Punjab Technical University

MaximumMarks:90 **Time: 90Mins.**

Entrance Test for Enrollment in Ph.D Programme

Important Instructions

- **Fill all the information in various columns, in Capital letters, with blue/black point pen for attempting the questions**
- **Use of calculators is not allowed.**
- **Make attempt by writing the answer in capital Letters in the box against each question number.**
- **All questions are compulsory. Each Question has only one right answer. No Negative marking for wrong answers.**
- **Questions attempted with two or more options/answers will not be evaluated.**

Stream: .....**Engineering** .....

Discipline .....**ECE**.....

Name .....

Fathers Name .....

Date ...**17-05-2015**.....

Roll Number .....

Signature of Candidate: .....

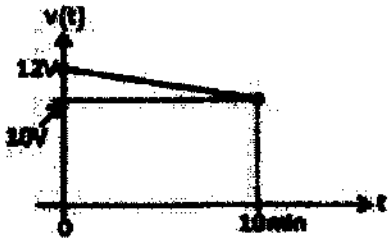
Signature of Invigilator .....

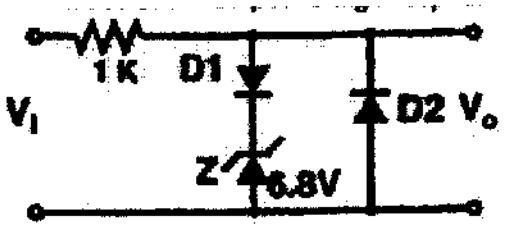
1	A practical DC current source provides 20 kW to a 50 Ω load and 20 kW to a 200 Ω load. The maximum power, that can be drawn from it, is A) 22.5 KW B) 30.3 KW C) 40 KW D) 45 KW
2	A rectangular waveguide has dimensions 1 cm × 0.5 cm. Its cut-off frequency is A) 5GHz B) 10GHz C) 12 GHz D) 15 GHz

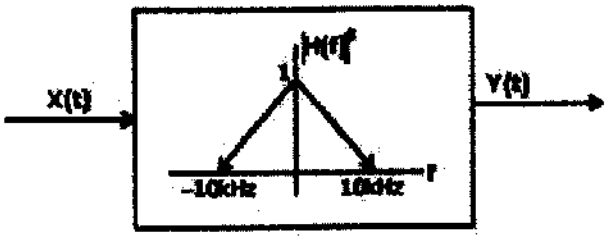
3	A uniform plane electromagnetic wave incident normally on a plane surface of a dielectric material is reflected with a VSWR of 3. What is the percentage of incident power that is reflected? A) 10 B) 25 C) 50 D) 75
4	In an impedance Smith chart, a clockwise movement along a constant resistance circle gives rise to A) a decrease in the value of reactance B) an increase in the value of reactance C) no change in the reactance value D) no change in the impedance value
5	Drift current in the semiconductors depends upon A) only the electric field B) only the carrier concentration gradient C) both the electric field and the carrier concentration D) both the electric field and the carrier concentration gradient
6	A plane electromagnetic wave propagating in free space in incident normally on a large slab of loss-less, non-magnetic, dielectric material with $\varepsilon = \varepsilon_0$. Maxima and minima are observed when the electric field is measured in front of the slab. The maximum electric field is found to be 5 times the minimum field. The intrinsic impedance of the medium should be A) 120 $\pi\Omega$ B) 60 $\pi\Omega$ C) 600 $\pi\Omega$ D) 24 $\pi\Omega$

7	The rank of the matrix $\begin{bmatrix} 1 & 1 & 1 \\ 1 & -1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$ is A) 0 B) 1 C) 2 D) 3
8	A probability density function is of the form $P(x) = K\exp(-\alpha\|x\|)$, $x \in (-\infty, \infty)$ The value of K is A) 0.5 B) 1 C) 0.5 α D) A
9	A low – pass filter having a frequency response $H(j\omega) = A(\omega)\exp(j\square(\omega))$ does not produce any phase distortion, if 0.1kHz A) $A(\omega) = C\,\omega^2$, $\square(\omega) = k\,\omega^3$ B) $A(\omega) = C\,\omega^2$, $\square(\omega) = k\,\omega$ C) $A(\omega) = C\,\omega$, $\square(\omega) = k\,\omega^2$ D) $A(\omega) = C$, $\square(\omega) = k\,\omega^{-1}$
10	The equation sin (z) = 10 has A) No real or complex solution B) Exactly two distinct complex solutions C) A unique solution D) An infinite number of complex solutions

11	The Fourier series of a real periodic function has only P. Cosine terms if it is even Q. Sine terms if it is even R. Cosine terms if it is odd S. Sine terms if it is odd Which of the above statements are correct? A) P and S B) P and R C) Q and S D) Q and R
12	A fair coin is tossed 10 times. What is the probability that ONLY the first two tosses will yield heads? A) $(1/2)^{-7}$ B) $10C_2(1/2)^2$ C) $(1/2)^{10}$ D) $10C_2 (1/2)^{10}$
13	The ratio of the mobility to the diffusion coefficient in a semiconductor has the units A) V^{-1} B) em. V^{-1} C) V. cm^{-1} D) V. s

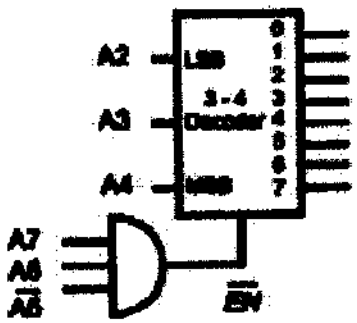
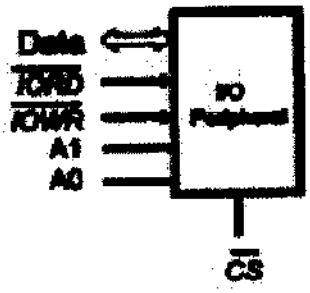
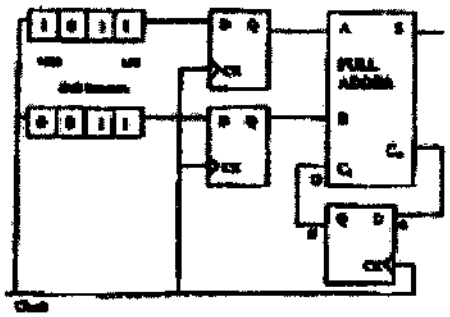
14	A fully charged mobile phone with a 12V battery is good for a 10 minute talk-time. Assume that, during the talk-time, the battery delivers a constant current of 2A and its voltage drops linearly from 12 V to 10 V as shown in the figure. How much energy does the battery deliver during this talk-time?  A) 220J B) 12kJ C) 13.2kJ D) 14.4kJ
15	Which of the following is NOT associated with a p-n junction? A) Junction Capacitance B) Charge Storage Capacitance C) Depletion Capacitance D) Channel Length Modulation
16	Which of the following is true? A) A silicon wafer heavily doped with boron is a p+ substrate B) A silicon wafer lightly doped with boron is a p+ substrate C) A silicon wafer heavily doped with arsenic is a p+ substrate D) A silicon wafer heavily doped with arsenic is a p+ substrate
17	For a Hertz dipole antenna, the half power beam width (HPBW) in the E-plane is A) 360° B) 180° C) 90° D) 45°

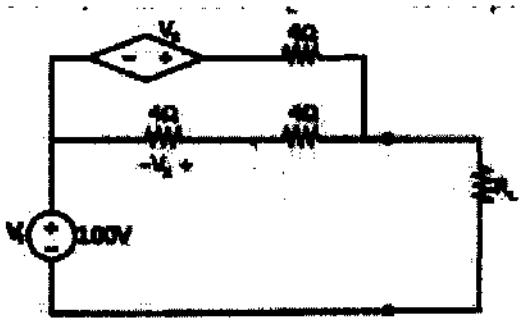
18	For static electric and magnetic fields in an inhomogeneous source-free medium, which of the following represents the correct form of two of Maxwell's equations? A) $\nabla . E = 0, \nabla \times B = 0$ B) $\nabla . E = 0, \nabla . B = 0$ C) $\nabla \times E = 0, \nabla \times B = 0$ D) $\nabla \times E = 0, \nabla . B = 0$
19	In the following limiter circuit, an input voltage V_i=10 sin 100πt is applied. Assume that the diode drop is 0.7 V when it is forward biased. The Zener breakdown voltage is 6.8V. The maximum and minimum values of the output voltage respectively are  A) 6.1V, -0.7 V B) 0.7V, -7.5V C) 7.5V, -0.7V D) 7.5V, -7.5V
20	The drain current of a MOSFET in saturation is given by $ID = K(V_{GS} - V_T)^2$ where K is a constant. The magnitude of the transconductance Gm is A) $K(V_{GS} - V_T)^2 V_{DS}$ B) $2K(V_{GS} - V_T)$ C) $I_D/(V_{GS} - V_{DS})$ D) $(K(V_{GS} - V_T)^2 / V_{GS}$
21	A memoryless source emits n symbols each with probability p. The entropy of the source as a function of n A) Increases as log n B) Decreases as log (1/n) C) Increases as n D) Increases as n log n

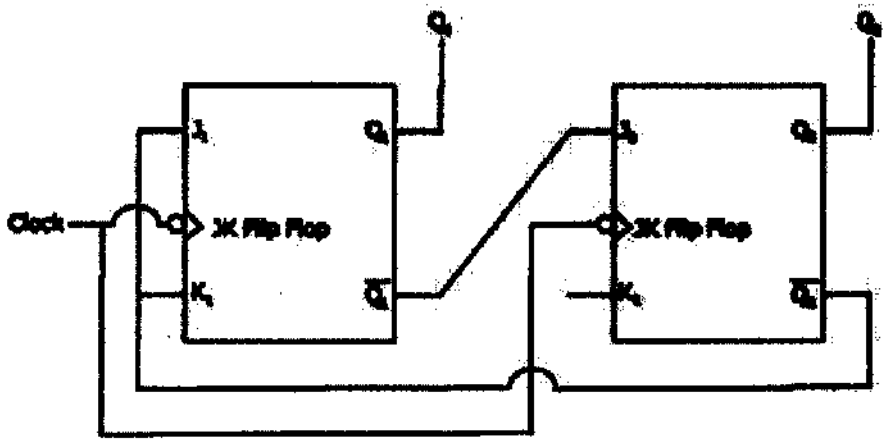
22	A white noise process X(t) with two-sided power spectral density 1×10^{-10} W/Hz is input to a filter whose magnitude squared response is shown below  The power of the output process Y(t) is given by A) 5×10^{-7} W B) 1×10^{-7} W C) 2×10^{-6} W D) 1×10^{-5} W
23	The concentration of minority carriers in an extrinsic semiconductor under equilibrium is A) directly proportional to the doping concentration B) inversely proportional to the doping concentration C) directly proportional to the intrinsic concentration D) inversely proportional to the intrinsic concentration
24	Under low level injection assumption, the injected minority carrier current for an extrinsic semiconductor is essentially the A) diffusion current B) drift current C) recombination current D) induced current
25	The phenomenon known as "Early Effect" in a bipolar transistor refers to a reduction of the effective base-width caused by A) electron-hole recombination at the base B) the reverse biasing of the base-collector junction C) the forward biasing of emitter-base junction D) the early removal of stored base charge during saturation-to-cutoff switching

26	The input impedance (ZI) and the output impedance (Z0) of an ideal transconductance (voltage controlled current source) amplifier are A) $Z_i = 0, Z_0 = 0$ B) $Z_i = 0, Z_0 = \infty$ C) $Z_i = \infty, Z_0 = 0$ D) $Z_i = \infty, Z_0 = \infty$
27	An n-channel depletion MOSFET has following two points on its I_D –V_{GS} curve (i) $V_{GS} = 0$ at $I_D = 12$ mA and (ii) $V_{GS} = -6$ Volts at $I_D = 0$ Which of the following Q-points will give the highest trans-conductance gain for small signals? A) $V_{GS} = -6$ Volts B) $V_{GS} = -3$ Volts C) $V_{GS} = 0$ Volts D) $V_{GS} = 3s$ Volts
28	The number of product terms in the minimized sum-of-product expression obtained through the following K-map is (where, "d" denote don't care states) 1 0 0 1 0 D 0 0 0 0 D 1 1 0 0 1 A) 2 B) 3 C) 4 D) 5

29	Let $x(t) \leftrightarrow X(j\omega)$ be Fourier Transform pair. The Fourier Transform of the signal $x(5t-3)$ in terms of $X(j\omega)$ is given as A) $(1/5)\exp(-j^3\omega/5)\, X\,(j\,\omega/5)$ B) $(1/5)\exp(j^3\omega/5)\, X\,(j\,\omega/5)$ C) $(1/5)\exp(-j^3\omega) X\,(j\,\omega/5)$ D) $(1/5)\exp(j^3\omega)\, X\,(j\,\omega/5)$
30	The values of voltage (V_D) across a tunnel-diode corresponding to peak and valley currents are V_P and V_V respectively. The range of tunnel-diode voltage V_D for which the slope of its I-V_D characteristics is negative would be A) $V_D < 0$ B) $0 \leq V_D < Vp$ C) $Vp \leq V_D < Vv$ D) $V_D \geq V_v$
31	A new Binary Coded Pentary (BCP) number system is proposed in which every digit of a base-5 number is represented by tis corresponding 3-bit binary code. For example, the base-5 number 24 will be represented by its BCP code 010100. In this numbering system, the BCP code 100010011001 corresponds to the following number in base-5 system.. A) 423 B) 1324 C) 2201 D) 4231

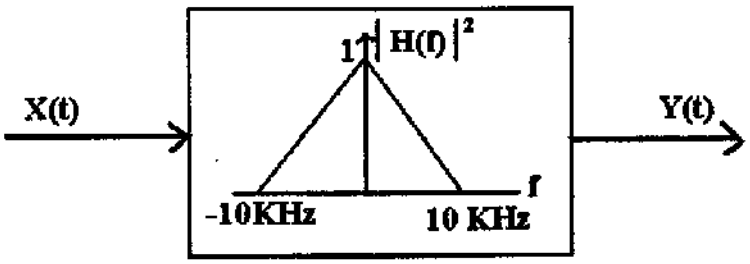
32	An I/O peripheral device shown in Figure (b) below is to be interfaced to an 8085 microprocessor. To select the I/O device in the address range D4 H –D7 H, its chip-select $\overline{(CS)}$ should be connected to the output of the decoder shown in Figure (a) below  Fig. (a)  Fig. (b) A) Output 7 B) Output 5 C) Output 2 D) Output 0
33	For the circuit shown in figure below, two 4-bits parallel-in serial-out shift registers loaded with the data shown are used to feed the data to a full adder. Initially, all the flip-flops are in clear state. After applying two clock pulses, the outputs of the full adder should be  A) S = 0, C_0 =0 B) S = 0, C_0 =1 C) S = 1, C_0 =0 D) S = 1, C_0 =1

34	In the circuit shown, what value of R_L maximizes the power delivered to R_L?  A) 2.4Ω B) (8/3)Ω C) 4Ω D) 6Ω
35	If X =1 in the logic equation [X +Z{Y+ $\overline{(Z + XY)}$}] {X+ Z (X + Y)} =1 , then A) Y = Z B) Y = C) Z =1 D) Z=0
36	What are the minimum number of 2 to 1 multiplexers required to generate a 2 input AND gate and a 2 input Ex-OR gate? A) 1 and 2 B) 1 and 3 C) 1 and 1 D) 2 and 2

37	What are counting stages (Q1, Q2) for the counter shown in the figure below?  (A) 11, 10, 00, 11, 10, ... (B) 01, 10, 11, 00, 01, ... (C) 00, 11, 01, 10, 00, ... (D) 01, 10, 00, 01, 10, ...
38	A system with transfer function H(z) has impulse response h(.) defined as h(2) = 1, h(3) = -1 and h(k) =0 otherwise. Consider the following statements S1 : H(z) is a low pass filter S2 : H(z) is a FIR filter Which of the following is correct? A) Only S2 is true B) Both S1 and S2 are false C) Both S1 and S2 are true, and S2 is a reason for S1 D) Both S1 and S2 are true, but S2 is not a reason for S1
39	The amplitude of a random signal is uniformly distributed between -5V and 5V. If the signal to quantization noise ratio required in uniformly quantizing the signal is 43.5dB, the step size of the quantization is approximately A) 0.0333V B) 0.05V C) 0.0667V D) 0.10V

40	The amplitude of a random signal is uniformly distributed between -5V and 5V. If the signal to quantization noise ratio required in uniformly quantized with a step size of 0.05V, and the negative values are uniformly quantized with a step size of 0.1V, the resulting signal to quantization noise ratio is approximately A) 46 dB B) 43.8 dB C) 42 dB D) 40 dB
41	A communication channel with AWGN operating at a signal to noise ratio SNR>>1 and bandwidth B has capacity C_1. If the SNR is doubled keeping B constant, the resulting capacity C_2 is given by A) $C_2 \approx 2C_2$ B) $C_2 \approx C_1+B$ C) $C_2 \approx C_1+2B$ D) $C_2 \approx C_1+0.3B$
42	The 4 point Discrete Fourier Transform (DFT) of a discrete time sequence {1, 0, 2, 3} is A) [0, -2, +2j, 2, -2, -2j] B) [2, 2, +2j, 6, 2, -2j] C) [6, 1, -3j, 2, 1, +3j] D) [6, -1, +3j, 0, -1, -3j]
43	Four message band limited to W, W, 2W and 3W respectively are to be multiplexed using Time Division Multiplexing (TDM). The minimum band width required for transmission of this TDM signal is A) W B) 3W C) 6W D) 7W

44	Consider the frequency modulated signal **10 cos[2π x 10^5t + 5sin(2π x 1500t) + 7.5sin(2 x 1000t]** with carrier frequency of 10^5 Hz. The modulation index is A) 12.5 B) 10 C) 7.5 D) 5
45	The signal **cosω_ct- 0.5 cosω_mt sinω_ct** is A) FM only B) AM only C) Both AM and FM D) Neither AM nor FM
46	Consider a Binary Symmetric Channel (BSC) with probability of error being p. To transmit a bit, say 1, we transmit a sequence of three 1s. The receiver will interpret the received sequence to represent 1 if at least two bits are 1. The probability that the transmitted bit will be received in error is A) $p^3 + 3p^2 (1-p)$ B) p^3 C) $(1-p)^3$ D) $p^3 + p^2 (1-p)$
47	At 20 GHz, the gain of a parabolic dish antenna of 1 meter diameter and 70% efficiency is A) 15dB B) 25dB C) 35dB D) 45dB
48	In the design of a single mode step index optical fiber close to upper cut-off, the single-mode operation is NOT preserved if A) Radius as well as operating wavelength are halved B) Radius as well as operating wavelength is doubled C) Radius is halved and operating wavelength is doubled D) Radius is doubled and operating wavelength is halved

49	A white noise process X(t) with two sided power spectral density 1 X 10^{-10} W/Hz is input to a filter whose magnitude squared response is shown below. Then the power of the output process Y(t) is given by  A) 5 x 10^{-7} W B) 1 x 10^{-7} W C) 2 x 10^{-6} W D) 1 x 10^{-5} W
50	For a N-point FFT algorithm with N = 2^m which one of the following statements is TRUE? A) It is not possible to construct a signal flow graph with both input and output in normal order B) The number of butterflies in the mth stage is N/m C) In-place computation requires storage of only 2N node data D) Computation of a butterfly requires only one complex multiplication
51	The modulation index of AM signal is changed from 0 to 1. the transmitted power is A) unchanged B) halved C) increased by 50% D) doubled
52	consider x(t) = 10cos(10^8πt + sin 2π(10^4)t].The maximum phase deviation and maximum frequency deviation is A) 5 radians,5kHz B) 5/2π radians,5kHz C) 5 radians,5/2πkHz D) 5/2π radians, 5/2πkHz

53 A 108 MHz carrier signal is frequency modulated by sinusoidal modulating signal. The maximum frequency deviation is 100 kHz. Find the approximate transmission bandwidth of FM signal if frequency of modulating signal is 500 kHz

A) 200 kHz

B) 500 kHz

C) 1 MHz

D) 1.2 MHz

54 Choose the correct one among the alternative A,B,C,D after matching an item from group 1with the most appropriate item in group 2

Group 1	Group 1
P. Ring modulator	1. clock recovery
Q. VCO	2. demodulation of FM
R. Foster-Seelay discriminator	3. Frequency conversion
S. Mixer	4.Summing the 2 inputs
	5. Generation of FM
	6. Generation of DSB SC

A) P-1,Q-3 ,R-2,S -4

B) P-6,Q-5 ,R-2,S -3

C) P-6,Q-1,R-3,S -2

D) P-5,Q-6 ,R-1,S -3

55 The ratio of the radiation intensity of an antenna to the radiation intensity

A) Gain

B) Directivity

C) Efficiency

D) Beamwidth

56 If in a rectangular waveguide for which a=2b, the cut off frequency for TE10 mode is 12 GHz, the cutoff frequency for TE01 mode is

A) 3GHz

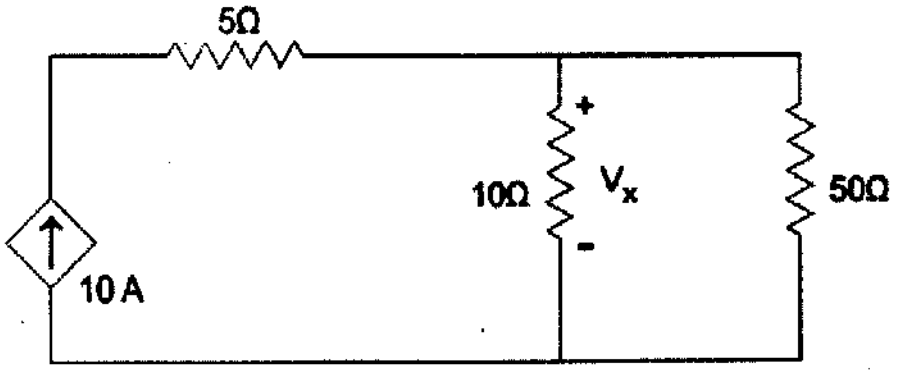
B) 12GHz

C) 10GHz

D) 24GHz

57	As the height of a half-wavelength antenna is reduced below a quarter-wavelength, the radiation resistance A) Increases B) Decreases C) Remains the same D) equal to half
58	If the electric field strength of a plane wave is 1 V/m, the strength of a magnetic field in free space is given by A) 0.1 A/m B) 0.25 A/m C) 0.0026A/m D) 0.0036A/m
59	Transformed impedance of a folded half wave dipole with n parallel elements is A) $n \times 73$ B) $n/2 \times 73$ C) $(n \times 73)2$ D) $n^2 \times 73$
60	Which of the following circuit is used as a comparator A) Astable multivibrator B) Bistable multivibrator C) Monostable multivibrator D) Schmitt trigger
61	In an air filled rectangular wave guide, the cut off frequency of a TE_{10} mode is 8 GHz where as that of TE_{01} mode is 15 GHz, the dimensions of the guide are A) 2 cm by 1.25 cm B) 2.7 cm by 1.50 cm C) 1.8 cm by 1.0 cm D) 1 cm by 0.75 cm

62	A digital communication system uses 8-PSK modulation and transmits 3600 bps. What is the symbol rate? A) 10800 symbols/sec B) 450 symbols/sec C) 28800 symbols/sec D) 1200 symbols/sec
63	If a random variable X has probability density function $$f(x)=\begin{cases}\frac{3}{50}\left(x^2-4x+5\right) & 0\le x\le 5\\ 0 & x<0 \text{ or } x>5\end{cases}$$ then the mean of X is: A) 0 B) 1 C) 2.5 D) 3.125
64	For 8085 microprocessor, the following program is executed. MVI A, 05H; MVI B, 05H; PTR: ADD B; DCR B; JNZ PTR; ADI 03H; HLT; At the end of program, accumulator contains A) 17H B) 20H C) 23H D) 05H

65	The return loss of a device is found to be 20 dB. The voltage standing wave ratio (VSWR) and magnitude of reflection coefficient are respectively A) 1.22 and 0.1 B) 0.81 and 0.1 C) 1.22 and 0.1 D) 2.44 and 0.2
66	Find V_x from the given circuit  A) 42.2V B) 83.3V C) 97.3V D) 103V

67 If the total power to an antenna is Wt, the radiated power is Wr, and the radiation intensity is Φ, the match list-I with list-II and select the correct answer using the code given below the lists:

List-I	List-II
a. Power gain	1. W_r/W_t
b. Directive gain	2. $W_r/4\pi$
c. Average power radiated	3. $4\pi\Phi/W_t$
d. Efficiency of the antenna.	4. $4\pi\Phi/w_r$

Code

	a	b	c	d
A)	3	4	2	1
B)	4	3	2	1
C)	3	4	1	2
D)	4	3	1	2

68 A device with input x(t) and output y(t) is characterized by: $y(t) = x^2(t)$. An FM signal with frequency deviation of 90 kHz and modulation signal bandwidth of 5 kHz is applied to this device. The bandwidth of the output signal is

A) 370 kHz

B) 190 kHz

C) 380 kHz

D) 95 kHz

69 If E denotes expectation, the variance of a random variable X is given by

A) $E[X^2] - E^2[X]$

B) $E[X^2] + E^2[X]$

C) $E[X^2]$

D) $E^2[X]$

70 The first and the last frequency of an RC-driving point impedance function must respectively be

A) a zero and a pole

B) a zero and a zero

C) a pole and a pole

D) a pole and a zero

71 Match the following and choose the correct combination.

	Group 1		Group 2
E.	Continuous and aperiodic signal	1.	Fourier representation is continuous and a periodic
F.	Continuous and periodic signal	2.	Fourier representation is discrete and aperiodic
G.	Discrete and aperiodic signal	3.	Fourier representation is continuous and periodic
H.	Discrete and periodic signal	4.	Fourier representation is discrete and periodic

A) E-3, F-2, G-4, H-1

B) E-1, F-3, G-2, H-4

C) E-1, F-2, G-3, H-4

D) E-2, F-1, G-4, H-3

72 The region of convergence of Z-transform of the sequence $(5/6)^n u(n) - (6/5)^n u(-n-1)$ must be

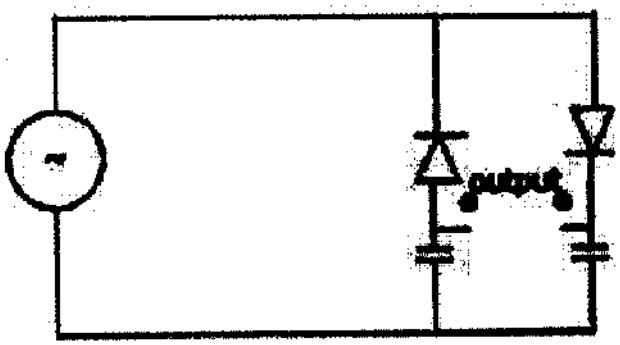
A) $|z| < 5/6$

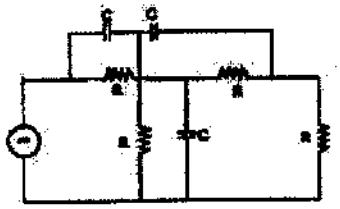
B) $|z| > 6/5$

C) $5/6<|z| < 6/5$

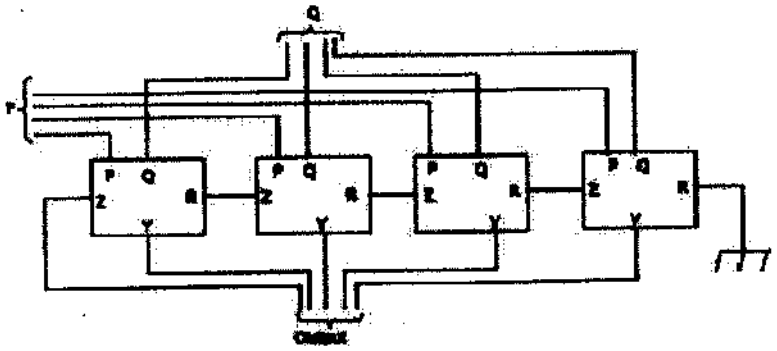
D) $6/5<|z|<\infty$

73	The impulse response h[n] of a linear time-invariant system is given by H[n] = u [n+3] + u [n-2] -2u [n-7] Where u[n] is the unit step sequence. The above system is A) Stable but not causal B) Stable and causal C) Causal but unstable D) Unstable and not causal
74	The Boolean expression AC + BC is equivalent to A) $\overline{A}C + B\overline{C} + AC$ B) $\overline{B}C + AC + B\overline{C} + \overline{A}C\overline{B}$ C) $AC + BC + B\overline{C} + ABC$ D) $ABC + \overline{A}B\overline{C} + AB\overline{C} + AC\overline{C}$
75	Assuming zero initial condition, the response y(t) of the system given below to a unit step input u(t) is A) u(t) B) t u(t) C) $t^2/2$ u(t) D) $e^{-t}u(t)$

76	The circuit shown in figure is best described as a  A) Bridge rectifier B) Ring modulator C) Frequency discriminatory D) Voltage doubler
77	A series RLC circuit has a resonance frequency of 1 kHz and a quality factor Q = 100. If each R,L and C is doubled from its original value, the new Q of the circuit is A) 25 B) 50 C) 100 D) 200
78	Cycle stealing mode of DMA operation involves A) DMA-controller taking on the address, data and control buses, while a block of data is transferred between memory and on I/O device. B) while the μP is executing a programme, an interface circuit takes control of the address, data and control buses, when not in use by the μP C) Data transfer takes place, between the I/O device and memory, during every alternate clock cycle. D) the DMA controller working for the μP to finish execution of the programme and then takes over the buses.

79	A source of angular frequency 1 rad/sec, has a source impedance consisting of 1Ω resistance in series with 1 H inductance. The load that will obtain the maximum power transfer is A) 1Ω resistance B) 1Ω resistance in parallel with 1 H inductance C) 1Ω resistance in series with 1 F capacitor D) 1Ω resistance in parallel with 1 F capacitor
80	The minimum number of equations required to analyze the circuit shown in the figure is  A) 3 B) 4 C) 6 D) 7
81	The Laplace transform of i(t) is given by I (s) = 2/(s(1+s)). As $t \rightarrow \infty$, the value of i(t) tends to A) 0 B) 1 C) 2 D) ∞
82	An 8-bit D/A converter has a full scale output voltage of 20 V. The output voltage when the input is 11011011 is A) 160mV B) 78mV C) 22mV D) 17mV

83	Flicker noise in a MOSFET is due to A) Random motion of electrons B) Generation & Recombination of electrons & holes C) Trapping and releasing of carriers at interface D) Current flow through the potential barrier
84	The effect of current shunt feedback in an amplifier is to A) increase the input resistance and decrease the output resistance. B) increase both input and output resistances. C) decrease both input and output resistances. D) decrease the input resistance and increase the output resistance.
85	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}
86	If the region of convergence of x1(n) + x2(n) is $1/3<\|z\|<2/3$ then the region of convergence of x1[n] - x2[n] includes A) $1/3<\|z\|<3$ B) $2/3<\|z\|<3$ C) $3/2<\|z\|<3$ D) $1/3<\|z\|<2/3$
87	When x(n) is real then the Fourier series coefficients are correlated as _____ . A) $a_{-k} = a_k^*$ B) $a_k = a_k^*$ C) $a_{k+1} = a_k^*$ D) $a_{-k+1} = a_k^*$

88	The circuit shown in the figure has 4 boxes each described by inputs P,Q,R and outputs Y, Z with Y = P⊕Q⊕R Z= RQ + $\overline{P}R + Q\overline{P}$  The circuit acts as a A) 4 bit adder giving P + Q B) 4 bit subtractor giving P – Q C) 4 bit subtractor giving Q – P D) 4 bit adder giving P +Q+ R
89	The relation between DFT and Fourier series coefficients of a periodic sequence is A) $X(K) = C_k/N$ B) $X(K)= C_k$ C) $X(K) = NC_k$ D) $X(K)=1/C_k$
90	Using divide and conquer approach (N=ML) of FFT calculations, The number of complex multiplications and additions are A) N X N B) N (M + L +1), N(M + L -2) C) N(M + L -2), N(M+L) D) N(M +L), MXL