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SUBJECT CODE NO:- 2033
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. S.Y (Sem-IV)
Examination March/April-2022 (To Be Held In June/July-2022)
Physics Paper-XI
(General Electronics)

[Time: 1:53 Hours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- N.B
- 1) Attempt all questions
 - 2) Use of Logarithmic table and electronic pocket calculator is allowed.
- Q.1
- a) What is a P-N junction diode? Explain the working of P-N junction diode in toward and reverse bias. 10
 - b) What is an OPAMP? Explain its working as a non-inverting amplifier. 10
- OR
- a) Explain in detail principle and working of phase shift oscillator. 10
 - b) What is phase modulation? Drive an expression for phase modulated wave 10
- Q.2
- a) Write a short note on NPN transistor. 05
 - b) Find α and β for a transistor if $I_B=50\mu A$ and $I_C=2mA$. 05
 - c) Write a note on hybrid parameters for a circuit. 05
 - d) The frequency of a Hartly oscillator is 100KHz. If the capacitor used is $0.001\mu F$, find the total inductance of the coil used in the tank circuit. 05
- OR
- a) Write a short note on positive feedback in amplifier 05
 - b) A transistor uses potential divider method of biasing calculate .the collector current if voltage across R_2 is 2V, $V_{BE}=0.3V$ and $R_E=1K\Omega$ 05
 - c) Write a short note on demodulation 05
 - d) An audio signal of 1 KHz is used to modulate a carrier of 500 kHz. Determine the sideband frequencies and bandwidth required. 05
- Q.3 Multiple choose questions(Attempt All) 10
1. A zener diode is always -----connected.
 - a) Forward
 - b) Reverse
 - c) Either reverse or forward
 - d) None of the above
 2. The input control parameters of a JFET is
 - a) Gate current
 - b) Drain current
 - c) Drain voltage
 - d) Gate voltage
 3. A BJT has an I_B of $50\mu A$ and β of 75; I_C is
 - a) 0.375mA
 - b) 3.75mA
 - c) 37.5 mA
 - d) 375 mA

4. The point of intersection of d.c and a.c load lines is called-----
 - a) Saturation point
 - b) Operating point
 - c) Cut off point
 - d) None of the above
5. RC coupling is used for -----amplification
 - a) Voltage
 - b) Current
 - c) Power
 - d) None of the above
6. An ideal operational amplifier has
 - a) Infinite output impedance
 - b) Zero input impedance
 - c) Infinite bandwidth
 - d) All of the above
7. The bistable multiplier has-----states stable
 - a) Single
 - b) both
 - c) Triple
 - d) None of the above
8. An astable multivibrator requires:
 - a) Balanced time constant
 - b) A pair of matched transistors
 - c) No input signal
 - d) Dual J K flip flop
9. In an amplitude modulation, the maximum power is in -----
 - a) Upper side bands
 - b) Lower side bands
 - c) Carrier
 - d) Frequency
10. A carrier wave of 100V is made to vary between 130 V and 70 V by the signal. The modulation index is
 - a) 1.0
 - b) 0.5
 - c) 0.6
 - d) 0.3