation of N channel depletion mode MOSFET. Plot its both characteristics
- 6) Derive MOSFET current equation. Discuss the changes in its output resistance with respect to channel length modulation
- 7) Write about voltage divider bias with suitable diagrams and find its three stability factors.
- 8) Write about the following
 - a) C TO B bias
 - b) BJT as inverter

EDC MID-2



Rajiv Gandhi University of Knowledge Technologies, Ongole Campus

E1 (2018 BATCH) SEM2 MID2 EXAMINATIONS, September - 2021

SUBJECT: Mathematical Methods

DATE: 15-09-2021(FN)

Time: 120 min

BRANCH: ECE

Max. 40 Marks

Instructions: Answer any four questions of the following

4X10=40 Marks

The Question Paper Consists of 8 questions. Answer any 4 questions

Each Question Carries 10 Marks and may have 'A', 'B' as two sub-questions

Note (if any): Usage of any scientific calculator is permitted.

1. If $\phi(x, y) = x^2 - xy - y + y^2$ then find all the points when the directional derivative in the direction of $\frac{i+\sqrt{3}j}{2}$ is zero.
2. If $a = x + y + z, b = x^2 + y^2 + z^2, c = xy + yz + zx$ then show that $[\nabla a \quad \nabla b \quad \nabla c] = 0$
3. Using Newton Raphson method find a root lying in $[1, 2]$ for $x + \log_e x - 2 = 0$.
4. a) Find the missing term in the following table

x	0	1	2	3	4
y	1	3	9	--	81

Explain the reason why the resulting value differs from 3^3 .

b) Find the second difference of the polynomial $x^4 - 12x^3 + 42x^2 - 30x + 9$ with interval of differencing $h = 2$.

5. Consider the following data for $g(x) = \sin x / x^2$

x	0.1	0.2	0.3	0.4	0.5
g(x)	9.9833	4.9696	3.2836	2.4339	1.9177

Calculate $g(0.25)$ accurately using Newton's forward method of Interpolation.

6. Evaluate $\int_0^1 \sqrt{1+x^2} dx$ taking $h = 0.1$ using 1) Simpson's $1/3^{\text{rd}}$ rule 2) Trapezoidal Rule.
7. Find the value of y at $x = 0.1, 0.2$ from $\frac{dy}{dx} = x + y^2, y(0) = 1$ by using Euler's method.
8. Use the R-K method of 4^{th} order to find $y(0.1)$ and $y(0.2)$, given that $\frac{dy}{dx} = y - x, y(0) = 2$.

MM MID-2



Rajiv Gandhi University of Knowledge Technologies, Ongole Campus

E1 SEM2 MID2 EXAMINATIONS, September 2021.

SUBJECT: NETWORK THEORY

DATE: 15-09-2021(AN)

Time: 120 min

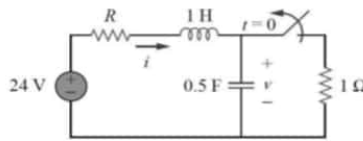
BRANCH: ECE

Max. 40 Marks

Instructions: Answer any four questions of the following

4X10=40 Marks

- (1) For the circuit shown, consider the cases when $R=1\Omega$, 4Ω and 5Ω . For each case, find out the damping factor, undamped natural frequency, roots of the characteristic equation and comment on the damping of the circuit. (10M)

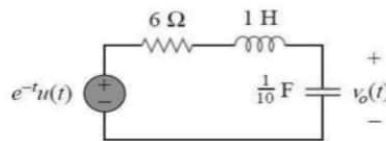


- (2) (A) Define the following terms: (10M)

- (i) Define a second order circuit.
- (ii) Draw any two example circuits of second order and define each element in the circuit.
- (iii) What do you mean by source free response of second order circuits.
- (iv) What do you mean by forced response of second order circuits.

(B) Write in steps the general procedure to solve any second order circuit excited by step input.

- (3) Find $v_o(t)$ in the circuit using Laplace transformation technique. (10M)



- (4) A circuit is known to have its transfer function as,

$$H(S) = \frac{S+3}{S^2+4S+3}$$

Find its output when

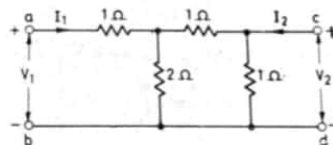
- (a) Input is a unit step function
- (b) Input is $6te^{-2t}u(t)$.

(10M)

Subject code:20EC1202

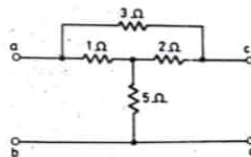
- (5) (A) Define a Port. (2M)

(B) Obtain the transmission parameters of the below network. (8M)



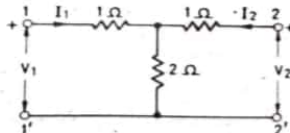
- (6) (A) Write the conditions for symmetry and reciprocity for Z, Y, h and T Parameters. (2M)

(B) Determine Y parameters of the circuit below and draw the equivalent circuit for Y-parameter model. (8M)



- (7) (A) Derive ABCD parameters in terms of Z-parameters. (4M)

(B) Two similar networks are connected in series. One of the circuits is shown below.



Calculate the Z-parameters for the equivalent series network. (6M)

- (8) Obtain the state equation for the circuit below. (10M)

