Shoubra Faculty of Engineering

Model No.12
Course Specifications : Test 3A

University : Benha university

Faculty : Shoubra Faculty of Engineering

Department : Electrical Engineering Department

1- Course Data

Course Title: Test (3A) **Code**: EPE 315
Lecture: - **Tutorial**: - **Practical**: 4 **Total: 4**
Program on which the course is given: B.Sc. Electrical Engineering (Electrical Power and machines)
Major or minor element of program: Major
Department offering the program: Electrical Engineering Department
Department offering the course: Electrical Engineering Department
Academic year / level: Third Year / **First** Semester
Date of specifications approval: 20 / 6 / 2010

2- Course Aim

For students undertaking this course, the aims are to:

- Demonstrate applied topics of DC machine and transformer tests
- Demonstrate applied topics of Power systems & control of T.L.
- **Demonstrate applied topics of High Voltage testing and corona.**

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:

a.1) Demonstrate the Generating and transmission of electrical energy and break down of insulating materials and testing of electrical machines. (a.1)

a.2) give methodologies of solving Three phase transformers , dc motors , 3 phase to 2 phase conversion, Load testing, Equivalent circuits & regulation and interpreting the results. (a.5)

a.3) Demostrate knowledge of current technologies related to the electrical testing discipline. (a.8)

b- Intellectual Skills

At the end of this course, the students will be able to:

b.1) Select appropriate solutions for engineering problems based on analytical thinking.(b2)

b.2) Analyze results of numerical models and appreciate their limitations.(b11)

b.3) Integrate electrical, electronic and mechanical components and equipment with transducer, actuators and controllers in creatively computer controlled systems.(b15)

c- Professional Skills

On completing this course, the students are expected to be able to:

c.1) Use computational facilities and techniques, measuring instruments, workshops and laboratories equipment to design experiments, collect, analyze, and interpret results.(c5)

c.2) Test and examine components, equipment and systems of electrical power and machines.(c14)

c.3) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.(c16)

d- General Skills

At the end of this course, the students will be able to:

d.1) Communicate effectively.(d3)

d.2) Lead and motivate individuals.(d5).

d.3) Acquire entrepreneurial skills.(d8).

4- Course Contents

Week No.	Topic	No. of hours	ILOs	Teaching/ learning methods and strategies	Assessment method
1	Introduction, Generating and transmission of electrical energy	4	a1,b1, c1, c2 , d1	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
2	Break down of Gaseous insulation	4	a1, a3, b2, c1, d2	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
3	Breakdown of liquid insulation	4	a1, a3, b2, c1, d3	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
4	Breakdown of solid insulation	4	a1, a3, b2, c1	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
5	Three phase transformers: Iron loss, Harmonics, Imbalanced loading	4	a3, b1, b3, c2	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
6	Three phase transformers: iron core & harmonics, 3 phase to 2 phase conversion, Load testing, Equivalent circuits & regulation	4	a3, b1, b3, 16	Presentation board, computer and data show	Home Assignments, Quizzes, Oral Exam
7	DC motors: separately excited motors, series & parallel excited motors	4	a3, b1 , b3, c2	Classroom, computer and data show	Home Assignments, Quizzes, Oral Exam
8	Mid-term exam	2	a3, b1 , b3		
9	DC motors: Inertia torque, speed control using thyristors.	4	a3, b1 , b3, c3	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
10	Measuring of resistance - Induction – Capacitance – Voltage drops	4	a1 , a2, b1 , b2, c2	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
11	Power loss of loaded power transmission lines – Capacitance of 3 phase cable	4	a2 , a3, b1 , b2, d1	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
12	corona voltage of power transmission lines – Control Fundamentals	4	a2 , a3, b1 , b2, d2	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
13	Analog computer trainer – Logic circuits trainer	4	a2 , a3, b1 , b2, d3	Classroom board, computer and data show	Home Assignments, Quizzes, Oral Exam
14	Oral Exam , Practical Exam	3			
15	Final exam				

5- Teaching and Learning Methods

5.1- Modified Lectures
5.2- Practical training / laboratory
5.3- Class activity
5.4- Assignments / homework

6- Teaching and Learning Methods of Disables

None

7- Student Assessment

a- Student Assessment Methods

1	Assignments to assess knowledge and intellectual skills.
2	Quiz to assess knowledge, intellectual and professional skills.
3	Mid-term exam to assess knowledge, intellectual, professional and general skills
4	Oral exam to assess knowledge and intellectual skills.
5	Final exam to assess knowledge, intellectual, professional and general skills.

b- Assessment Schedule

No.	Assessment	Week
1	Assessment 1	2, 5, 9, 11
2	Assessment 2 Quizzes	4, 6, 10, 12
3	Assessment 3 Mid-term	8
4	Assessment 4 Oral Exam	14
5	Assessment 5 Final exam	15

c- Weighting of Assessments

Assessment	Weight
Mid_Term Examination	25 %
Final_Term Examination	50 %
Oral Examination	10 %
Practical Examination	10 %
Semester work	5 %
Total	100 %

8- List of References

a- Books

1- 8.1Course Notes
2- 8.2Essential Books (Text Books)
3- Recommended Books

Matrix of Knowledge and Skills of the course

No.	Topics	Hours	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Introduction, Generating and transmission of electrical energy	4	a1	b1	c1,c2	d1
2	Break down of Gaseous insulation	4	a1, a3	b2	c1	d2
3	Breakdown of liquid insulation	4	a1, a3	b2	c1	d3
4	Breakdown of solid insulation	4	a1, a3	b2	c1	
5	Three phase transformers: Iron loss, Harmonics, Imbalanced loading	4	a3	b1 , b3	c2	
6	Three phase transformers: iron core & harmonics, 3 phase to 2 phase conversion, Load testing, Equivalent circuits & regulation	4	a3	b1 , b3	c3	
7	DC motors: separately excited motors, series & parallel excited motors	4	a3	b1 , b3	c2	
8	Mid-term exam	2	a3, b1	b3		
9	DC motors: Inertia torque, speed control using thyristors.	4	a3	b1 , b3	c3	
10	Measuring of resistance - Induction – Capacitance – Voltage drops	4	a1 , a2	b1 , b2	c2	
11	Power loss of loaded power transmission lines – Capacitance of 3 phase cable	4	a2 , a3	b1 , b2		d1
12	corona voltage of power transmission lines – Control Fundamentals	4	a2 , a3	b1 , b2		d2
13	Analog computer trainer – Logic circuits trainer	4	a2 , a3	b1 , b2		d3
14	Oral Exam , Practical Exam					
15	Final exam					

Matrix of course content and ILO's

Course Title: Test (3A) **Code**: EPE 315
Lecture: - **Tutorial**: - **Practical**: 4 **Total: 4**
Program on which the course is given: B.Sc. Electrical Engineering (Electrical Power and machines)
Major or minor element of program: Major
Department offering the program: Electrical Engineering Department
Department offering the course: Electrical Engineering Department
Academic year / level: Third Year / **First** Semester
Date of specifications approval: 20 / 6 / 2010

Course content	ILO a's			ILO b's			ILO c's			ILO d's		
	1	2	3	1	2	3	1	2	3	1	2	3
Introduction, Generating and transmission of electrical energy	✓			✓			✓	✓		✓		
Break down of Gaseous insulation	✓		✓		✓		✓				✓	
Breakdown of liquid insulation	✓		✓		✓		✓					✓
Breakdown of solid insulation	✓		✓		✓		✓					
Three phase transformers: Iron loss, Harmonics, Imbalanced loading			✓	✓		✓		✓				
Three phase transformers: iron core & harmonics, 3 phase to 2 phase conversion, Load testing, Equivalent circuits & regulation			✓	✓		✓			✓			
DC motors: separately excited motors, series & parallel excited motors			✓	✓		✓			✓			
DC motors: Inertia torque, speed control using thyristors.			✓	✓		✓			✓			
Measuring of resistance - Induction – Capacitance – Voltage drops	✓	✓		✓	✓			✓				
Power loss of loaded power transmission lines – Capacitance of 3 phase cable		✓	✓	✓	✓					✓		
corona voltage of power transmission lines – Control Fundamentals		✓	✓	✓	✓						✓	
Analog computer trainer – Logic circuits trainer		✓	✓	✓	✓							✓

Matrix of course aims and ILO's

Course Title: Test (3A) **Code**: EPE 315
Lecture: - **Tutorial**: - **Practical**: 4 **Total: 4**
Program on which the course is given: B.Sc. Electrical Engineering (Electrical Power and machines)
Major or minor element of program: Major
Department offering the program: Electrical Engineering Department
Department offering the course: Electrical Engineering Department
Academic year / level: Third Year / **First** Semester
Date of specifications approval: 20 / 6 / 2010

Course Aims	ILO a's			ILO b's			ILO c's			ILO d's		
	1	2	3	1	2	3	1	2	3	1	2	3
Demonstrate applied topics of DC machine and transformer tests	✓		✓	✓		✓		✓	✓			
Demonstrate applied topics of Power systems & control of T.L.	✓	✓	✓	✓	✓					✓	✓	✓
Demonstrate applied topics of High Voltage testing and corona.	✓		✓	✓	✓		✓	✓		✓	✓	✓

Course coordinator: Prof. Dr. M.Abouelsad
Course instructor: Prof. Dr. M.Abouelsad, Hassan Abd El-Aziz Mansour and Dr. M.Soliman.
Head of department: Prof. Dr. Sayed A. Ward