Hall Ticket Number :										

R-11 / R-13

Code: 1G354

III B.Tech. I Semester Supplementary Examinations May 2017

Antennas and Wave propagation

(Electronics & Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any ***five*** questions
All Questions carry equal marks (**14 Marks** each)

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1. a) Deduce the relationship between Gain and Directivity of an antenna? 7M
   b) An antenna has normalized radiation intensity

$$U(\theta,\phi)=\begin{cases}10\sin\theta\sin\phi, W/sr & 0<\theta<\pi, 0<\phi<\pi \\ 0 & elsewhere\end{cases}$$

   Find the power radiated and directivity. 7M
2. a) Sketch the patterns of a centre fed vertical diploes of the following lengths?
   i) $\frac{a}{2}$ ii) $\frac{3a}{2}$ 6M
   b) Starting from Maxwell's equations derive the expressions for Retarded potentials? 4M
   c) A transmitting antenna has an effective height of 61.4 mts and takes rms current of 50 Amps at a wavelength of 625 mts. Find radiation resistance, radiated power and Antenna efficiency if the antenna loss resistance is 5Ω. 4M
3. a) With an example explain the principle of pattern multiplication? 6M
   b) Obtain an array factor for a rectangular array of isotropic radiators which are excited in phase and are placed at the corners of a square with each side equal to half wavelength? 8M
4. a) Explain the operation of Helical antenna in axial mode? 7M
   b) Calculate the diameter and effective aperture area of a parabolic reflector required to produce a beam-width of 15^0 between first nulls at a frequency of 10GHz? 7M
5. a) Explain the method of measuring the Beam width of an antenna? 7M
   b) Determine the length L, H-plane aperture, flare angles (θ_E and θ_H), Beam width and directivity of a pyramidal horns for which the E-plane aperture a_E= 10λ. The horn is fed by a rectangular waveguide with TE_{10} mode. Let δ=0.2 λ in the E-Plane and 0.375 λ in the H-plane 7M
6. a) Explain the following
   i) Earth's behavior at different frequencies ii) Wave Tilt 6M
   b) A vertically polarized wave having power density of 200W/m^2 is launched as a surface wave along a smooth ground having dielectric constant 20 and conductivity 2X10^{-2} ʊ/m. The frequency of the wave is 5MHz. Find the wave tilt and power loss per unit area of the ground. 8M
7. a) Derive an expression for radio horizon distance for curved earth? 7M
   b) Explain the following
   i) Tropospheric Scatter Propagation ii) Super Refraction 7M
8. a) Explain how the earth's magnetic field effects the propagation of radio waves in the ionosphere? 6M
   b) A wave propagating through ionosphere at a height of 400km above the earth surface at a frequency of 10MHz, Determine the skip distance for both flat and curved earth, assume the refractive index of the medium is 0.9 8M

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Hall Ticket Number :										

R-11 / R-13

Code: 1G457

III B.Tech. I Semester Supplementary Examinations May 2017

Computer Systems Architecture

(Electronics and Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any ***five*** questions
All Questions carry equal marks (**14 Marks** each)

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1. a) Convert the following octal numbers into binary and hexadecimal:
   (i) $5436.15_8 = ?_2 = ?_{16}$ (ii) $13705.207_8 = ?_2 = ?_{16}$ 10M
   b) List different types of computers and write significance of each type 4M

2. a) Write about register transfers and Register Transfer language with an example 8M
   b) Explain Arithmetic Micro Operations, logic micro operations, 6M

3. With a neat diagram explain the BUS organization for seven CPU registers 14M

4. a) Discuss the design of control unit. 7M
   b) Explain about address sequencing in Micro Programmed control Unit with an example 7M

5. a) Compute square root for 172_{10} using binary square root algorithm. 8M
   b) Develop a flow chart for the Booth's multiplication algorithm. 6M

6. a) Explain various cache memory management techniques 8M
   b) Write about associate Memory 6M

7. a) Discuss in detail about Direct Memory Access (DMA) 8M
   b) write about peripheral Component interconnect (PCI) bus 6M

8. a) Explain Arithmetic Pipelining processing with an example 8M
   b) Distinguish between parallel processing and pipelining processing 6M

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Hall Ticket Number :										

R-11 / R-13

Code: 1G353

III B.Tech. I Semester Supplementary Examinations May 2017

Digital IC Applications

(Electronics & Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **Five** questions
All Questions carry equal marks (**14 Marks** each)

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1. a) Explain the operation of a three input NOR gate and Design a CMOS transistor circuit for the same? 7M
   b) Does speed and the power consumption of a CMOS device depend on its dynamic electrical characteristics? Justify. 7M

2. a) Explain the classification of TTL logic family and mention its two applications. 8M
   b) Compare the logic families Emitter coupled logic and CMOS logic in detail. 6M

3. a) Explain the various Data types and Operators used in VHDL. 7M
   b) State the built-in libraries and packages in VHDL. Explain about the user defined packages in VHDL. 7M

4. a) Write the VHDL entity and architecture for an eight bit inverter in structural model using FOR-GENERATE loop. 7M
   b) What is Time dimension? Write a VHDL code for generating input waveforms in a test bench using WAIT statement. 7M

5. a) Explain 74x138 like 3 to 8 decoder and develop the VHDL code for it in Dataflow model. 7M
   b) Discuss about EXOR gates and parity circuits in detail? 7M

6. a) What is a barrel shifter? Design an approach to build a 16-bit barrel shifter using 74x151 ICs. 6M
   b) What is Ones counter? Draw the architecture for a 32 bit ones counter and write the VHDL code for it? 8M

7. a) Draw the positive edge triggered D-Flip Flop with preset and clear using gates. And explain its operation? 6M
   b) What do you mean by modulo-m-counter? Explain about Ripple and Synchronous counters in detail? 8M

8. a) Draw the internal structure of synchronous SRAM and explain its operation in detail. 8M
   b) What is 2D-decoding? Write briefly about commercial ROMs. 6M

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Hall Ticket Number :										

R-11 / R-13

Code: 1G352

III B.Tech. I Semester Supplementary Examinations May 2017

Linear IC Applications

(Electronics & Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any ***five*** questions
All Questions carry equal marks (**14 Marks** each)

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1. a) What is the purpose of Differential amplifier and explain the low frequency small signal analysis of it. 7M
   b) Explain the difference between constant current bias and current mirror. 7M

2. a) Draw the schematic symbol and block diagram of the typical op-amp and explain. 6M
   b) Define the following terms as applied to op-amp and mention their typical values for IC741.
   i)CMRR ii) Slew rate iii) PSRR iv)Input offset voltage 8M

3 a) Explain the difference between integrator and differentiator and give one application of each. 7M
   b) Draw and explain the operation of a current to voltage converter. If 741C is used, what is the lowest value of current that may be measured? 7M

4. a) List the important characteristics of the comparator and explain some applications of it. 7M
   b) Draw the circuit diagram of log and antilog amplifiers and derive their output voltages. 7M

5. a) Design a second-order low pass Butterworth filter at a cutoff frequency of 1KHz. Draw the frequency response of the same filter using A_F=1.586 10M
   b) What is an all pass filter? Where and why is it needed? 4M

6. a) Explain the Astable operation of 555 timer and derive the expression for its frequency and duty cycle. 8M
   b) Explain the block diagram of PLL emphasizing the capture range and lock range. 6M

7. a) Describe the operation of dual slope A/D converter with necessary diagrams. Give some of its advantages & disadvantages. 7M
   b) How many resistors are required for an 8 bit weighted resistors D/A converter? What are those resistor values , assuming the smallest resistance is R. 7M

8. a) What is the difference between analog multiplier and modulator? Explain the balanced modulator in detail. 7M
   b) Draw a sample and hold circuit. Explain its operation and indicate its uses. 7M

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Hall Ticket Number :										

R-11 / R-13

Code: 1GA51

III B.Tech. I Semester Supplementary Examinations May 2017

Managerial Economics and Financial Analysis

(Common to CE, ME and ECE)

Max. Marks: 70 Time: 3 Hours

Answer any **Five** questions
All Questions carry equal marks (**14 Marks** each)

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1. What is Managerial Economics? Discuss its relation with other areas of Management?

2. Explain various Demand forecasting techniques with suitable examples?

3. Define Production function? Explain about Cobb-Douglas production function?

4. How do you classify markets? Discuss price output determination in monopoly market?

5. What is the need of Public Sector business organizations? Explain various public sector organizations in detail?

6. What is Capital budgeting? Discuss various methods of capital budgeting?

7. What is Trail balance? Explain its role and importance in financial accounting?

8. What is Ratio Analysis? Discuss various financial ratios in financial analysis?

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