



SCHE4E 07 E9A4 INATION 7OR  
 4ASTER 07 ENGINEERING (E/ELECTRONICS 3 CO4 4UNICATION)  
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 7+" B\$t\*# 8080-88

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SECTION-A

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SECTION-B

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SY//ABUS

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SECTION-A

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SECTION-B

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Course Code	ECE 110.
Course Title	ADVANCED MATHEMATICS
Type of Course	Elective-I
Teaching Method	*Lecture*
Credits	*
Course Assessment Methods	
End Semester Assessment (University Exam)	50
Sessional Assessment (Sessional Assignments & Projects)	50

### SYLLABUS

- Examiner will set 7 questions of equal marks. First question will cover whole syllabus, having 10 conceptual questions of 1 mark each or 7 questions of 2 mark each and the rest of the paper will be divided into two parts having three questions each and the candidate is required to attempt at least two questions from each part.

#### SECTION-A

1. (a) Find the Laplace transform of  $t^2 e^{-t}$ . (20)

(b) Find the Laplace transform of  $\cos t$ . (20)

(c) Find the Laplace transform of  $e^{2t}$ . (20)

(d) Find the Laplace transform of  $t \sin t$ . (20)

#### SECTION-B

2. (a) Find the Laplace transform of  $t \cos t$ . (20)

(b) Find the Laplace transform of  $t \sin t$ . (20)

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## SECOND SEMESTER

Course Code	ECE-1801
Course Title	E4-BEDDED SYSTEMS DESIGN
Course Credits	3
Prerequisites	ECE-1800, ECE-1801
Course Assessment Methods	
End Semester Assessment (University Exam)	50
Continuous Assessment (Sessonal Assignments)	50

### SYLLABUS

- Examiner will set 7 questions of equal marks. First question will

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SY##ABUS



Course Code	ECE-1808
Course Title	DIGITAL IMAGE PROCESSING
Teaching Hours	3
Prerequisites	EE-101, EE-102
Course Assessment Methods	
End Semester Assessment (University Exam)	50
Continuous Assessment (Sessions & Assignments)	50

- Examiner will set 7 questions of equal marks. First question will cover whole syllabus, having 10 conceptual questions of 1 mark each or 7 questions



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SECTION-A

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SECTION-B

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End Semester Assessment (University Ex m!"	50
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SECTION-A

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### SY##ABUS

- Examiner will set 7 questions of equal marks. First question will cover whole syllabus, having 10 conceptual questions of 1 mark each or 7 questions of 2 mark each and is compulsory. Rest of the paper will be divided into two parts having three questions each and the candidate is required to attempt at least two questions from each part.

#### SECTION-A

1. A circuit is shown in the figure below.

Find the power absorbed by the 2Ω resistor.

2. A circuit is shown in the figure below.

Find the voltage across the 2Ω resistor.

#### SECTION-B

3. A circuit is shown in the figure below.

Find the current through the 2Ω resistor.

4. A circuit is shown in the figure below.

Find the voltage across the 2Ω resistor.

TEXT BOOKS			
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ECE-180A

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SY##ABUS

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SECTION-A

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### SY##ABUS

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SY##ABUS

- Examiner will set 7 questions of equal marks. First question will cover whole syllabus, having 10 conceptual questions of 1 mark each or 7 questions of 2 mark each and the rest of the paper will be divided into two parts having three questions each and the candidate is required to attempt at least two questions from each part.

SECTION-A

1. A particle of mass  $m$  is moving in a circular path of radius  $r$  with a constant speed  $v$ . The centripetal force acting on the particle is  $F = \frac{mv^2}{r}$ . If the speed of the particle is doubled, the centripetal force becomes  $F' = \frac{m(2v)^2}{r} = 4F$ . Thus, the centripetal force becomes four times the original force when the speed is doubled.

2. A body of mass  $m$  is moving in a circular path of radius  $r$  with a constant speed  $v$ . The angular momentum of the body is  $L = mvr$ . If the speed of the body is doubled, the angular momentum becomes  $L' = m(2v)r = 2L$ . Thus, the angular momentum becomes twice the original angular momentum when the speed is doubled.

3. A particle of mass  $m$  is moving in a circular path of radius  $r$  with a constant speed  $v$ . The centripetal force acting on the particle is  $F = \frac{mv^2}{r}$ . If the speed of the particle is doubled, the centripetal force becomes  $F' = \frac{m(2v)^2}{r} = 4F$ . Thus, the centripetal force becomes four times the original force when the speed is doubled.

SECTION-B

4. A particle of mass  $m$  is moving in a circular path of radius  $r$  with a constant speed  $v$ . The centripetal force acting on the particle is  $F = \frac{mv^2}{r}$ . If the speed of the particle is doubled, the centripetal force becomes  $F' = \frac{m(2v)^2}{r} = 4F$ . Thus, the centripetal force becomes four times the original force when the speed is doubled.

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### SY##ABUS

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#### SECTION-A

1. A system is described by the following transfer function:

$$G(s) = \frac{2s^2 + 1}{s^2 + 2s + 1}$$

Find the steady-state value of the system response to a unit step input.

#### SCADA

2. A SCADA system is used to monitor and control a process. The system is described by the following transfer function:

$$G(s) = \frac{K}{s^2 + 2s + 1}$$

Find the value of K such that the system is critically damped.

#### SECTION-B

3. A system is described by the following transfer function:

$$G(s) = \frac{1}{s^2 + 5s + 1}$$

Find the natural frequency and damping ratio of the system.

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Course Code	ECE-170A
Course Title	ADVANCED ANTENNA SYSTEMS
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Prerequisites	3+%
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Course Assessment Methods	
End Semester Assessment (University Exam)	50
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### SYLLABUS

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#### SECTION-A

1. A plane wave with electric field  $E = 10 \cos(\omega t - \beta z) \hat{a}_x$  V/m is incident on a perfectly conducting plane at  $z = 0$ . Find the total electric field in the region  $z > 0$ .

2. A rectangular waveguide of dimensions  $a \times b$  is filled with a dielectric of permittivity  $\epsilon_r$ . Find the cutoff frequency of the  $TE_{10}$  mode.

3. A horn antenna is fed by a waveguide. The horn has a length  $L$  and a flare angle  $\alpha$ . Find the radiation pattern of the horn.

4. A parabolic reflector antenna has a focal length  $f$  and a diameter  $D$ . Find the directivity of the antenna.

#### SECTION-B

1. A plane wave is incident on a dielectric interface. Find the reflection and transmission coefficients.

2. A rectangular waveguide is filled with a dielectric. Find the phase velocity and group velocity of the  $TE_{10}$  mode.

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Course Code	ECE-1206
Course Title	CRYPTOGRAPHY 3 NETWORK SECURITY
Level of Course	Elective 6
Prerequisites	3+%
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### SY##ABUS

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#### SECTION-A

1. The following are the components of the syllabus. The first question will cover the whole syllabus, having 10 conceptual questions of 1 mark each or 7 questions of 2 mark each and is compulsory. Rest of the paper will be divided into two parts having three questions each and the candidate is required to attempt at least two questions from each part.

2. The following are the components of the syllabus. The first question will cover the whole syllabus, having 10 conceptual questions of 1 mark each or 7 questions of 2 mark each and is compulsory. Rest of the paper will be divided into two parts having three questions each and the candidate is required to attempt at least two questions from each part.

#### SECTION-B

3. The following are the components of the syllabus. The first question will cover the whole syllabus, having 10 conceptual questions of 1 mark each or 7 questions of 2 mark each and is compulsory. Rest of the paper will be divided into two parts having three questions each and the candidate is required to attempt at least two questions from each part.

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