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Question Paper Code : 80359

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Electrical and Electronics Engineering

EE 6004 — FLEXIBLE AC TRANSMISSION SYSTEMS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between load compensation and system compensation.
2. Write the need for a reactor in basic single phase TSC diagram.
3. List the advantages of slope in dynamic characteristics of SVC.
4. What is PSDC?
5. List the different modes of TCSC operation.
6. Draw the VI capability characteristics for single-module TCSC.
7. Draw the VI characteristics of STATCOM.
8. Define SSSC and list the components in it.
9. List the various possible combinations for the study of controller interactions.
10. What are the frequency ranges for the study of different control interactions?

PART B — (5 × 16 = 80 marks)

11. (a) Draw the single line diagrams of TCSC, STATCOM, SSSC and UPFC. (16)

Or

- (b) What is meant by active and passive compensation? Discuss the effect of various types of passive compensation on power transmission capacity with necessary diagrams and expressions. (16)

12. (a) Explain the voltage-control action by the SVC with necessary diagrams. (16)

Or

- (b) Explain the role of SVC in increasing the steady state power-transfer capacity with necessary diagrams and expressions. (16)

13. (a) (i) Discuss the advantages of TCSC in detail. (8)

- (ii) Describe the variable reactance model of TCSC with block diagram. (8)

Or

- (b) Briefly describe the steps to be followed for SSR mitigation by TCSC.

14. (a) (i) Explain the principle of operation and applications of STATCOM. (8)

- (ii) Explain the power exchange process between STATCOM and power system. (8)

Or

- (b) Explain the principle of operation of SSSC and series-compensation using SSSC with necessary diagrams and expressions. (16)

15. (a) (i) Explain the coordination features of parallel SVCs and electrically close SVCs. (8)

- (ii) Explain the controller coordination using Genetic Algorithms. (8)

Or

- (b) Describe the basic procedure for controller design for the coordination of multiple controllers using linear control techniques. (16)

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Question Paper Code : 80363

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Electrical and Electronics Engineering

EE 6008 — MICROCONTROLLER BASED SYSTEM DESIGN

(Common to Electronics and Instrumentation Engineering and Instrumentation and Control Engineering)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write about the Status Register of PIC Microcontroller.
2. List out all the addressing Modes in PIC Microcontroller.
3. What is the minimum and maximum clock frequency for PIC 16CXX?
4. What is the role of TRISx register in I/O Port Management?
5. What is the value to be loaded into SPBRG register if we want 19200 baud rate with 10MHz clock source.
6. List the registers associated with UART.
7. What is the purpose of Program Counter?
8. List out some of ARM Development Tools.
9. What is five stage pipeline in ARM PROCESSOR?
10. List few embedded Application for ARM processor.

PART B — ($5 \times 16 = 80$ marks)

11. (a) (i) Draw and explain the architecture of PIC 16 Microcontroller. (10)
(ii) Explain about the instruction set of PIC Microcontroller. (6)

Or

- (b) Explain about the Various Memory organization of PIC Microcontroller. (16)

12. (a) Explain the functionality of TIMER for PIC Microcontroller with a suitable program. (16)

Or

- (b) What is Interrupt? Explain the Interrupt structure of PIC Microcontroller with neat diagram. (16)

13. (a) What is meant by I²C module? Explain how I²C is interfaced with PIC Microcontroller. (16)

Or

- (b) Using Suitable circuits, construct and explain how ADC is interfaced with PIC microcontroller. (16)

14. (a) With Neat sketch explain the functional block diagram ARM architecture. (16)

Or

- (b) Explain the various Operating modes Programmers model in Arm Processor. (16)

15. (a) Using Suitable example, explain the various instruction set of ARM processor. (16)

Or

- (b) Explain how does the coprocessor interface of the ARM work. (16)

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Question Paper Code : 80385

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Electrical and Electronics Engineering

EE 6701 — HIGH VOLTAGE ENGINEERING

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is back flashover?
2. Define Isokeraunic level or thunderstorm days.
3. What is ionization by collision?
4. Define Gas law.
5. What is a tesla coil?
6. What is Deltatron circuit?
7. What are the advantages of generating voltmeters?
8. List some advantages of Faraday generator.
9. Define 50% flash over voltage.
10. What are the tests need to be conducted on power transformer?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the mechanism of lightning stroke. (10)
(ii) Give the mathematical model for lightning discharges and explain them. (6)

Or

- (b) Explain the different methods employed for lightning protection of overhead lines. (16)

12. (a) From the fundamental principles, derive Townsend's criteria for the breakdown of gaseous dielectric medium. (16)

Or

- (b) Explain the various breakdown theories involved in commercial liquid dielectrics. (16)

13. (a) (i) Mention the necessity of generating high DC voltages. (4)
(ii) Explain with a neat diagram the generation of high DC voltages using Van-de-graff generator. State the factors which limit the voltage developed. (12)

Or

- (b) Explain the working principle of Cockcroft-Walton voltage multiplier circuit. Derive an expression for total voltage drop and total ripple voltage of n-stage voltage multiplier circuit and hence deduce the condition for optimum number of stages. (16)

14. (a) (i) Enumerate digital peak voltmeter. (8)
(ii) What is CVT? Explain how CVT can be used for high voltage AC measurement. (8)

Or

- (b) Explain how a sphere gap can be used to measure the peak value of voltages? Also discuss the parameters and factors that influence such voltage measurement? (16)

15. (a) Discuss the various tests carried out in a circuit breaker at HV labs. (16)

Or

- (b) Explain in sequence the various high voltage test being carried out in a power transformer. (16)

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Question Paper Code : 80386

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

.Seventh Semester

Electrical and Electronics Engineering

EE 6702 — PROTECTION AND SWITCHGEAR

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the difference between primary and back up protection?
2. What do you mean by dead spot in zones of protection?
3. What is the significance of PSM and TSM?
4. A relay is connected to 400/5 ratio current transformer with current setting of 150%. Calculate the plug setting multiplier when circuit carries a fault current of 4000A.
5. What is over fluxing? How it affect transformer?
6. Write two protection schemes used for protection of bus-bar.
7. Write two application of static relay.
8. State the difference between conventional relay and numerical relay.
9. What is the difference between re-striking voltage and recovery voltage?
10. State the difference between D.C. and A.C. circuit breaking.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain in detail about the need and different types of earthing scheme. (10)
(ii) A 132 KV, 3 phase, 50 cycles, overhead line, 50 Km long has a capacitance to earth for each line of $0.0157 \mu\text{F}/\text{Km}$. Determine the inductance and KVA rating of the arc suppression coil. (6)

Or

- (b) (i) Explain the essential qualities of protection and explain them in detail. (6)
(ii) Explain the method of calculating fault current using symmetrical components. (10)
12. (a) With a neat diagram explain the working principle of a directional over current relay. Derive the torque equation and also explain about directional relay connection. (6 + 4 + 6)

Or

- (b) From the universal torque equation determine the condition of operation for impedance relay, reactance relay and admittance relay. (16)
13. (a) Draw and explain protection scheme of an A.C. induction motor. (16)

Or

- (b) (i) A generator is protected by restricted earth fault protection. The generator ratings are 13.2 KV, 10 MVA. The percentage of winding protected against phase to ground fault is 85%. The relay setting is such that it trips for 20% out of balance. Calculate the resistance to be added in the neutral to ground connection. (8)
(ii) Explain a protection scheme for protection of transformer against incipient fault. (8)
14. (a) How will you synthesize a mho relay using static phase comparator? (16)

Or

- (b) Explain the numerical over current protection and numerical transformer differential protection. (8 + 8)

15. (a) (i) Derive the expression for restriking voltage and maximum RRRV. (8)
- (ii) In short circuit test on a 3 pole, 132 KV, circuit breaker, the following observations are made. Power factor for fault = 0.4, recovery voltage 0.9 times full line value, the breaking current symmetrical, frequency of oscillation of restriking voltage 16 KHZ. Assume neutral is grounded and fault is not grounded. Determine average RRRV. (8)

Or

- (b) (i) With a neat sketch explain the principle of vacuum circuit breaker. (8)
- (ii) Explain the phenomenon of interruption of capacitive current in a circuit breaker. (8)

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Question Paper Code : 80387

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Electrical and Electronics Engineering

EE 6703 — SPECIAL ELECTRICAL MACHINES

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by reluctance torque in synchronous reluctance motor?
 2. Write down the applications of synchronous reluctance motor.
 3. Define lead angle.
 4. What is the need of suppressor circuits in stepper motor?
 5. What is the need of a rotor positioning sensor in Switched Reluctance Motor?
 6. Write any four applications of SRM.
 7. What are the merits of the brushless dc motor drives?
 8. Write the difference between electronic and mechanical commutator.
 9. Classify the different types of PMSM.
 10. Differentiate square wave and sine wave motor.

PART B — (5 × 16 = 80 marks)

11. (a) Explain with neat diagram, the construction, working principle and types of synchronous reluctance motor. (16)

Or

- (b) Draw the steady state phasor diagram of synchronous reluctance motor and derive the expression for torque of synchronous reluctance motor. (16)

12. (a) (i) Explain in detail the multi stack construction of stepper motor. (8)

- (ii) Explain the modes of excitation of a stepper motor with neat diagram. (8)

Or

- (b) (i) A stepper motor has resolution of 180 steps/rev. Find the pulse rate required in order to obtain a rotor speed of 2400 rpm. (8)

- (ii) Explain in detail, the static and dynamic characteristics of a stepper motor. (8)

13. (a) (i) Explain with neat diagram, the microprocessor based control of Switched reluctance motor. (10)

- (ii) Derive the expression for static torque in SRM. (6)

Or

- (b) (i) Explain with the neat diagram any two converter topologies for SRM. (8)

- (ii) Explain the torque speed characteristics of SRM in detail. (8)

14. (a) Explain the construction and principle of operation of PMSM motor. (16)

Or

- (b) (i) Explain in detail, the power controllers for PMSM. (8)

- (ii) A BLPM motor has a no load speed of 6000 rpm when connected to a 120 V DC supply. The armature resistance is 2Ω . Rotational and iron losses may be neglected. Determine the speed when the supply voltage is 60 V and the torque is 0.5 N-m. (8)

15. (a) Derive the Torque equation of PMSM along with the phasor diagram. (16)

Or

(b) (i) Derive the EMF equation of PMSM. (10)

(ii) Explain the torque speed characteristics of PMSM. (6)

Question Paper Code : 80701

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Electrical and Electronics Engineering

MG 6851 – PRINCIPLES OF MANAGEMENT

(Common to Robotics and Automation Engineering, Polymer Technology, Fourth Semester Industrial Engineering and Management and Fifth Semester Industrial Engineering, Sixth Semester Mechanical Engineering (Sandwich), Aeronautical Engineering, Automobile Engineering, Electronics and Communication Engineering, Environmental Engineering, Geoinformatics Engineering, Mechanical Engineering, Mechanical and Automation Engineering, Mechatronics Engineering)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the functions of a Manager?
2. Give the current trends in Management.
3. What is meant by policies?
4. Define MBO.
5. Define “Departmentation”.
6. What is meant by performance appraisal?
7. What are the elements in the Maslow’s hierarchy of needs?
8. What is effective communication?
9. What are the uses of computers in management control?
10. Discuss the productivity problems in a management.

PART B — (5 × 16 = 80 marks)

11. (a) Explain in detail about the different types of business organization. (16)

Or

(b) Discuss in detail the evolution of management. (16)

12. (a) Discuss in detail about the classification of planning practices. (16)

Or

(b) Explain briefly about the decision making steps and process. (16)

13. (a) Explain briefly about the various types of departmentation. (16)

Or

(b) (i) Discuss the types of Centralization. (8)

(ii) Explain about the organizational Culture. (8)

14. (a) Explain the various types of Leadership with its different styles. (16)

Or

(b) (i) Explain the different barriers and breakdowns of communication process. (8)

(ii) Difference between motivation and satisfaction. (8)

15. (a) Discuss in detail about the budgetary and non - budgetary control techniques. (16)

Or

(b) Impact of IT in management concepts - Discuss. (16)