Hall Ticket Number :										

R-11 / R-13

Code: 1G356

III B.Tech. I Semester Supplementary Examinations November 2018

Linear and Digital Integrated Circuits Applications

(Electrical and Electronics 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)	Draw the internal diagram of an op-amp and explain the operation of each section.	10M
	b)	Distinguish between digital and linear IC's.	4M
2.	a)	Explain the construction of instrumentation amplifier and derive the expression for gain.	7M
	b)	Draw the circuit of a log amplifier and explain its operation.	7M
3.	a)	Design a ramp generator using 555 timer having an output frequency of approximately 5 KHz.	8M
	b)	Draw the circuit of a Schmitt trigger using 555 timer and briefly explain it's operation	6M
4.	a)	Explain the various DAC/ADC specifications in detail.	8M
	b)	Determine the resolution of 8-bit ADC for 10V input.	6M
5.		Discuss in detailed about Dynamic electrical behavior of CMOS	14M
6.	a)	Explain the concept of low voltage CMOS logic and interfacing.	8M
	b)	What are the current sourcing and sinking applications of TTL 74XX IC's?	6M
7.	a)	Explain half & full adders with truth tables.	7M
	b)	What is the necessity of tri-state buffers?	7M
8.		Explain with neat diagram about universal shift register.	14M

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Hall Ticket Number :										

R-11 / R-13

Code: 1G253

III B.Tech. I Semester Supplementary Examinations November 2018

Power Electronics

(Electrical and Electronics 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) Illustrate the turn-on methods of SCR in brief.
   b) Define Latching and Holding currents as applicable to SCR and list out the merits and demerits of a thyristor?

2. Classify the triggering methods of an SCR.

3. a) Explain different cooling methods of a SCR briefly.
   b) Describe the function of heat sink?

4. Describe the operation of 1-Φ fully controlled bridge converter in the following modes: i) Rectifying mode ii) Inversion mode

5. a) Compare 3-Φ mid-point converters and bridge type converters and bring out important features.
   b) Why the circulating current mode preferred over non circulating current mode in dual converter?

6. a) Describe 3-Φ to 3-Φ cycloconverter with relevant circuit arrangements using 18 thyristors and 36 thyristors. What are the advantages of three-phase bridge over 3-Φ to 3-Φ cycloconverter circuit consisting of 18 thyristors?
   b) A 1-Φ to 1-Φ mid-point cycloconverter is delivering power to a resistive load. The supply transformer has a turn's ratio of 1:1:1. The frequency ratio is fo/fs =1/5. The firing delay angle α for all four SCRs are the same. Sketch the time variations of the following waveforms for $\alpha=0^o$ and 30^o. (i) Supply voltage (ii) Output current (iii) Supply current

7. a) What is a dc chopper? Describe the various types of chopper configurations briefly with necessary sketches.
   b) Describe the control strategies of a chopper operation.

8. a) With the help of neat diagram and associated wave forms, describe the operation of 1-Φ full bridge voltage source inverter with: (a) Resistive load (b) Inductive load.
   b) Explain the operation of Parallel inverter?

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Hall Ticket Number :										

R-11 / R-13

Code: 1G252

III B.Tech. I Semester Supplementary Examinations November 2018

Transmission of Electric Power

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

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1. Develop the expression for the Inductance per unit length of an overhead line from the basics of magnetic fields.

2. a) Derive the capacitance of a 1-φ two wire line

   b) A 3- φ OHTL has its conductors arranged at the corners of an equilateral triangle of 2 meters aside. Calculate the capacitance/km/ph. Assume that radius of each conductor is 0.5cm.

3. Discuss in detail the nominal-π representation with neat circuit diagram and phasor diagram. Derive also its performance specifications.

4. a) What is surge impedance? Define Surge Impedance loading? What is the relation of SIL with Ferranti effect?

   b) A 800KV transmission line is having per phase line inductance of 1.1mH/km and per phase line capacitance of 11.68nF/km. Ignoring the length of line, what is the surge impedance loading of the line.

5. With neat sketches describe the travelling of the wave for open and short circuited ends at different time instants.

6. a) Find the Voltage distribution of 5 disc insulator string and prove that voltage distribution is not uniform.

   b) What is the effect of non uniform voltage distribution on string efficiency? Explain with an illustration of 5 disc insulator string.

7. What is Sag? Derive the expressions for Sag when the supporting towers are of equal and unequal heights.

8. Explain with neat sketch the construction of Underground Cable?

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