

SECTION A Write either true or false for the correct answer. [20 MARKS]

1. The band rate is a measure of the number of symbols per second.
2. An RF amplifier must be used in a superhet receiver.
3. Positive feedback is a necessity of an oscillator circuit.
4. In an oscillator the portion of the output is normally fed back to the input in order to oscillate.
5. The function of a microphone is to convert electrical energy to sound energy.
6. The input device in a radio system is the microphone and the video camera.
7. The function of the detector in a radio receiver is to extract audio from the modulated wave.
8. Basically a television system consists of six transducers namely video camera, microphone, transmitting antenna, CRT and loudspeakers.
9. A LCD like a CRT are both display devices in a television system.
10. LC feedback elements are normally used in oscillators for frequencies greater than 1 MHz.
11. The local oscillator and IF amp operate at the same frequency.
12. Crystal oscillators are inherently unstable.
13. The distinguishing feature of the Colpitts circuit is that the feedback signal is taken from a voltage divider made by two capacitors in series.
14. The differential amplifier produces an output only when the two input signals are different.
15. Baseband means a signal is transmitted on the lowest carrier in a channel.
16. Another name for a unity gain amplifier is comparator.
17. The open-loop voltage gain of an op-amp is the most controlled parameter.
18. The super heterodyne receiver solved the variable-sensitivity problem of the TRF system.
19. Sensitivity and selectivity refer to the same thing.
20. The positive feedback voltage in an oscillator has no net phase shift.

SECTION B**FILL IN THE BLANKS****[20 MARKS]**

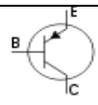
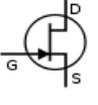
Choose the correct answer from the list by writing the answer against your question number in your answer booklet:

high, class B, 180 degrees, power, decreases, increases, high, filter, zener, signal, low, bridge, ripple, rectification, efficiency, voltage, positive, power, class A, regulated,

1. _____ is changing ac to dc with electronic rectifiers.
2. The most commonly used single phase rectifier circuit is the _____ rectifier.
3. The cathode of a diode is always considered _____ in the rectifier circuit.
4. The purpose of a _____ circuit is to remove as much of the _____ from the dc output as possible.
5. The output voltage from a capacitor filter _____ as the load increases and the ripple voltage _____.
6. A _____ diode may be used in conjunction with a series resistor to form a shunt regulator.
7. Zener diodes are rated in terms of zener _____ and maximum _____ dissipation.
8. A _____ supply is a device that provides power to a load.
9. With regard to power supplies, _____ is the ratio of the output power to the input power.
10. A _____ power supply automatically adjusts the output voltage if it tries to change due to changes in the line or load conditions.
11. In _____ power amplifiers, the output _____ varies for a full 360° of the cycle.
12. In _____ power amplifiers, the output signal varies for _____ of the cycle.
13. A common-emitter amplifier has high voltage gain, _____ current gain, _____ power gain and _____ input impedance.

SECTION C**MATCHING****(10 MARKS)**

Match the symbols with their appropriate name.

	<u>Symbols</u>		<u>Name</u>
1.		A.	Capacitor
2.		B.	Zener Diode
3.		C.	P-Channel JFET
4.		D.	PNP Transistor
5.		E.	Variable Resistor
6.		F.	NPN Transistor
7.		G.	Op - Amp
8.		H.	AC Voltage Source
9.		I.	Earth (Ground)
10		J.	N-Channel JFET

SECTION D

[50 MARKS]

- 1) A d.c. power supply is made up of a number of component blocks. The overall purpose of these blocks is ultimately to provide a stable, well-regulated and smooth d.c. supply. Draw the block diagram of a basic d.c. power supply and write the function of each of the blocks. **(10 marks)**

- 2) The inductor filter consists simply of an inductor connected to the output of the rectifier in such a way that it is in series with the load. The choke presents a high impedance to varying currents, but offers little impedance to unvarying d.c. currents. Name and describe the three things on which the degree of filtering offered by a choke filter is dependent on. **(6 marks)**

- 3) The three terminal regulators are very simple to use and require only connection of the three terminals, as well as very few external components. Name and describe the three terminals. **(6 marks)**

- 4) The amplifier is a device which raises the level of an input signal. Show the input and output relationship of both inverting and non inverting amplifier. **(4 marks)**

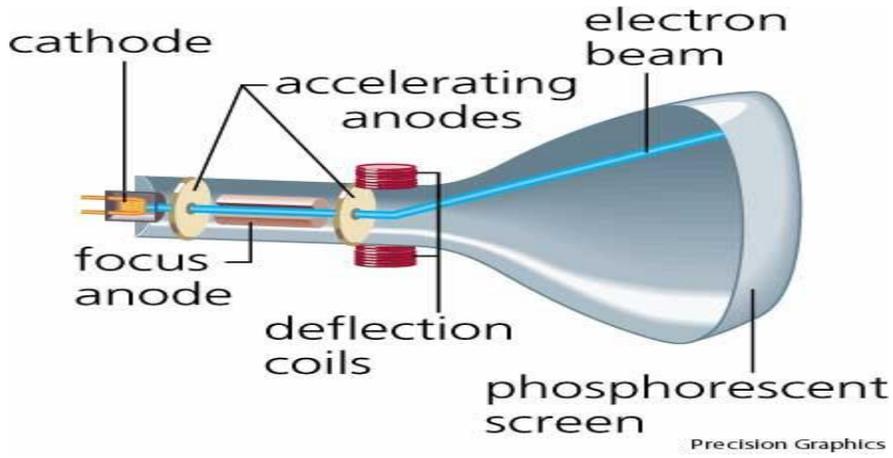
- 5) An oscillator is a mechanical or electronic device that works on the principles of oscillation: a periodic fluctuation between two things based on changes in energy. Differentiate between positive feedback oscillator and crystal oscillators. **(4marks)**

- 6) Name the three basic parts of an oscillator. **(3 marks)**

- 7) The IC Op-amp comes so close to ideal performance that it is useful to state the characteristics of an ideal amplifier without regard to what is inside the package. State the five characteristics of ideal operational amplifier. **(5 marks)**

- 8) In telecommunications and signal processing, frequency modulation is the encoding of information in a carrier wave by varying the instantaneous frequency of the wave. Draw and label the block diagram of FM receiver. **(5 marks)**

9)



i) Name the device shown above and comment on its use? **(2 marks)**

ii) Write down the function of each part of the device and explain its function? **(6 marks)**

*****THE END*****

