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B. E. (Sixth Semester) Examination,

Nov.-Dec. 2015

(Old Scheme)

(ET & T Branch)

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COMMUNICATION HARDWARE DESIGN

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : Part (a) is compulsory for each question.
Attempt any two parts from (b), (c) and (d) of
each question. Assume suitable data, if
necessary. Answers should be brief and to the
point.*

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Unit-I

1. (a) Why Collector Modulation is superior to Base Modulation.

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328611(28)

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- (b) In a linear series plate modulated amplifier, plate supply voltage $V_{bb} = 1000$ volts, Resistance of coil in tuned circuit is 5 ohms, Q of plate tuned circuit is 50, No modulation D.C. plate current = 10 amp and r.m.s. tank circuit with zero modulation $I_{to} = 38$ amp.

On application of sinusoidal modulating voltage from a class A amplifier, carrier power increases to 7.82 kW.

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Calculate :

- (i) Plate circuit efficiency
 - (ii) Modulation index
 - (iii) Plate dissipation in modulated amplifier with modulation.
 - (iv) Plate dissipation in modulated amplifier without modulation.
- (c) Explain the principle of Grid Bias Modulation with help of its basic circuit and modulation characteristic and also describe relative performance of Linear series plate modulation & Grid bias modulation.
- (d) Draw the basic circuit of suppressor grid Modulated Amplifier with help of basic circuit, Modulation characteristic, advantage and limitations.

Unit-II

2. (a) Specify the range of Long Wave, Medium Wave and Short wave Transmitters. CSVTUonline.com 2
- (b) State difference between Low Level AM Transmitter & High Level AM Transmitters. Enumerate the precautions necessary in design and operation of L-C master oscillator for providing good frequency stability. 7
- (c) What is basic difference between peak clipper and volume compressor? Draw the circuit & waveform of Diode Peak Clipper. CSVTUonline.com 7
- (d) What are the wave trap circuit? How wave trap circuits suppress the Harmonic radiation & explain it with help of circuit diagram? 7

Unit-III

3. (a) Define image signal selectivity. 2
- (b) Describe tracking & alignment of receivers for single dial tuning for R.F. Alignment & oscillator tuned circuit alignment. 7

(c) Define Automatic Volume Control. How simple AVC differs from delayed AVC? Draw circuit of linear diode detector with amplified & delayed AVC.

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(d) What is the difference between space & frequency diversity? Describe the working of space diversity ratio telephone receiver.

Unit-IV

4. (a) Difference between A.M. Receivers & F.M. receivers.

(b) Explain capacitance reactance tube FM modulated oscillator with help of its circuit diagram & find the expression for modulation index in it.

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(c) With the help of basic circuit, transformer action & response characteristics, explain centre tuned discriminator.

(d) Draw block diagram of FM Armstrong transmitter & describe its working.

Unit-V

5. (a) Define horizontal & vertical resolution (in single line). 2

(b) What do you understand by Kell factor? How does it affect the vertical resolution of a television picture? Show that vertical resolution increases with increase in number of scanning lines.

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(c) Define following terms : (in single line)

(i) Aspect Ratio

(ii) Flicker

(iii) Interlace error

(iv) Front Porch

(v) Blanking Pulses

(vi) Equallizing Pulses

(vii) Contrast Ratio

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(d) Write short notes on any one :

(i) Monochrome T.V. Receiver

(ii) Monochrome T.V. Transmitter