Enrollment No……

Bachelor of Engineering
Sixth Semester Examination, June-2021
Industrial Electronics [EC601]
Branch: EC

Time: 3:00 Hrs **Max Marks 70**

Note: 1. Attempt any five questions out of eight.
2. All question carry equal marks.

Q.1 a) Differentiate thyristor and transistor.
b) Explain the triggering method of SCR circuits.

Q.2 (a) Explain the working of DIAC and TRIACS.
(b) What is MOSFET also explain its working.

Q.3 (a) Explain the constructional features and principle of operation of silicon-controlled rectifier.
(b) Explain working of three phase full wave rectifier.

Q.4 (a)Describe PLC also draw its functional block diagram.
(b)Explain Op-Amp as rectangular to triangular pulse-convertor.

Q.5 (a) What is MOSFET also explain its working.
(b) Discuss the principle working of bridge type full wave rectifier.

Q.6 (a) What programming language is used to program PLC explain with example.
(b) Discuss the working of a Buck-boost regulator with the help of diagram.

Q.7 (a) Explain the application of Op-Amp as Wien bridge oscillator
(b) What are the criteria of choosing a PLC?

Q.8 (a) Explain in brief the working of Insulated Gate Bipolar Transistor (IGBT)
(b) Discuss the application of Op-Amp in function generator.

Enrollment No……

Bachelor of Engineering
Sixth Semester Examination, June-2021
Cellular Mobile Communication [EC602]
Branch-EC

Time: 3:00 Hrs **Max Marks 70**

Note: Attempt any five questions. All questions carry equal marks.

Q.1 (a) Define the term frequency management.
(b) Discuss the traffic load on a set up channel and on voice channels. Define channel assignment?

Q.2 (a) Explain GSM architecture. What is layer modeling? Explain.
(b) Explain modulation, characteristic call processing and hand off procedures for CDMA

Q.3 (a) Explain basic cellular system and its component.
(b) Describe the performance criteria of mobile telephone system

Q.4 (a) Explain the propagation of land to mobile transmission over water.
(b) Describe the antennas used at cell site. Discuss unique situations of cell site antenna

Q.5 (a) Explain the near end far interference in one cell and in the two system cell.
(b) What are antennas? Write various types of antennas.

Q.6 (a) Why do you need cell splitting? Explain various cell splitting techniques
(b) How will you increase the cell coverage for a noise limited system?

Q.7 (a) Explain point to point model for obtaining path loss in obstructive condition.
(b) What is co-channel interference? Derive the expression for co-channel interference.

Q.8 Write short note on:-

(i) Foliage loss

(ii) Mobile antenna

(iii) Dropped cell rate formula

Enrollment No……

Bachelor of Engineering
Sixth Semester Examination, June-2021
Digital Signal Processing [EC603]
Branch-EC

Time: 3:00 Hrs **Max Marks 70**

Note: Attempt any five questions. All questions carry equal marks.

Q.1 (a) What are discrete time signals and system? What do you mean by linearity and time invariance of these systems?
(b) Draw and explain the flow graph for decimation in frequency FFT algorithm for N=8 show various stages of decimation.

Q.2 (a) Discuss decimation in time algorithm for FFT and how it differs from the decimation in frequency algorithm
(b) Prove the properties of time shifting and time reversal are applicable to z-transform

Q.3 (a) Draw the flow graph for decimation in time FFT algorithm for N=8, using radix 2. Show various steps of decimation.
(b) Describe and explain Bilinear transformation method for designing digital filters

Q.4 (a) Discuss radix of FFT algorithm. Find the number of computations required for 1024 point DFT using normal methods.
(b) Define DFT of a given time sequence x(n) and hence write five different properties of DFT by giving suitable illustrations

Q.5 (a) Derive the equation for the convolution sum as applicable to DTLTI system.
(b) Explain window technique for designing FIR digital filter.

Q.6 (a) How DFT can be used to perform high speed convolution? Explain by giving example.
(b) Write down the characteristic of Bilinear transformation.

Q.7 a) What are the desirable and undesirable features of FIR filters? Differentiate between FIR filters and IIR filters.
b) Show that multiplication of two DFT's is a circular convolution in time domain. Dropped call rate formula.

Q.8. State and prove the following properties of DFT.
(i) Even and odd properties (ii) Circular frequency shift

Enrollment No……

Bachelor of Engineering
Sixth Semester Examination, June-2021
Antenna & Wave Propagation [EC604]
Branch: EC

Time: 3:00 Hrs **Max Marks 70**

Note: 1. Attempt any five questions out of eight.
2. All question carry equal marks.

Q.1 (a) What are different directional characteristic of dipole antenna.
(b)With the help of diagram explain the important features of different types of space wave propagation of electromagnetic waves over long distance even beyond the horizon.

Q.2 (a)Explain the radiation from a travelling wave on a wire.
(b)Derive the relation for magnetic and electric field components of an alternating current elements.

Q.3 (a) What do you mean by horn antenna? Explain in detail.
(b) Explain Dolph-Chebyshev method of antenna array synthesis.

Q.4 (a) Explain traveling wave antenna in detail.
(b) Derive an expression for the power radiated by quarter wave monopole.

Q.5 (a) If the array factor of a line array has zero at $\emptyset = 90^0, 180^0, 270^0$ and the elements are spaced at UA. Design the array.
(b) What do you mean by Ground Wave Propagation?

Q.6 (a) Write a short note on effect of earth on vertical patterns.
(b) Write a detail description on planer array.

Q.7 Discuss the significance of
(i) Retarded Potential
(ii) Radiation resistance

Q.8 Define the following.
(i) Effective length of transmitting and receiving antenna
(ii) Virtual height
(iii) Skip distance

Enrollment No……

Bachelor of Engineering
Sixth Semester Examination, June-2021
VLSI Circuits & Systems [EC605]
Branch: EC

Time: 3:00 Hrs **Max Marks 70**

Note: 1. Attempt any five questions out of eight.
2. All question carry equal marks.

Q.1. (a) Explain ASM flow chart with help of a suitable example
(b) Explain the hardware implementation and algorithm for addition with signed 2's compliment data.

Q.2 (a) What is FPGA? Explain various types of FPGA with diagram.
(b) Implement a BCD to excess 3 code converters by using PLA.

Q.3 (a) Prove that p-MOS pass strong logic '1' and n-MOS pass strong logic '0'.
(b) Explain hazards in sequential circuits. Explain methods of removal of hazards in sequential circuit design.

Q.4 (a) Explain VLSI design flow and design strategies.
(b) Write a short note on computer aided design (CAD) tools

Q.5 (a) What is controller? Describe the autonomous and non-autonomous controller with help of diagram.
(b) Draw and explain ASM chart for a comparator.

Q.6 (a) What are faults? Explain its type.
(b) Explain the state minimization of completely specified machine by using tabular methods

Q.7 (a) Explain secondary state assignment in sequential machines.
(b) Describe in brief critical and non-critical races.

Q.8 Explain the following memory elements:-
D flip-flop
J-K flip-flop
S-R flip-flop