

**IV B.Tech. I Semester Regular Examinations, November -2005****T.V. ENGINEERING****(Electronics & Communication Engineering)****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) With a neat constructional diagram, explain the working of a Silicon diode array target plate.  
(b) Define the following terms with respect to TV. [8+8]
  - i. Aspect ratio
  - ii. Kell factor
  - iii. Vertical resolution
  - iv. Horizontal resolution.
2. (a) Explain the basis for keeping the picture - sync ratio to **7 : 3**.  
(b) With a neat sketch explain the horizontal sync and blanking standards. [8+8]
3. (a) Sketch the diagram of additive color mixing and state Grassman's law.  
(b) With necessary diagrams, explain the encoding of color difference signals. [6+10]
4. (a) Sketch the negative modulated video signal. Explain merits and demerits of negative modulation.  
(b) Explain why AM is chosen for picture transmission and FM for sound transmission. [8+8]
5. (a) Explain with a block diagram the delay line technique of averaging and separating U&V constituents of the chroma signal in a color receiver.  
(b) Write short notes on chroma band pass amplifiers. [10+6]
6. (a) What are the functions performed by a TV receiver tuner.  
(b) Explain the block diagram of a Varactor tuned UHF tuner. [8+8]
7. (a) Explain with a suitable circuit diagram how saturation control affects change in the magnitude of the chroma signal.  
(b) Explain the principle of synchronous demodulator. [10+6]
8. (a) Explain how integrating and differentiating circuits are employed to separate vertical and horizontal sync pulses. Draw a typical circuit and explain its operation.  
(b) Write short notes on hunting in AFC circuits. [10+6]

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1. (a) With a neat block diagram, explain the working of a TV receiver.  
(b) Briefly discuss about the type of modulation used for both picture and sound signals. [10+6]
2. (a) With respect to a picture tube briefly discuss about the following terms:  
    i. Beam deflection  
    ii. Deflection angle  
    iii. Picture tube screen. [3+3+4]  
(b) List out the typical specifications of any two standard picture tubes. [6]
3. (a) Define the following terms:  
    i. Luminance signal  
    ii. Hue  
    iii. Saturation  
    iv. Chrominance signal.  
(b) Explain why (G-Y) color difference signal is not used for transmission. [8+8]
4. (a) What are the limitations of NTSC system.  
(b) Explain why color difference signals in NTSC color system are modified to become I&Q signals. Why is the value of color sub carrier frequency is fixed at 3.579545 MHz in NTSC system. [6+10]
5. (a) Explain the block diagram of vertical deflection system.  
(b) With a neat circuit diagram, explain the operation of a video detector. [8+8]
6. (a) What are the design requirements of an IF amplifier section.  
(b) With a neat sketch, explain the operation of transistor keyed AGC circuit. [8+8]
7. (a) With a neat circuit diagram explain the working of a sub carrier reference oscillator.  
(b) Draw the circuit of an ACC amplifier and explain its working. [10+6]
8. (a) Draw the basic transistor sync separator circuit and explain its working.

- (b) With a neat circuit diagram explain how horizontal and vertical sync pulses are separated. Also explain about the design considerations of the circuit.

[6+10]

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1. (a) Justify the selection of **4:3** as the aspect ratio for TV system.  
(b) Explain how the illusion of continuity is created in TV picture.  
(c) What is interlaced scanning? Explain how it reduces both bandwidth and flicker. [5+5+6]
2. (a) Explain the following terms :
  - i. Picture tube screen
  - ii. Deflection beam
  - iii. Deflection angle. [4+3+3](b) With a neat diagram explain how the electron beam is focused using electro-static focusing. [6]
3. (a) Define the following terms:
  - i. Luminance signal
  - ii. Hue
  - iii. Saturation
  - iv. Chrominance signal.(b) Explain why (G-Y) color difference signal is not used for transmission. [8+8]
4. (a) Tabulate the frequency bands for channels in both VHF and UHF bands.  
(b) Explain why space wave propagation is chosen for TV signal radiation. [8+8]
5. (a) Explain the block diagram of PAL-D decoder.  
(b) What are the functions performed by chroma decoder. [8+8]
6. (a) With the help of circuit diagram, explain the principle of operation of forward AGC.  
(b) Explain the requirements of AGC circuit and what is the purpose of delayed AGC. [8+8]
7. (a) Explain the block diagram of differential peak detector.  
(b) Explain the block diagram of digital FM detector. [8+8]
8. (a) With a neat circuit diagram explain the transistor vertical output stage driven by a multivibrator oscillator.  
(b) Write short notes on digital terrestrial TV. [10+6]

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(b) With a neat sketch explain the horizontal sync and blanking standards. [8+8]
3. (a) Sketch the diagram of additive color mixing and state Grassman's law.  
(b) With necessary diagrams, explain the encoding of color difference signals. [6+10]
4. (a) With a neat sketch, explain the effect of noise pulses with negative and positive modulation.  
(b) Explain with a neat sketch, why VSB is used for signal transmission in TV system. [8+8]
5. (a) Explain the block diagram of vertical deflection system.  
(b) With a neat circuit diagram, explain the operation of a video detector. [8+8]
6. (a) With the help of circuit diagram, explain the principle of operation of forward AGC.  
(b) Explain the requirements of AGC circuit and what is the purpose of delayed AGC. [8+8]
7. (a) Explain the principle of operation of burst phase ident amplifier and color killer generation circuit.  
(b) Explain how R,G & B video signals can be directly obtained from Y and demodulated U & V signals. [8+8]
8. (a) Draw the basic transistor sync separator circuit and explain its working.  
(b) With a neat circuit diagram explain how horizontal and vertical sync pulses are separated. Also explain about the design considerations of the circuit. [6+10]

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