Paper Code – 5304

M.Sc. Semester-III (Physics)

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EPH-601 Linear IC's Applications

કુલ સમય :– : ૩૦ મીનીટ **કુલ પ્રશ્નો : ૩૫** **વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૧૮**

નોંધ : વિદ્યાર્થીએ માત્ર ૧૮ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૧૮ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

(1) The Bandwidth in a _____ filter equals the cut-off frequency.
(A) high-pass (B) band-pass (C) low-pass (D) band-reject

(2) A _____ filter significantly attenuates all frequencies below f_c and passes all frequencies above f_c.
(A) band-pass (B) high-pass (C) band-reject (D) low-pass

(3) The critical frequency of a filter circuit is defined as the point at which the response drops_____ from the passband.
(A) -40 dB (B) -6 dB (C) -20 dB (D) -3 dB

(4) _____filter has a flat passband as well as stopband.
(A) Butterworth (B) Cauer (C) Chebyshev (D) All of these

(5) A _____ filter rejects all frequencies within a specified band and passes all those outside this band.
(A) low-pass (B) high-pass (C) band-pass (D) band-reject

(6) An electric filter is often a _____ selective circuit.
(A) Phase (B) Frequency (C) Amplitude (D) None of these

(7) An input RC network has R = 10 kΩ and C = 0.001 μF. _____is the low cut-off frequency of High pass Butterworth filter.
(A) 15.9 MHz (B) 15.9 kHz (C) 100 kHz (D) 100 MHz

(8) A narrow band pass filter circuit uses only _____OP-AMP.
(A) One (B) Two (C)Three (D) Four

(9) In band-pass filter lower and upper cut-off frequencies are 300 Hz and 3000 Hz. So the centerfrequency is _____
(A) 100Hz (B) 948.7 Hz (C) 500Hz (D)700Hz

(10) The All-pass filters are also called _____
(A) delay equalizers (B) band-stop filter (C) band-elimination filter (D)None of these

(11) Band-reject filters perform in an exactly opposite way of _____ filter.
(A) band-pass (B) low-pass (C) high-pass (D)None of these

(12) Active filters uses transistors or op-amps in addition to _____ and _____.
(A) Resistors, Inductor (B) Capacitors, Inductor (C) Resistors, Capacitors (D) None of these.

(13) A first order low-pass Butterworth filter can be converted into second order low-pass Butterworth filter by using additional _____ network.
(A) R– L (B) L – C (C) R– C (D) None of these

(14) A wide band-pass filter has a "figure of merit" or "quality factor" Q _____10
(A)< (B) = (C) > (D)None of these

(15) The most commonly used Narrow Band-Reject filter has _____ T network.
(A) One (B) Two (C)Three (D) Four

(16) A Narrow Band-Pass filter has _____ feedback paths.
(A) One (B) Two (C) Three (D) Four

(17) A _____ filter passes all frequency components of the input signal without attenuation.
(A) All-pass (B) High-pass (C) Low-pass (D) Band-pass

(18) A low-pass filter has a cut-off frequency of 1 kHz. Determine the bandwidth of the filter.
(A) 2 kHz (B) 1 kHz (C) 640 Hz (D) 400Hz

(19) For the low-pass filter Find R, for a cut-off frequency of 10 kHz and C=0.002 μF.
(A) 100 k Ω (B) 1 MΩ (C) 8 k Ω (D) 100 Ω

(20) A second order high pass butterworth filter is obtained from a second order low pass butterworth filter if _____ are interchanged.
(A) Resistors and Capacitors (B) Resistors and Inductor
(C) Capacitors and Inductor (D) None of these.

(21) The Overall mid frequency voltage gain of CA 3040 is about _____
(A) 50 (B) 110 (C) 500 (D) 250

(22) HA2539 Wideband Op-Amps has a gain-bandwidth product is _____ MHz.
(A) 600 (B) 1700 (C) 70 (D)100

(23) In Inverting Norton Op-Amp configuration, the critical frequencies of input and output coupling capacitors should be set at _____ of the operating frequency.
(A) one-half (B) one-fifth (C) one-sixth (D) one-tenth

(24) The gain of the non-inverting Norton Op-Amp amplifier is _____and the gain of conventional non-inverting Op-Amp is _____
(A) $1+\frac{R_f}{R_1}$, $\frac{R_f}{R_1}$ (B) $\frac{R_f}{R_1}$, $1-\frac{R_f}{R_1}$ (C) $\frac{R_f}{R_1}$, $1+\frac{R_f}{R_1}$ (D) $1-\frac{R_f}{R_1}$, $\frac{R_f}{R_1}$

(25) What is the full form of CMRR?
(A) Correct Mode Rejection Ratio (B) Common Mode Rejection Ratio
(C) Common Mode Reverse Ratio (D) Correct Mode Reverse Ratio

(26) 741 Conventional Op-Amp is a_____ driven device and LM 3900 Norton Op-Amp is a _____driven device.
(A) Voltage, Current (B) Voltage, Voltage (C) Current, Voltage (D) Current , Current

(27) In most consumer applications of equalizer, the band frequencies are equally spaced and centred around_____.
(A) 4 kHz (B) 2 kHz (C) 1 kHz (D) 3 kHz

(28) 741 Conventional Op-Amp differences input _____ and LM 3900 Norton Op-Amp differences input_____
(A) Currents, Currents (B) Currents, Voltages
(C) Voltages, Voltages (D) Voltages, Currents

(29) An_____ amplifier provides "a barrier" between the input and output for the protection of human life or sensitive device.
(A)Instrumentation (B) Operational transconductance
(C)Isolation (D)Voltage-to-current

(30) In a type LM 3900 Norton Op-Amp has _____ amplifiers are combined in a single package.
(A) One (B) Two (C) Three (D) Four

(31) _____ is/are the area(s) of application for isolation amplifiers.
(A) power plant (B) automation (C) medical (D) All of these

(32) Slew rate is measured in _____
(A) V/μs (B) I/μs (C) V. μs (D) I.μs

(33) The passive tone control circuitry consists of _____ components.
(A) R – L (B) L – C (C) R – C (D) None of these.

(34) The input resistance is generally in the _____ range for BJT and _____range for JFET.
(A) k Ω , M Ω (B) k Ω , G Ω (C) MΩ , GΩ (D) k Ω , k Ω

(35) Graphic equalizers are used to control the _____ of an audio system.
(A) Frequency response (B) Amplitude response
(C) Phase response (D) None of these