

Code: 9A02601

R09

B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

**POWER SEMICONDUCTOR DRIVES**

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 Give two methods of speed control normally employed for D.C Motors. Hence, sketch the characteristics of a separately excited D.C motor based on these two methods. Indicate clearly constant torque drive and constant power drive regions.
- 2 Describe how the speed of a separately excited D.C motor is controlled through the use of two three phase full converters. Discuss how two quadrant drive can be obtained from this scheme.
- 3 Describe the relative merits and demerits of the following types of braking for dc motors: mechanical braking, dynamic braking and regenerative braking with neat diagram.
- 4 Explain the basic principles of working of choppers and their application to DC motors. List out some applications of chopper fed dc drives.
- 5 (a) With the help of a neat schematic explain the operation of reversible AC voltage controller fed induction motor drive.  
(b) What is soft start and how ac voltage controller fed induction motor drive provides soft start of motor?
- 6 Show the circuit for controlling a delta connected induction motor using PWM inverter. Explain the operation.
- 7 Explain the closed loop operation of a wound rotor induction motor with sub synchronous converter cascade in the rotor circuit to drive a centrifugal pump.
- 8 Explain the working of VSI fed synchronous motor. Show relevant wave forms.

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B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

**POWER SYSTEM ANALYSIS**  
(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 Construct bus admittance matrix by using the singular transformation. Also explain merits of it in load flow studies.
- 2 (a) Explain merits and demerits of  $Z_{BUS}$  building algorithm.  
(b) Write step by step algorithm for  $Z_{BUS}$  building for a network containing no mutual and no phase shifting transformers.
- 3 Explain the algorithm for Gauss -Seidel method of load flow solution. Also explain how to handle Q – limits in voltage controlled buses.
- 4 Explain N-R method of load solution using flow chart for polar co-ordinates.
- 5 Two generators A and B are identical and rated 11 kV, 10 MVA and have a transient reactance of 20% at their own MVA base. Two transformers T1 and T2 are also identical and are rated 5 MVA, 11/66 kV and have a reactance of 5% at their own MVA base. The tie line is 100 km long and has a reactance of 0.1  $\Omega$ /km. a 3  $\Phi$  fault occurs at a distance of 25 km from one end of the line when the system is on no-load but at rated voltage. Determine fault MVA and fault current.
- 6 Show that for a fully transposed transmission line that the positive and negative sequence impedances are equal and also the zero sequence impedance is larger than positive and negative sequence impedances.
- 7 A power deficient area receives 50 MW over a tie line from another area. The maximum steady state capacity of the tie line is 100 MW. Find the allowable sudden load that can be switched on without loss of stability.
- 8 A 50 Hz synchronous generator with inertia constant  $H=2.5$  second and a transient reactance of 0.20 PU feeds 0.80 PU active power into an infinite bus (voltage 1 PU) at 0.8 lagging power factor via a network with an equivalent reactance of 0.25 PU. A 3  $\Phi$  fault is sustained for, 150 millisecond across generator terminals. Determine through swing curve calculation the torque angle  $\delta$  250 millisecond after fault initiation.

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Code: 9A02603

R09

B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

**POWER SYSTEM OPERATION & CONTROL**

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 Draw and explain incremental fuel cost characteristics of a thermal power plant.
- 2 Explain economic dispatch of thermal plants coordinating the system transmission line losses. Derive relevant equations and state the significance and role of penalty factor.
- 3 Explain about co-ordination in hydro thermal system and its importance.
- 4 Explain the adjustment of governor characteristic of parallel operating units.
- 5 Explain different blocks of a two area control system with the help of a neat diagram.
- 6 Explain the considerations in selection of frequency bias parameters.
- 7 (a) Derive the expression for reactive power of synchronous phase modifier and explain.  
(b) Explain how the power flow gets enhanced in a compensated line.
- 8 Explain the role of FACTS technology in deregulated environment.

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Code: 9A04602

III B. Tech II Semester (R09) Supplementary Examinations, November/December 2012

**MICROPROCESSORS & MICROCONTROLLERS**

(Common to EEE, ECE, CSE, EIE &amp; E.Con.E)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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- 1 (a) Differentiate between overlapping and non-overlapping segmentation in 8086 microprocessor.  
(b) Explain the special functions of general purpose registers.
- 2 (a) Write an ALP in 8086 to add five 16-bit numbers and result is 24 bit.  
(b) Write an ALP in 8086 to add two 16 bit decimal numbers.
- 3 (a) Briefly explain the maximum mode configuration of 8086.  
(b) What is the purpose of MN/MX pin? Explain.
- 4 (a) Explain about internal registers of 8259.  
(b) With neat block diagram explain briefly about PPI.
- 5 (a) Explain control word format of 8251.  
(b) Define frame in asynchronous communication and draw it.
- 6 (a) Discuss about the programming model of 8259.  
(b) It is necessary to serve 18 interrupt requests using 8259's. The address map for the 8259's is given from 0A00H to 0A0FH. Show the complete interface with 8086 system bus. These 18 interrupts are to be requested from interrupt type 040 H on words, with edge triggered mode and auto end of interrupt. Give the initialization sequence for all 8259's.
- 7 (a) Explain in brief about programming 8051 timers.  
(b) What are the steps involved in programming the 8051 to transfer data serially?
- 8 (a) Explain the instruction set of MCS-96 microcontrollers with simple example.  
(b) List the applications of ARM cores.

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Code: 9A10504

B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

**LINEAR & DIGITAL IC APPLICATIONS**

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Explain op-amp ideal characteristics.  
(b) Explain the difference between slew rate and transient response.  
(c) Explain the different external frequency compensation techniques.
- 2 Explain:  
(i) V to I converter with floating ground.  
(ii) Triangular wave generator with fewer components and derive expression for frequency of oscillation.
- 3 (a) Explain the basic principle of PLL & draw the pin configuration of IC 565.  
(b) The monostable multivibrator using IC 555 is used as a divide by 3 network. The frequency of the input trigger is 15 KHZ. If the value of  $e = 0.01\mu F$ , calculate the value of R.
- 4 (a) Draw and explain the operation of CMOS.AOI gate.  
(b) Explain dynamic electrical behavior of CMOS inverter.
- 5 (a) Explain interfacing of lowvoltage TTL and lowvoltage CMOS logic.  
(b) Draw and explain the operation of current mode logic for 2 input OR gate.
- 6 (a) Explain VHDL design flow.  
(b) Write the syntax for  
(i) Library (ii) Constant (iii) Package (iv) Case statement.
- 7 (a) Design 8-bit comparator using 74 x 85's.  
(b) Write a VHDL code for 74 x 148.
- 8 (a) Design and explain the operation of 4-bit binary ripple counter using T-flip flop's.  
(b) Explain operation of edge triggered JK flip flop.

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Code: 9AHS701

III B. Tech II Semester (R09) Supplementary Examinations, November/December 2012

**MANAGEMENT SCIENCE**

(Common to EEE & ECC)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 How do you explain the basic functions of management?
- 2 What is the need of decentralization? Explain factors determining degree of decentralization.
- 3 Explain basic procedure involved in method study & work measurement.
- 4 Discuss the role of purchases manager in formulation and implementations of business decisions.
- 5 Discuss the merits and demerits of payment by time and payment by results.
- 6 Explain any two methods to evaluate the progress of a project. What are the critical parameters that are used for evaluation? Give example.
- 7 Identify and discuss the stages in the process of strategy formulation and implementation.
- 8 Explain the concept of JIT. How does it help the manufacturing system to improve productivity?

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