BE Semester-IV (Biomedical Engineering) Question Bank

(BM-402 Advance Electronics)

All questions carry equal marks (10 marks)

Q.1	Explain the following terms for op-amp : 1) Input offset voltage 2) Input offset current 3) Input bias current 4) Differential Input resistance 5) Offset voltage adjustment range
Q.2	Explain the following terms for op-amp: 1) Common mode rejection ratio 2) Supply voltage rejection ratio 3) Large signal voltage gain 4) Slew rate 5) Gain bandwidth product
Q.3	Explain emitter coupled differential amplifier.
Q.4	Draw an equivalent circuit of an op-amp & give the characteristics of an ideal op-amp.
Q.5	Draw & explain an open loop configuration for op-amp & write equations for output voltage.
Q.6	Explain various differential amplifiers circuit configurations.
Q.7	Explain FET based differential amplifier in detail.
Q.8	Explain voltage series feedback amplifiers with necessary equation.
Q.9	Explain voltage shunt feedback amplifiers with necessary equation.
Q.10	What is Unity Gain Bandwidth (UGB)? Derive the equation for bandwidth of an op-amp with feedback.
Q.11	Explain differential amplifier configuration using two Op-amps. Also derive the equations for voltage gain & input resistance.
Q.12	Draw & explain differential amplifier with offset voltage compensating network.
Q.13	Explain current series feedback amplifiers with necessary equation.
Q.14	Explain current shunt feedback amplifiers with necessary equation.
Q.15	Explain in detail voltage follower circuit.
Q.16	What is Thermal drift? Derive the expression for Error voltage due to thermal drift.
Q.17	Explain Peaking amplifier in detail.
Q.18	Draw & explain Summing, Scaling & Averaging amplifier in inverting configuration.
Q.19	Draw & explain Summing, Scaling & Averaging amplifier in noninverting configuration.
Q.20	Draw & explain Summing, Scaling & Averaging amplifier in differential configuration.
Q.21	Explain working of Instrumentation amplifier using Transducer Bridge.
Q.22	Explain voltage to current convertor with circuit diagram.
Q.23	Explain current to voltage convertor with circuit diagram.
Q.24	Explain Integrator circuit with diagram & derive the equation for output voltage & frequency response.
Q.25	Explain Differentiator circuit with diagram & derive the equation for output voltage & frequency response.
Q.26	Design a differentiator to differentiate an input signal that varies in frequency from 10 Hz to 1 KHz. If a sine wave of 1 V peak at 1000 Hz is applied to above differentiator, draw its output waveform.
Q.27	Draw & explain frequency response of different active filters.
Q.28	Explain in detail designing butterworth low-pass filter using op-amp.

Q.29	Explain in detail designing butterworth high-pass filter using op-amp.
Q.30	Write short note on Oscillators.
Q.31	Explain Quadrature Oscillator.
Q.32	Design the bandpass filter with passband of 0.5 to 5 KHz with gain of 2
Q.33	Explain 555 timer as Astable multivibrator in detail.
Q.34	Explain 555 timer as Monostable multivibrator.
Q.35	Write a short note on Phase shift oscillator.
Q.36	Design a wide band-pass filter with f_L=200Hz, f_H=kHz, and a passband gain=4. Draw the frequency response plot of this filter and calculate the value of Q for the filter.
Q.37	Explain emitter bias and emitter follower configurations for BJT.
Q.38	Explain different types of FET networks.
Q.39	Explain low frequency response for BJT and FET amplifier.
Q.40	Explain high frequency response of BJT and FET amplifier.