HIGHLIGHT COMPUTER GROUP

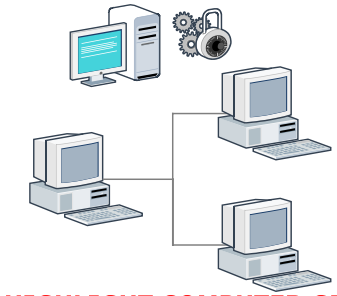
TRAINING CENTRE

www.highlightcomputer.com

www.highlightcomputergroup.zoomshare.com

www.iqytechnicalcollege.com

Affiliated to St Clements University Higher Education School Niue of St Clements University



BACHELOR OF APPLIED ENGINEERING (ELECTRICAL)

EXERCISES

PART (1) THEORY QUESTIONS

Study Option (1) Self Study

Basic Concepts

BACHELOR OF APPLIED ENGINEERING (ELECTRICAL)

Pre-requisite

Advanced Diploma in Electrical Engineering

ASSESSMENT

The learning and assessment system involves two parts

(1) **Part (1)**

Completion of the course works- submission of the assignments Theory/ Practical/ Calculations) for the over all knowledge of the subject
(Grading—Complete or Incomplete)

(2) Completion of the course works- submission of the assignments (Theory/ Practical/ Calculations) for the competency units of the subject
(Grading—Complete or Incomplete)

(3) **Part (2)**

Sitting the final test for the subject by either online or paper based test- -Grading—In accordance with St Clements University Higher Education School-Niue Students Handbook.

BACHELOR OF APPLIED ENGINEERING (ELECTRICAL)

Subjects	Points	Competency Units	Page
BAE 401 Advanced Engineering Mathematics	9	Maths 301 Introduction to Complex Variables (1 pt) Maths 302 Elementary Linear Algebra (1 pt) Maths 401 Continuous Distributions (1 pt) Maths 402 Discrete Distributions (1 pt) Maths 403 Engineering Mathematics (1 pt) Maths 501 Introduction to Probability(1 pt) Maths 501 Linear Algebra & Matrices (1 pt) Maths 502 Finite Difference Methods for Partial Differential Equations & Mathematical Modelling (1 pt) Maths 601 Random Variables (1 pt)	
BAE 402 Calculus	3	Maths 304 Integration and Differential Equations (1 pt) Maths 403 Second Order Differential Equations (1 pt) Maths 303 Engineering Mathematics (1 pt)	
BAE 403 Engineering Mechanics	1	ME 301 Applied Mathematics (1 pt)	
BAE 404 Engineering Materials & Thermodynamics	3	ME 334 Engineering Thermodynamics (1 pt) ME 434 Wind Turbines (1 pt) ME 634 Pneumatics (1 pt)	
BAE 405 Advanced Circuit Analysis	3	EE 301 Electrical Circuits (1 pt) EE 303 Engineering Circuit Analysis (1 pt) EE 404 Electrical Measurement (1 pt)	
BAE 406 Electro-mechanics	2	EE 502 Electrical Machines (1 pt) ME 301 Machine Principle (1 pt)	

Subjects	Points	Competency Units	Page
BAE 407 Advanced Electro-magnetics Field & Materials	1	EE 407 Electromagnetism (1 pt)	
BAE 408 Analogue & Digital Electronics	5	EE 403 Introduction to Electronic Engineering (1 pt) EE 524 Power Electronics & Applied Electronics (1 pt) EE 405 Digital System (1 pt) EE 526 Digital Signal Processing (1 pt) EE 527 Digital Image Processing 1/ 2 (1 pt)	
BAE 501 Advanced Power Systems & Power Transmission Networks	3	EE 512 Power System (1 pt) EE 302 Power System Technology (Optional) EE 402 Electrical Power (1 pt) EE 513 Power Transmission and Distribution Lines (1 pt)	
BAE 502 Linear System	1	EE 304 Computer Mathematics (1 pt)	
BAE 503 Control System	4	EE 601 Non Linear Control Applications (1 pt) EE 601 Control Engineering , Feedback and Control System , PID_Control (1 pt) EE 624 Process Control (1 pt) ME 534 Numerical Control Part 1 / 2 (1 pt)	
BAE 504 Power System Analysis	1	EE 614 Power System Analysis (1pt)	
BAE 505 Power System Optimization	1	EE 613 Power System Optimization (1pt)	
BAE 506 Power System Stability & Protection	**2**	EE 615 Power System Stability & Power Quality (1 pt) EE 616 Power System Protection (1 pt)	
BAE 507 Electro-mechanical Energy Conversion	2	EE 602 Motor Control Electronics (1 pt) ME 434 Mechtronics & Robotics (1 pt)	

Subjects	Points	Competency Units	Page
BAE 508 Industrial Engineering & Industrial Management	1	Mgt 501 Basic Management & Communication Skills (1 pt)	
BAE 601 Computer Programming	3	IT 401 Object Oriented Programming (1 pt) IT 402 Structured Programming (1 pt) IT 403 Visual Basic Programming (1 pt	
BAE 602 Computer Network	1	ICT 202 Information Systems Principles and Networking (1 pt)	
BAE 603 Software Engineering	3	ICT 106 Software Engineering (1 pt) ICT 203 Information Systems, Analysis and Design (1 pt) EE 626 Nano Technology (1 pt)	
BAE 604 Telecommunication Engineering	2	EE 525 Data Communication (1 pt) EE 603 Electronics Telecommunication (1 pt)	
BAE 605 Engineering Management	5	Mgt 502 Operation Management (1 pt) Mgt 503 Production & Operation Management (1 pt) Mgt 504 Project Management (1 pt) Mgt 505 Quality Management and Manufacturing Engineering (1 pt) Mgt 506 Strategic Financial Management (1 pt)	
BAE 606 Building Service Electrical & Mechanical Engineering	2	EE 617 Building Electrical and Mechanical System (1 pt) ME 334 Airconditioning and Refrigeration (1 pt) CE 301 Building Construction (Optional) CE 301 Conceise Hydroulics (Optional)	
BAE 607 Radio Wave Propagation & Microwave Techniques	2	EE 625 Radio Wave Propagation (1 Pt) EE 626 Microwave Technique (1pt)	
Total Credit points	60		

Maths 502 Introductory Finite Difference Method for PDE

Assignment (9)

Q99

Write general form of partial differential equation.

Q100

Write the models for the following classifications of PDE

(a) Elliptic (b) parabolic (c) hyperbolic (d) $Ut = -CUx$ (e) $Ut+CUx = K Uxx$

Q102

Write the equation for Taylor's theorem

Q103

$U(x) = X^2$ Find the first order forward of FD approximation to Ux (3) using step size $h = 0.1$

Q104

Write the equation for Iterative solution method

Q105

Define the distance between two vectors in R^N by iterative approach (X = 1,3,5 Y = 4,5,3)

Q106

Write the equation for Jacobi Iteration

Q107

Write the equation for Gauss Seidel Iteration

Q108

Write Successive Over Relaxation method for Relaxation parameter $0 , w , 1$ for under relaxation.

BAE 402 Calculus

Calculus 2a.pdf

Assignment (11)

Q125

Write down the equation for line integral.

Q126

Describe the surface integral development procedure.

Q127

Describe the Green's theorem in the plane.

Calculus 3b.pdf

Q139

Write the generalised formula for (a) Quotient like series (b) Exponential like series

Q140

Describe the condition required for convergence of power series.

Q142

In the following equations, which one will be possible to find the power series solution?

(a) $X\, d^2y/dx^2 + 2\, dy/dx + xy = 0$

(b) $X\, d^2y/dx^2 + (X^2 + ¼)\, Y = 0$

(c) $X\, d^4y/dx^4 + (λ - X)\, d^2y/dx^2 - d\, Y/dx = 0$

Maths 403 Second Order Differential Equations

Assignment (13)

Q185

Find the generalised solution for the following equation

$(1 – X^2)\, y'' - 2X\, Y'' + λ\, Y = 0$

Q188

Describe the followings

(a) Normal stress (b) Shear stress (c) Stress in pins (d) Internally distributed force system (e) Stress at a point.

Assignment (14)

Q195

Explain (a) Average normal strain (b) average shear strain (c) engineering strain

Q205

Explain (a) Tension test (b) Isotropy & Homogeneity (c) Plain stress & plain strain (d) Failure & factor of safety.

Q211

Explain – Axial member, Structural analysis

Q217

Describe the followings

(a) Tension of shaft (b) Internal bending moment (c) Shear moment by equilibrium (d) Shear stress in thin symmetric beam

Q235

Explain (a) Stress Transformation (b) wedge method (c) stress transformation by method of equation.

Q239

Explain (a) Strain transformation (b) Line method (c) Visualizing principal strain direction (d) strain gauge

Q246

Explain (a) Non zero stresses (b) Non zero strain (c) Torsion (d) Combined axial & torsional loading

Q251

Explain (a) Buckling phenomenon (b) Local buckling (c) Radial stress (d) Radius of gyration

Theory of waves in materials

Assignment (17)

Q277/ Q278

Define the followings

(a) The material continuum (b) Notion of body (c) Representative cable

Q279

Classify the materials

Q280

Homogeneous materials, Composite materials

Q281

Explain the basic mechanical properties of materials

Q282

Define (a) Elasticity (b) Plasticity (c) Thermo elasticity (d) Viscosity (e) Diffusional elasticity (f) Electro elasticity (g) Magneto elasticity

Q283

Write the equation for First law of Thermodynamics

Q284

Define chemical potential

Q285

Explain sound wave

Q286

Write the equation for (a) Kirchoff's formula (b) Poission formula (c) D 'A Lembert formula

Q287

Explain the characteristics of wave

Q288

Define phase velocity

Q289

Write the equation for Linear strain tensor

Q290

Write the equation for Lagrange Cauchy Stress Tensor

Q291

Write the equation for class equation of mass balance

Q292

Write the balance equation of energy for first principle of theorodynamics

Q293

Write the Christoffel equation for plane waves in linear elastic materials

Q294

Explain the followings

(a) Surface waves (b) Rayleigh elastic waves

Q295

Write the equation for phase velocity of surface wave

ME434 Wind Turbine

Assignment (19)

Q308

Sketch wind farm displacement

Q309

Describe types of wind turbines

Q313

Describe planning contents of wind turbine

Q314

Explain theory of wind turbines

Q315

Identify the components of wind turbine

Q316

Describe the velocity & flow measured by anemometers

ME634 Pnuematics

Assignment (20)

Q317

Define atmospheric pressure, vacuum pressure

Q318

An air reservoir with a volume 6 m^3must be filled with compressed air to a maximum pressure of 900 Kpa . Calculate the volume of free air to be pumped by the compressor.

Q319

Explain the concept of air power transmission.

Q320

Write spring actuated valve method of valve actuation.

Q321

Explain actuator control

Q322

An actuator must reciprocate a load in horizontal direction. The load mass is 1000 kg . The friction coefficient is 0.12. The acceleration travel distance is 40 mm and the stationary speed after acceleration is 600 mm/ s . The system pressure is 600 KPa. Calculate piston diameter.

Q323

Piston diameter 40 mm, Piston rod diameter 16 mm, Stroke length 550 mm, Euler case situation 2. Safety factor 5 mounting type real and swivel. Find safe operating pressure.

Q324

A cushion built linear actuator has a piston diameter 200 mm & oversized piston rod diameter 180 mm. Air pressure is 1000 KPa. Calculate intensified pressure on rod and air outlet . If the meter out air outlet of the flow control valve is by mistake almost close off.

Q325

Explain liquid level pneumatic sensor.

BAE 405 Advanced Circuit Analysis

Assignment (21)

Q326

Explain integrated circuit fabrication

Q327

Describe operational amplifier terminal voltage and current.

Q328

Explain semi conductor materials

Q329

Explain formulation of Kirchoffs' law

Q368

Describe Nodal Analysis

Q369

Sketch MOSFET Ids VS Vgs characteristics.

Q370

Explain how to measure inverter performance

Q371

Write the equation for NOT/ NOR/ NAND gates.

EE404 Electrical Measurement

Assignment (24)

Q372

Write the methods to measure inductance & capacitance

Q373

Write the method to measure magnetism.

Q374

Explain high voltage measurement & testing.

Q375

Explain how to locate cable fault

Q376

Explain the measurement of electric power.

Q377

Explain the measurement of electric energy.

EE502 Electrical Machines

Assignment (26)

Q407

Explain the followings

(a) Turbine (b) Condenser (c) Boiler feed pump.

Q417

Explain the operation of three phase induction motor

Q420

Explain the operation of synchronous generator

Q426

Explain the followings

(a) Control relay (b) Thermal relay

ME301 Machine Principle

Assignment (27)

Q431

Explain rotating machinery

Q432

Explain machinery mounting.

Q433

Explain machine balancing

Q434

Describe bearing

Q435

Sketch power transmission & explain it.

BAE407 Advanced Electro-magnetic Field & Materials

Q436

Briefly explain electric field

Q437

Explain magnetic effect on electric current.

Q438

Explain electromagnetic induction

Q439

Explain magnetic dipole movement

Q440

Explain electro static energy

Q441

Explain multiple expansion.

Q442

Explain magneto statics

Q443

Write Maxwell's equation & explain.

Q444

Explain electro-magnetic relation & scattering

Q445

Explain electromagnetic field & moving charges.

Q446

Write equation for ampere law.

Q447

Write Gauss's law

BAE 402 Analog & Digital Electronics

Introduction to Electronic Engineering

Assignment (30)

Q459

Explain the followings

(a) Intrinsic semiconductors (b) Recombination (c) doping

Q460

Explain (a) Forward biasing (b) Reverse biasing

Q461

Explain (a) opto electronics (b) Tunnel diode

Q462

Sketch CE/ CC/ CB connections of transistors

Q463

Explain (a) Depletion mode MOSFET (b) Enhancement mode MOSFET

Q464

Explain (a) OR Gate (b) NOR Gate (c) AND Gate

Q465

Explain (a) OR Gate (b) NOR Gate (c) AND Gate

Q466

Explain Encoder & Decoder

Q467

Explain Sequential logic

Introduction to Power Electronics

Q468

Explain three phase rectifier

Q469

Explain dual rectifier

Q470

Explain active rectifier

Q471

Explain multi-level inverter

Q472

Explain DC/DC Converter

Q473

Explain boost converter

Q474

Explain phase modulation with sketch.

Q475

Explain block modulation.

Q476

Explain pulse width modulation.

EE403 Introduction to Electronic Engineering

Assignment (31)

Q477

Explain linear & non linear devices

Q478

Explain feedback

Q479

Sketch AC/ DC load line.

Q480

Explain CE voltage amplifier

Q481

Describe the properties of operational amplifier.

Q482

Describe inverting feedback voltage amplifier.

Q483

Describe filter

Q484

Explain passive band stop filter with sketch.

Q485

Explain differentiator

Q486

Explain comparator.

Q487

Explain sine wave generator with sketch.

Q488

Explain quantitizing & coding.

EE 524 Introduction to Power Electronics

Assignment (32)

Q489

Sketch the block diagram of an ordinary gate driver.

Q490

Explain the gating of dual rectifiers

Q491

Explain the gating of a cyclo-converter.

Q492

Explain pulse width modulation.

Q493

Explain space vector modulation.

EE 405 Digital System

Assignment (33)

Q494

Convert 26 to binary

Q495

Convert $100\ 101\ 110_2$ to Octal

Q496

What are Hex, Binary and Character values of 69, 73 and 116?

Q497

Convert 973 to BCD

Q498

What are the Gray code values of decimal 4, 9, 15?

Q499

Sketch the gates to get the function of

$$F = \overline{\overline{A} + \overline{B}}$$

Q500

$F = A\overline{B}\,(B + C)$

Q501

Simplify $F = A\overline{B} + A\,B$ by Karnaugh map.

Q502

Simplify

$LED = \overline{P}\,R + \overline{P}\,Q\,S + P\,\overline{Q}\,\overline{R} + \overline{P}\,\overline{Q}\,\overline{S}$ by using Karnaugh map.

Q503

Explain SR flip flop with Enable input.

Q504

Explain A synchronous flip flop.

Q505

Sketch D Flip flop & explain the operation

Q506

Explain the operation of astable multivibrator.

Q507

Sketch the truth table for Full adder.

Q508

Sketch the circuit diagram and explain the operation of parallel adder

Q509

Explain the operation of De-multiplexer .

Q510

Explain operation of Asynchronous up counter – PGT clocked with flip flops

Q511

Explain synchronous counters.

EE526 Digital Signal Processing

Assignment (34)

Q512

Explain non linear shift invariant system. Linear shift in variant system.

EE 527 Digital Image Processing (Part 1)

Assignment (35)

Q518

Explain the application areas that use digital image processing.

Q519

What are the components of an image processing system. Describe the basic concepts in image sampling and quantization

Q520

Explain Gamma transform & Histogram processing

Q521

Explain smoothing linear filters & second order static filter.

Q522

Write the fourier transform of sampled function.

Q523

Describe one dimensional DFT, Explain Gaussian low pass Butterworth high pass filter.

BAE 501 Advanced Power System & Power Transmission Networks

Assignment (36)

Q525

Outline the source of energy.

Q526

Explain the operation of steam power station.

Q527

Explain the operation of hydro power station.

Q528

Explain the operation of diesel power station.

Q529

Explain the operation of nuclear power station.

Q530

Explain the operation of gas turbine power station.

Q531

How can variable load affect the power station operation?

Q537

Compare the copper weight of single phase three wires system.

Q550

Explain screened cable & limitation of solid cable.

Q560

What are the methods of voltage control?

Q561

What are the essential features of switch gears?

Q562

Explain the operation principle of circuit breaker.

Q563

What are the desirable characteristics of fuse element?

Q564

What are the fundamental requirements of protective relay?

Q565

Explain the differential protection of alternators.

Q566

Classify the substations.

Intech Power Quality.zip

Q567

What are the consequences of power quality?

Q569

What are the problems in public lighting networks related to power quality?

Q570

Explain (a) Power Quality Indexes

Q571

Describe voltage quality level.

Q572

Explain the procedures to control the power quality.

Q573

Describe power quality & harmonic emission standards.

Q574

Sketch active filter & explain.

Intech Electrical Generation & Distribution System-Power Quality Disturbances

Q575

What are the requirements on voltage waveforms in hybrid renewable generation units in stand alone mode?

Q576

Write the equations for standard optimal power flow formulation.

Q577

Explain the basic principle of power flow control.

BAE 501 Advanced Power System & Power Transmission Network

EE512 Electrical Power Generation System

Assignment (37)

Q581

Explain the turbine design for high temperature & pressure.

Q582

Describe turbine components.

Q583

Explain the burning of fuel.

Q584

Explain the burning of gas and oli.

Q585

Describe the methods to treat the water .

Q586

Explain heat exchanger.

Q587

Describe power system computer control method.

EE512 Power System

Q588

Explain typical power system.

EE302 Electrical Power

Assignment (38)

Q598

Explain surge diverter,

Q599

HT & UG cable

Q600

Ex plain current protection. power system earth connection.

Q601

Explain switch gear.

Q602

Explain (a) HRC Fuse (b) Circulating current protection.

Q603

Explain symmetrical components.

Q604

Explain the commission of electrical plant.

EE302 Power System Technology

Q605

Explain types of electrical circuits.

Q606

Describe overview of electrical power plants.

Q607

Describe power control using switches

Q608

Describe the characteristics of electrical loads.

Q609

Explain the operation of electrical energy meter.

BAE502 Linear System

Assignment (40)

Q615

Define controllability.

Q618

Sketch the control system execution level.

Q619

Sketch the control system co-ordination level

Q620

What are the design guidelines for autonomous controllers?

Q621

What is control? Sketch the components of modern control system.

Q622

Explain additivity,

Q623

Explain homogeneity

Q624

Explain linearity

Q625

Define Analog

Q626

Define Digital

Q627

Explain continuous and discrete

Q628

Explain steady state , target value, rise time, % Overshoot.

Q629

Explain control process.

Q630

Draw the table of representation.

Q631

What are the system that can be applied with Laplace Transform?

Q632

Write the equations for Impulse Response , Impulse function.

Q633

Write the equation for star transform.

Q634

Write the equation for time shift & delay margin, delyed star transform

Q635

$$H(s) = \frac{S + 2}{S + 0.25}$$

Find zeros

Q636

What are the effective poles and zeros?

Q637

Explain time domain approach

Explain state space

What are the requirements to meet state space method?

Q638

Solve for X (t) with zero input

Solve for X (t) with non zero input

EE304 Introduction to maths for computer.

Assignment (41 & 41 A)

Q640

Write the statements for conjunction , de-junction & conditional.

BAE 503 Control System

Assignment (42)

Q654

Write the equation for Mason's rule.

Q655

Describe bode plot

Q656

Write the equation for Bode Gain

Q657

Draw the Bode plot for integration system.

Q658

Draw the Bode plot for differentiator system.

Q659 2

How to determine BIBO stability. h (t) = -------

t

Q660

Explain Routh Harwitz criteria.

Q661

Explain Root Locus method.

Q662

Explain Root Locus rule

Q663

Express Root Locus equation

Q664

Describe root locus stability.

Q667

What is Nyquist stability criteria?

Q668

What is observability?

Q669

Write the equation for proportional controllers & derivative controllers.

Q670

Explain Integral controller, PID controller.

Q671

Describe phase compensation, phase lead , phase lag, phase lead & lag.

EE601 Non Linear Control Applications

Assignment (43)

Q672

Sketch filtered Vsc

Q673

Write mathematical model of Vsc

Q674

Explain the application of an input/ output feedback lineraization to Vsc.

Q675

Sketch two stage power factor correction converter & non linear average model.

EE601 Control Engineering

Q676

Write the equations for single pole transfer function.

Q677

Write the equation for two complex poles transfer functions.

Q678

Write the transfer function of integrator.

Q679

$$G(S) = \frac{4(S+1)}{(S+2)(S^2+S+1)}$$ Sketch Bode diagram.

Q680

Explain Nichol plot

Q681

Explain Root Locus method.

Q682

Explain Gain & Phase margin.

30

$$G(S) = \frac{3}{S(S+1)(S+2)}$$

Q683

Write phase lead design

Q684

Design phase lag design

EE601 PID Control

Q705

Sketch the block diagram of PID Controller

Q706

Sketch the structure of Fuzzy PID compound controller

Q707

Write the criterias of the design of I – PID controller

Q708

Sketch the simulation model of C- PID controlled SRM system.

EE601 An Introduction to Non Linearity in Control System

Q709

Define non linearity , Explain the forms of non linearity.

Q710

Explain the basic principle of phase plane method.

Q711

Explain the linear case.

Q737

Explain supervisory control

ME534 Numerical Control Part 2

Q744

Explain the application of numerical control in industry.

Q745

Describe loop system & servo mechanism.

Q746

For the diagram, determine the co-ordinates necessary to drill the part.

Q747

Explain the following programs.

BAE 504 Power System Analysis

Assignment (46)

Q751

Write the equations for average active (real) power & Apparent power

Q752

Write the equation for complex power flow.

Q753

Write the formula for flux linkage self & mutual inductance.

Q754

Write the equation for inductance of three phase line.

Q755

Write the equation for the bus admittance matrix

Q756

Write the matrix formulation equations for the given circuit.

Q757

Explain the process of Gauss Seidel method

Q758

Explain the process of Newton Raphson method

Q759

Write Jacobian matrix

Q771

Write the equation for double L-G fault

Q772

Write the equation for generator dynamic model

Q773

Write the swing equation and small disturbance modelling.

Q774

Write the equation for equal area criterion method

Q775

Write Euler's method formula

Q776

Explain the modelling steps of multi machine system.

Power System Load Flow

Assignment (47)

Q777

Classify buses.

Q778

Explain the solution of Newton Raphson method

Q779

Write the load flow algorithm

Q780

Form Y bus matrix

Q781

Explain the steps in Gauss Seidel load flow.

EE614 Power System Analysis

Assignment (48)

Q783

Draw the transmission line circuit

Q784

Sketch the simple example of power flow and write the equation.

Q785

Write theEquation for Gauss Seidel iteration.

Q786

Describe DC power flow algorithm.

Q787

Express the model of electric generator.

Q788

Develop the model of pre-fault on power system and fault on power system.

Q797

Describe power system stability.

BAE 505 Power system Optimization

Assignment (49)

Q798

Describe the economic operation of power system.

Q799

Explain the economic distribution of loads between the units of a plant.

Q800

Describe load frequency control.

Q801

Describe automatic generation control.

BAE 506 power system Stability & Protection

Assignment (51)

Q813

Describe faults in ac circuit.

Q814

Describe symmetrical faults in power system.

Q815

Write the equations related to transients in ac circuit.

Q816

Describe the calculation process to determine the fault current using Z bus matrix.

Q817

Explain the process to represent the fault current by using symmetrical components.

Q818

Write the equation for AC source transient.

Q819

Write the equation for AC source transient current.

Q820

Write the equation for transient RL circuit.

Q822

Outline the circuit breaker selection.

Q823

Write the equation tp calculate te short circuit current in unloaded synchronous generator

Q824

Express fault current using Z bus matrix.

Q825

Outline the criterias to select CB.

Q826

Outline the equation to transform symmetrical components.

Q827

Write the equations to calculate real and reactive power flow.

Q828

Write the matrix to calculate sequence circuit for Star load.

Q829

Sketch and write the equations for sequence circuit for transmission line.

Q830

Write the equation for Star/ Star connected transformer.

Q831

Write the equation to calculate 2L –G fault.

Q833

Write power-angle relationship equation.

Q834

Describe equal area criterion method.

Q835

Describe oscillation two areas system.

Q836

Explain ideal shunt compensator.

Q837

Explain the ways to improve the stability margin.

Q838

Explain the methods of voltage injection.

Q839

Explain power flow control and power swing damping.

EE616 power System Protection

Assignment (52)

Q840

Explain surge and transient

Q841

Explain noise and disturbances.

Q842

Describe the recommended design and installation practice with circuit diagram

Q843

Describe transient and permanent faults

Q844

Explain substation automation.

EE618 Power Quality

Q855

How will you measure the temperature increase of transformer?

Q856

Explain the decrease of life time due to an additional temperature rise.

Q857

Describe the calculation of steady state temperature rise of electrical apparatus based on thermal network.

Q858

Explain lateral profile of magnetic field at ground level under three phase transmission line.

Q859

Write the factors influencing generation of corona.

Q860

Describe the frequency control of an interconnected power system.

Q861

Explain the types of non linear loads

Q862

Classify the filters employed in power system.

Q863

Describe the common types of passive filters for power quality improvement.

Q864

Write the equation for first order damped high pass filter.

BAE 506 Power System Stability & Protection- Power System Protection.

Assignment (53)

Q865

Explain distance relay setting.

Q866

Explain over current phase earth fault relay.

Power Transmission Planning & Engineering

Q867

Explain distribution system planning and design.

EE616 Power system Protection

Assignment (54)

Q868

Explain generator and motor protection.

Q869

Write transformer protection.

Q870

Write the methods of busbar protection.

Q871

Write line protection

Q872

Write line protection with distance relay.

Q874

Explain the effect of dc offset , frequency on relay operation.

Q875

Express universal relay torque equation.

Q876

Sketch relay operation diagram.

Q877

Explain distance relay.

Q878

Explain carrier current relay.

Q879

Explain voltage transformer.

Q880

Describe relay response

BAE 507 Electro-mechanical Energy Conversion

Q886

Explain transistor rating.

Q887

Explain transistor switching characteristics.

Q888

Explain dynamic characteristics of MOSFET.

Q889

Sketch negative gate drive circuit.

EE602 Motor Control Electronics

Assignment (56A)

Q904

Explain modulation method DC-AC conversion

Q905

Explain third harmonic PWM.

Q906

Explain slip frequency control

Q907

Indicate electronic

Q908

Sketch the ground architecture

Q909

Explain dc motor control using power switching regulator.

Q910

Describe electrical characteristics of IGBT.

Q911

Explain power rectifier and power transistor.

ME 434 Machtronics & Robotics

Assignment (56B)

Q912

Sketch robotic interfacing circuit.

Q913

Sketch transmitter circuit.

Q914

Sketch input circuitry.

Q915

Explain robotic sensors.

Q916

Explain proximity sensors.

Q917

Explain temperature sensor.

Q918

Describe robotic communication system

BAE 508 Industrial Engineering & Industrial Management

Assignment (57) & (58)

Q919

Based on the knowledge that you gain in the subject, write a project report describing the duties and responsibilities of a project manager by outlining the following points.

1. How to acquire information.
2. Job of a project manager

3. How to manage human resources
4. Planning the organization.
5. Setting up operation strategies.
6. Manage the quality.
7. Manage the finance
8. Manage the strategy.
9. Organize the organization.
10. Provide leadership.
11. Motivate staff

The report should be 15 to 20 pages.

BAE 605 Engineering Management

Mgt 502 Operation Management

Assignment (59)

Q920

(a) Explain product design and process selection.

(b) Explain total quality management.

(c) Explain capacity planning.

Mgt 503 Production & Operation Management.

Assignment (60)

Q921

(a) Plan the production

(b) Explain the setting of operation strategy.

Mgt 504 Project Management

Assignment (61)

Q922

Write a report related to project management containing:

- Project organization , planning, project and performance measurement, risk management, documentation, audit, closure.

Mgt 505 Quality Management

Assignment (62)

Q923

Write the essay on quality management containing background, standard model, strategic quality management.

Mgt 506 Strategic Financial Management

Assignment (63)

Q924

Write the essay on financial management including capital budgeting, treatment of uncertainty, debt valuation and cost of capital.

BAE 601 Computer Programming

Assignment (65, 66,67)

Q925, 926, 927

Submit the programming projects given by the teacher.

BAE 602 Computer network

Assignment (68)

ICT 202 IT Network (D016 Study Guide)

Q928

Do Tutorial 4

Q929

Do Tutorial 5

Q930

Do Tutorial 6

Q931

Do Tutorial 7

Q932

Do Tutorial 10

Q933

Do Tutorial 14

BAE 602 Computer Network

Q933

Explain client server computing.

Q934

Describe network cable.

Q935

Explain the running of network program.

Q936

Explain the server operating system.

Q937

Explain digital transmission

Q938

Explain error detection and correction.

Q939

Explain analog transmission

Q940

Explain digital transmnission

Q941

Explain data & signal in the following aspects

(a) Sine wave

(b) Wave length

(c) Time & frequency domain

(d) Composite signal

(e) Bandwidth

ICT203 Information System Analysis & Design

Information System Analysis 1

Assignment (69)

Q948

What are the needs for organization?

Q949

Describe the size of organization and information requirement.

Q950

Compare manual & computerised information systems.

Q951

Describe the components of a system.

Q952

Explain information architecture.

Q953

Explain management information system.

Q954

Explain decision support system.

Q955

How do you understand data mining?

Q956

Explain executive support system.

Q957

What are the requirements to plan for system development?

Q958

Explain tactical plan and strategic plan.

What are the system development?

Q959

Outline the components of system design.

Q960

Which contents should be included in security policy?

Q961

Explain risk based audit approach.

Q962

What are the phases of risk management?

BAE 603 Software Engineering + ICT 106 Software Engineering

Q963

Describe the process to develop the software

Q964

Explain how to do feasibility study for development of software.

Q965

Outline the required documentation for software design.

Q966

What is source code management?

Q967

What is unified modelling language?

Describe the source code management process.

Q968

Explain data architecture, real time transaction, batch processing by using necessary flow diagrams.

Q969

Explain distributed objects and system life cycle.

What are the methods for evaluation of usability?

Q970

How will tou assess the performance of computer system?

Q971

Explain the coding standard tools for debugging

Q972

Explain reliability matrices for distributed system

Q973

What are the process of validation and verification?

EE 626 Nano Technology

Assignment (71)

Q974

Define Nano technology

Q975

Describe the materials utilized for Nano Technology products.

Q976

What are the possible motivation for miniaturing a device?

Q977

What are the issues related to miniaturization?

Q978

Explain the materials utilized for Nano Technology in the following aspects.

- Chemical reactivity
- Solubility
- Electronic energy level
- Electrical conductivity

Q979

Write the formula to describe electron confinement

Q980

Write the equation to express chemical reactivity.

Q981

Describe the mechanical properties of Nano technology devices.

Q982

Sketch an evolutionary design algorithm.

Q983

Describe non imaging approach

A FM Resolution

Methodology of self assembly.

BAE 604 Telecommunication Engineering

Assignment (72A)

Ho46 Telecommunication 1

Q984

Explain modulation

Q985

Sketch communication system block diagram.

Q991

What are the reasons for modulation?

Q994

Describe the operation of amplitude modulator.

Q995

Explain amplitude modulation reception.

Q997

What are the advantages of SSB?

Q998

Sketch SSB transmitter.

Q999

Sketch the block diagram of SSB receiver.

Ho46 Telecommunication 2

Q1002

Sketch RF amplifier.

Q1003

Explain frequency conversion technique.

Q1005

What is frequency hopping?

Q1006

Explain pulse modulation.

Q1007

Explain pulse position modulation.

H046 Telecommunication 3

Q1008

Explain PCM/ TDM repeater with sketch.

Q1010

Explain code transmission.

Q1011

Explain ISDN.

Q1012

Describe network topologies.

Q1016

Explain ground wave propagation.

Q1018

Explain antenna.

Q1020

Write the equation for quarter wave matching.

Q1021

Explain fibre optics communication.

Q1026

Describe fibre optics LANs.

EE525 Data Communication

Assignment (72B)

Q1027

Explain two stages communication system.

Q1028

Sketch universal server part data circuit.

Q1029

What are the parts of data terminal?

Q1030

Why redundancy is used in data transmission?

Q1031

Describe the various types of data transmission circuits.

Q1032

Explain Asynchronous modem and interfaces on the following aspects

- Analog modulation
- Low speed operation
- Time division multiplexing

Q1033

Sketch

- Synchronous modem block diagram.
- Modem transmitter block diagram.
- Modem receiver block diagram.

Q1034

Explain convolutional coding.

- Half duplex protocol
- Transparent text mode
- Synchronous data link control

EE603 Electronics Telecommunication

Assignment (73)

Q1035

Explain

(a) VHF band

(b) UHF channels

Q1036

Explain frequency deviation.

Q1037

Explain frequency modulated sound.

Q1038

Sketch the diagram of a direct frequency modulated transmitter.

Q1039

Explain folded dipole antenna with sketch.

Q1040

Explain horizontal pulse timing.

Q1041

Describe line pairing.

Q1042

Explain vertical interval reference.

Q1043

What is luminance signal?

BAE 606 Building Service Electrical & Mechanical Engineering

Assignment (74)

Building Construction 1

Q1044

Write an essay on building construction consisting of

(a) Making building

(b) Foundation

(c) Selecting materials

(d) Different types of construction

(e) Concrete construction

(f) Interior finish

Air-conditioning & Refrigeration

Q1045

Sketch line voltage bi-metal sensing device and explain it.

Q1046

Write the method to measure the temperature of fluids?

Q1047

Describe the performance of radiant heating panels

Q1048

Sketch the control circuit for forced air electric furnace.

Q1049

Explain self contained humidifier.

Q1050

Explain the followings

(a) Package air-conditioning

(b) Split system air-conditioning

Q1051

Describe the perimeter loop air ventilation system.

Q1052

Design industrial air distribution system with necessary sketch.

Sanitation and water supply in low income countries

Annex A

Q1053

Write the equations for the followings.

(a) Effective pit volume

(b) Pit side wall area

(c) The effective depth for infiltration (circular pit of diameter)

Annex B

Q1054

Write the notes on hydraulic design of simplified sewers.

Q1055

Write the notes on properties of a circular section.

Q1056

Write the design procedures of sewer system.

Q1057

Express the formula to calculate minimum sewer gradient.

Q1058

Express the formula to calculate sewer diameter.

Q1059

Describe the way of hydrogen sulphide control.

EE617 Building Electrical & Mechanical System

Assignment (75)

Q1060

Outline the climate comfort and design strategies of building construction.

Q1063

Calculate coefficient of transmission “U” for masonary cavity wall.

Q1067

Explain all air HVAC system.

Q1069

Describe the types of pumps used for building water supply system.

Q1070

Sketch the outline diagram of sewage pipe system.

Q1071

Explain fire safety and environment control system.

Q1072

What are the major factors influencing fire growth?

Q1073

Explain class A,B,C of interior finish and requirements for interior finish, summary of life safety code.

Q1077

Outline the elements of residential signal system.

ME334 Air-conditioning & Refrigeration

Q1078

Explain sensible heat and latent heat.

Q1079

Explain passive solar design.

Q1080

Explain air solar collector with sketch.

Q1081

Draw the connection diagram of water storage and water distribution auxiliary heat by convectional hot water boiler.

Q1082

Explain

(a) Relative humidity

(b) Humidifier

Q1083

Sketch split type air-conditioning and system for building.

Q1084

Design building air ventilation system.

PROJECT

Q1085

Use the worksheet provided from page 399 to 442, design the ventilation system for a building given by the teacher.

BAE 607 Radio Wave Propagation & Micro wave Technique

Assignment (77)

Radio wave propagation

Introduction to radio wave propagation .ppt

Q1086

Write the equation for spherical wave.

Q1087 Q 1088

Sketch propagation over a flat earth and write equation.

Q1089

Explain site shielding.

Q1090

Express local mean model.

Q1091

Express fast fading model.

1.ppt

Q1092

Explain delay spread.

Q1093

Explain outdoor propagation.

Q1094

Explain indoor propagation.

Electromagnetic propagation.ppt

Q1095

Write the equation for electric and magnetic fields propagate as wave.

Antenna propagation 1.ppt

Q1096

Express general frequency range.

Q1097

Write line of sight equation.

Q1098

Write the equation for thermal noise.

ARS slides wave prop.pdf

Q1099

Sketch two rays propagation.

Q1100

Sketch multiple knife edges

Q1101

Describe the different types of scattering.

Q1102

Explain multi-path propagation.

Chap 5.ppt

Q1103

What are the patterns of radiation?

Q1104

Write the formula to calculate antenna gain.

Q1105

Sketch the line of sight propagation.

Chap 03. Ppt

Q1106

Explain

(a) Reflection

(b) Diffraction

(c) Scattering

Q1107

What are the effects of radio propagation?

Q1108

Write the equation to calculate land propagation.

Q1109

How do you understand slow fading

Q1110

How do you understand fast fading

Chap 7 Notes.ppt

Q1111

Explain Ionosphere & how it reflects radio waves.

Chap 12.ppt

Q1112

Explain radio frequency interference

Q1113

Explain polarization of electric field.

Q1114

Describe ground wave.

Lecture 2.ppt

Q1115

Explain medium for communication.

Q1116

What is AM & FM ?

Week 3.ppt

Q1117

Describe free space propagation model.

Microwave Techniques

Assignment (78)

ECE5014 Microwav.ppt

Q1119

What are the methods of feed at the antenna?

Q1120

What are the methods of feed with resonant line?

Q1121

Explain single wire feed system.

Q1122

Explain delta matched feed system.

Q1123

What is artificial line matching system?

Chap 09

Q1127

Explain coupler, combiner, divider, directional coupler.

Q1128

Write the mathematical model for 4 ports coupler

Q1129

Write the equation for even mode.

Q1130

Write mathematical equation for mixers.

Q1131

What is two ports stability?

Q1132

What is simultaneous conjugate match?

Q1133

Explain thermal noise with necessary equations.

EE625 Radio Wave Propagation

Assignment (79)

Q1134

Express Maxwell equation for electro-magnetic waves

Q1135

Describe wave polarization.

Q1136

Describe ground effects of circular polarization.

Q1141

What are FCC guidelines for RF safety.

EE626 Microwave Techniques

Assignment (80)

MJ Part 1

Q1144

Write formula for incidence & reflected waves.

Q1145

Derive voltage transfer function.

Q1146

Drive formula for analysis of ladder circuit

Q1147

What are the properties of strip line?

Q1148

Sketch the field distribution of the even & odd modes in strip line.

Q1149

Sketch TE10 mode wave guide & equations.

Q1150

Write resonant frequency equation.

MJ Part 2

Q1151

Explain tunable band pass filter.

Q1152

Explain mechanically tunable coaxial band pass filter.

Q1153

Write the equation for ellipeoidal resonator resonant frequency.

Q1154

Sketch two resonator filter using wave guides.

Q1155

Explain magnetically tunable band pass filter with wave guide input & output.

Q1156

Explain 4 resonator magnetically tunable wave guide band stop filter.

Q1157

Describe design principle for magnetically tunable band pass filter.

Q1158

Describe the properties of Ferri magnetic materials for magnetically tunable filter.

Q1159

Provide the equation for generalised filter circuit using series resonator & impedance inverter.

Q1160

Explain higher order magnetostatic mode.