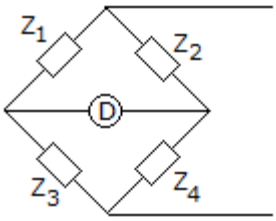
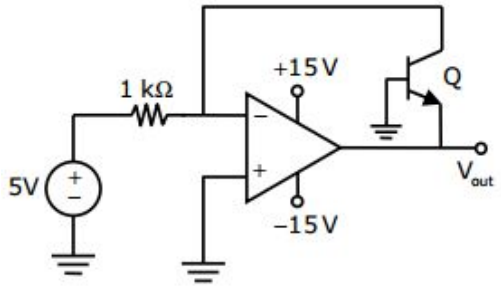
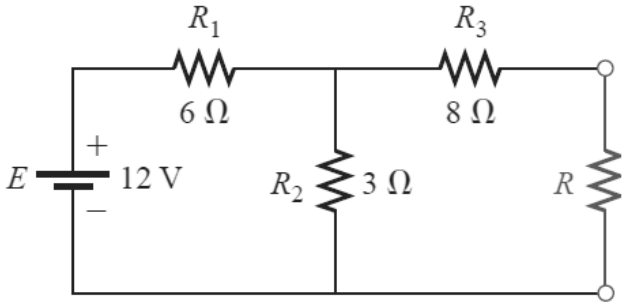
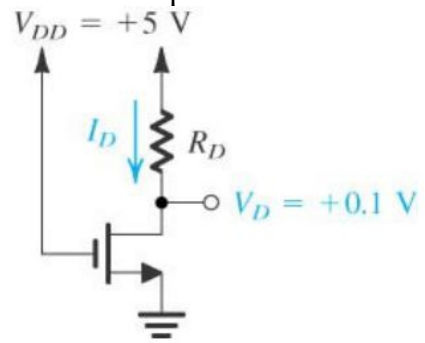
1.	The shift in the Fermi potential in an extrinsic semiconductor depends on I. Temperature II. Doping Concentration III. Work function difference A) I only B) II only C) I and II only D) I, II and III
2.	During the fabrication of ICs, dry oxidation when compared to wet oxidation results in: A) Superior quality oxide with a lower growth rate B) Superior quality oxide with a higher growth rate C) Inferior quality oxide with a higher growth rate D) Inferior quality oxide with a lower growth rate
3.	What is the resistivity of Silicon sample at room temperature doped with 10^{17}phosphorus atoms per cm^3. Given, $q=1.6x10^{-19}C$ and $\mu_n=700cm^2/V\text{-}sec$ A) 0.089 Ω-cm B) 0.0089 Ω-cm C) 89 Ω-cm D) 890 Ω-cm
4.	A circular capacitor of 100pF with Dielectric thickness 0.02mm, assume $\varepsilon_r=100$ and $\varepsilon_o=8.86x10^{-14}$ F/cm. Calculate the design value of *r* of capacitor A) 0.085cm B) 0.0085cm C) 15.92cm D) 1.592cm
5.	Calculate Fermi potential at room temperature for the p-type substrate with doping density $N_A = 10^{16}$ $cm^{-3}$and intrinsic carrier concentration is $1.45x10^{10}$ cm^{-3} A) 0.35V B) -0.25V C) -0.35V D) 0.25V
6.	The phenomenon known as "Early Effect" in a bipolar transistor refers to a reduction of the effective base-width caused by A) The reverse biasing of the base - collector junction B) Electron - hole recombination at the base C) The forward biasing of emitter-base junction D) The early removal of stored base charge during saturation-to-cut-off switching
7.	Thin gate oxide in a CMOS process in preferably grown using A) wet oxidation B) epitaxial oxidation C) dry oxidation D) ion implantation
8.	Fourier transform of a rectangular window is: A) Sinc function B) An impulse train C) Modified sinc function D) Rectangular window.
9.	In ECL family the negative supply voltage is used to

	A) Reduce noise at the output B) Save power C) Increase speed D) All of the above
10.	Why is polysilicon, rather than metal, used for the gate in modern MOS transistors? A) Lower resistance. B) Better thermal expansion properties than metal. C) Makes a better contact to sources and drains. D) It simplifies the fabrication process.
11.	In figure, Z1 = 300∠60°Ω, Z2 = 400∠ - 90°Ω, Z3 = 300∠0°. Then Z4 for bridge to be balanced is  A) 600∠30°Ω B) 200∠ - 90°Ω C) 300∠90°Ω D) 400∠ - 150°Ω
12.	The addressing mode in a microprocessor in which a register is used to hold the actual address where the data are stored is known as: A) Indexed Addressing Mode B) Register Direct Addressing Mode C) Register Indirect Addressing Mode D) Relative Addressing Mode
13.	If $L[f(t)]=\frac{w}{s^2+w^2}$, the value of $\lim_{t\to\infty} f(t)$ A) Cannot be determined B) 0 C) 1 D) ∞
14.	A system is defined by its impulse response $h(n) = 2^n u(n-2)$. The system is: A) Stable and causal B) Causal but not stable C) Stable but not causal D) Unstable and non-causal
15.	The output voltage when an ideal op-amp and a silicon transistor is used in the figure is:

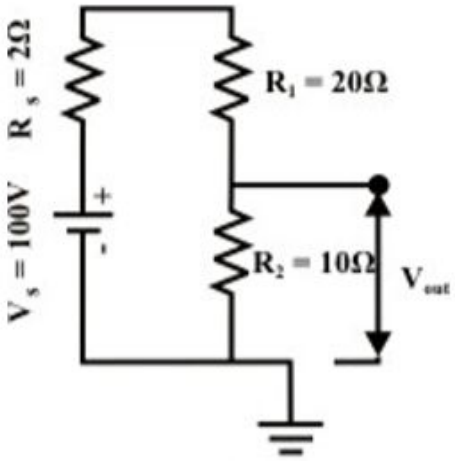
	 A) -0.7 V B) 0.7V C) -15V D) 15V
16.	For the network of Fig. shown below, the maximum value of power delivered to *R* is  A) 0.8 W B) 1.2 W C) 0.4 W D) 1.6 W
17.	The terms "low speed" and "high speed," applied to logic circuits, refer to the _____. A) rise time B) propagation delay time C) fall time D) clock speed
18.	To establish drain voltage of 0.1V. What effective resistance between drain and source is required? The MOSFET parameters are, V_{th}=1V, Kn'(W/L)=1mA/V^2.  A) 39.5mA, 1.24kΩ B) 39.5mA, 12.4kΩ C) 0.395mA, 1.24kΩ D) 0.395mA, 12.4kΩ
19.	Determine the output frequency for a frequency division circuit that contains 12 flip-flops with an input clock frequency of 20.48 MHz. A) 5 kHz B) 10.24 kHz

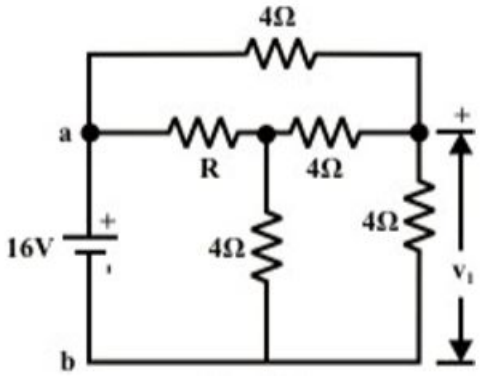
	C) 30.24 kHz D) 15 kHz
20.	A J-K flip-flop with J = 1 and K = 1 has a 20 kHz clock input. The Q output is _____. A) constantly LOW B) constantly HIGH C) a 20 kHz square wave D) a 10 kHz square wave
21.	The minimum time for which the input signal has to be maintained at the input of flip-flop is called _____ of the flip-flop. A) Set-up time B) Hold time C) Pulse Interval time p D) Pulse Stability time (PST)
22.	A rectangular waveguide has dimension cm 5.0 cm ×0.1cm , its cutoff frequency for the dominant mode is A) 5 GHz B) 15 GHz C) 10 GHz D) 20 GHz
23.	Fleming's left hand rule is used to find A) direction of magnetic field due to current carrying conductor B) direction of flux in a solenoid C) direction of force on a current carrying conductor in a magnetic field D) polarity of a magnetic pole
24.	A transmission line of characteristic impedance 50W is terminated in a load impedance Z_L. The VSWR of the line is measured as 5 and the first of the voltage maxima in the line is observed at a distance of $\lambda/4$ from the load. The value of Z_L is: A) 10Ω B) 250 Ω C) (19.23+ j46.15) Ω D) (19.23 - j46.15) Ω
25.	Poynting vector gives. A) rate of energy flow B) direction of polarization. C) intensity of electric field. D) intensity of magnetic field.
26.	An eight-bit D/A converter has a step size of 20 mV. Its percentage resolution is: A) 0.468% B) 0.612% C) 0.392% D) 0.822%
27.	**A digital-to-analog converter with a full-scale output voltage of 3.5 V has a resolution close to 14m V. Its bit size is** A) 4 B) 8 C) 16 D) 32

28.	The maximum data rate that a medium of 10 KHz and signal to noise ratio of 30dB is roughly A) 10Kbps B) 30Kbps C) 100Kbps D) 3Kbps
29.	The bit rate of a digital communication system is R kb/s. The modulation used is 32-QAM. The minimum bandwidth required for ISI free transmission is: A) R/10 Hz B) R/5 Hz C) R/10 kHz D) R/5 kHz
30.	An op-amp integrator has a square-wave input. The output should be A) a sine wave. B) a triangle wave C) a square wave. D) pure DC.
31.	In this logic, output depends not only on the current inputs but also on the past input values. It needs some type of memory to remember the past input values A) Sequential Circuit B) Logical Circuit C) Cascaded Circuit D) Parallel Circuit
32.	This is the maximum time from the start of the valid address of the read cycle to the time when the valid data is available at the data output. A) Read cycle time B) Access time C) Read to output valid time D) None of the above
33.	In this type of counter, the complement of the output of the last stage of the shift register is fed back to the D input of the first state. A) Ring Counter B) Johnson Counter C) Straight Counter D) None of the above
34.	For a linear network , convolution integral provides input-output relationship in A) Time Domain B) Frequency Domain C) Both Frequency and Time Domain D) None of the above
35.	Anti-aliasing filter is a low-pass filter with cut-off frequency of A) Signal bandwidth B) Twice the signal bandwidth C) Half the signal bandwidth D) Thrice the signal bandwidth
36.	Voltage applied across a ceramic dielectric produces an electrolytic field 100 times greater than air. What will be the value of dielectric constant ? A) 100 B) 50 C) 150 D) 200

37.	The voltage response of the network to unit step input is $Vo(s) = \frac{10}{s(s^2+8s+16)}$ A) Under damped B) Over damped C) Critically damped D) Can't be determined
38.	The fastest ADC is A) Counter type B) Flash Type C) Successive approximation type D) Dual slope type
39.	To construct 512K X 8 memory how many 32K X 4 memory circuits are required A) 16 B) 64 C) 8 D) 32
40.	Determine the convolution sum of two sequences x(n) = {3, 2, 1, 2} and h(n) = {1, 2, 1, 2} A) y(n) = {3,8,8,12,9,4,4} B) y(n) = {3,8,3,12,9,4,4} C) y(n) = {3,8,8,12,9,1,4} D) y(n) = {3,8,8,1,9,4,4}
41.	The signal to noise ratio at the output of a receiver is 20dB. Determine the rms value of signal voltage if the output nose voltage is 50mV. A) 100mV B) 5V C) 0.05V D) 0.5V
42.	Ge and Si do not emit light because : A) Energy is dissipated as heat and they are direct band gap materials B) Energy is dissipated as heat and they are indirect band gap materials C) Energy is dissipated in generation of holes and they are indirect band gap materials D) Energy is dissipated in generation of electrons and they are direct band gap materials
43.	For good differentiation one must ensure the time period T of signal is related to time constant RC as A) T=RC B) T≤RC C) T≥RC D) T= RC/2
44.	For the frequency 100Hz and C=0.1μF, Determine the value of R for RC phase shift oscillator. A) 6.5 KΩ B) 16 KΩ

	C) 65 KΩ D) 1.6 KΩ
45.	For a PMOS the condition for transistor to be in a triode region can be written as A) $V_{DG}=V_T$ B) $V_{DG}\leq V_T$ C) $V_{DG}>V_T$ D) $V_{DG}\geq V_T$
46.	The 2nd order Butterworth low pass filter has upper cut off frequency of 1KHz.The gain of the filter drops by -------- if frequency is increased to 2KHz. A) 20 db B) 12 db C) 40 db D) 60 db.
47.	Given lower and upper cut-off frequencies of single stage amplifier to be f_1=224 Hz and f_2=923 KHz, respectively and gain is 30dB? What is the effect of connecting 3-stages of similar amplifier on frequency response? A) f_{1n}=593.6Hz, f_{2n}=348.3KHz B) f_{1n}=672Hz, f_{2n}= 307.6KHZ C) f_{1n}=439.21Hz, f_{2n}=470.73KHz D) f_{1n}=114.24Hz, f_{2n}=1.8MHZ
48.	The common base configuration is represented by equivalent r_e model. The value of I_E=4mA and α=0.98. Calculate the value of I_C and r_e. A) 6.5Ω, 3.92mA B) 6.5KΩ, 3.92mA C) 6.5KΩ, 3.92μA D) 6.5Ω, 3.92μA
49.	Let $g(t) = e^{-\pi t^2}$ and $h(t)$ is a matched filter to $g(t)$. If $g(t)$ is applied as input to $h(t)$, then fourier transform of the output is: A) $e^{-\pi f^2}$ B) $e^{-\pi f^2/2}$ C) $e^{-\pi \lvert f \rvert}$ D) $e^{-2\pi f^2}$
50.	The impulse response of a continuous time system is $h(t) = \delta(t-1) + \delta(t-3)$. The value of the step response at t=2 is A) 0 B) 1 C) 2 D) 3
51.	Which of the following statements is correct for a system with gain margin close to unity or a phase margin close to zero? A) The system is relatively stable B) The system is highly stable C) The system is highly oscillatory D) None of the above
52.	The type 0 system has _____ at the origin. A) no pole B) net pole C) simple pole D) two poles

53.	Which of the following is the best method for determining the stability and transient response? A) Root locus B) Bode plot C) Nyquist plot D) None of the above
54.	A hollow rectangular waveguide acts as a A) Low pass filter B) High pass filter C) Band pass filter D) Low frequency radiator
55.	The radio wave is incident on layer of ionosphere at an angle of 30^o with the vertical. If the critical frequency is 1.2 MHz, the maximum usable frequency (MUF) is A) 1.2 MHz B) 2.4 MHz C) 0.6 MHz D) 1.386 MHz
56.	Phase noises are due to A) Modulation of signal with carrier B) Noise from other signal C) Noise due to change of phase during reflection D) Noise due to change of phase during transmission in different medium
57.	Identify the wrong statement A) Power in band is measure of total power within specified frequency range B) Occupied bandwidth measures bandwidth that contains total power of the signal C) Adjacent channel power measures the way a particular channel and two adjacent channel distribute power D) Resolution bandwidth measures the smallest frequency that can be resolved
58.	 For the circuit shown in Figure below: Calculate V_{out}, ignoring the internal resistance of the source Rs

	A) 33.333 V B) 3.3333 V C) 20 V D) 10V
59.	Consider the nonseries-parallel circuit shown in figure. Determine R and the equivalent resistance R_{eq} between the terminals "a" & "b" when v_1=1.8V  A) R= 2Ω, R_{eq}=4Ω B) R= 4Ω, R_{eq}=2Ω C) R= 4Ω, R_{eq}=4Ω D) R= 2Ω, R_{eq}=2Ω
60.	Which method is suitable for the measurement of resistivity of good conductors of electricity? A) Loss of charge method. B) Kelvin's double bridge method. C) Schering's bridge method. D) Any of the above.
61.	The following program is run in an 8085 microprocessor: MVI A, 07H; RLC; MOV B,A; RLC; RLC; ADD B; RRC; If the carry flag is initially not set, the contents of the accumulator after execution of the program is: A) 8CH B) 64H C) 15H D) 23H
62.	A system has the characteristic equation $q(s) = s^3 + 4Ks^2 + (5 + K)s + 10 = 0$. The range of K for a stable system is: A) $K < 0.46$ B) $K > 0.46$ C) $0 < K < 0.46$ D) Unstable for all K
63.	The equation $2s^4 + s^3 + 3s^2 + 5s + 10 = 0$ has how many roots in the left half of s-plane? A) 1 B) 2

	C) 3 D) 4
64.	The law that "the induced e.m.f. and current always oppose the cause producing them" is known as: A) Faraday B) Newton C) Lenz D) Coulomb
65.	The numerical aperture of a step index fiber having n_1=1.48 and n_2=1.46 is: A) 2.078 B) 0.020 C) 0.242 D) 0.141
66.	Mutual Information $I(X;Y)$ between two discrete random variables X and Y is given by: A) $H(X)+H(Y)-H(X,Y)$ B) $H(X)-H(Y\|X)$ C) $H(Y)-H(X\|Y)$ D) $H(X)+H(Y)+H(X,Y)$
67.	Precision of a measuring instrument is a measure of A) Repeatability B) Reliability C) Uncertainty D) Accuracy
68.	The internet protocol IPv6 has _____ -bit addresses. A) 32 B) 64 C) 128 D) Variable
69.	DFT stands as: A) Discrete Fourier transform B) Digital Function Transform C) Digital Frequency Transform D) none
70.	Number of address and data lines required to interface memory of 2kX8 A) 10, 8 B) 11, 8 C) 12, 16 D) 12, 12
71.	In delta modulation, the slope overload distortion can be reduced by A) decreasing the step size B) decreasing the granular noise C) decreasing the sampling noise D) increasing the step size
72.	TDMA differs with CDMA in terms of A) Bandwidth B) Timesharing

	C) Link D) Carrier
73.	The unit of Mutual information is A) Bits B) Bits per second C) Bits per symbol D) Bytes per second
74.	In which of the following type of handoff does a mobile station only communicate with one base station? A) Hard B) Soft C) Flexible D) None of the above
75.	Application of Convolution: A) Addition B) FIR Filtering C) Manipulation D) Division

x-x-x