

HAL TECHNICAL PAPER ON MAY 2008

Technical:

1. what is used for heat dissipation in ICs
2. for an amplifier, given $I_C(dc)$ and $I_C(ac)(p)$ for a 1k load calculate avg dc power dissipated.
3. given hfe calculate hfc.
4. given I_{CBO} , I_{CO} and α calc I_{CEO} .
5. for common collector configuration o/p current is $I_E/I_C/I_B/..$
6. which configuration amongst CC/CE/CB gives no current gain.
7. SiC is which group compound
8. pipelining is implemented in RISC/CISC/...
9. given transmitted power and modulation % for AM calc avg sideband power.
10. spectrum of sinewave contains how many components.
11. which of the following signals supports snoopy cache protocol arbitration signal/cache support signal/...
12. for an n-bit multiplicand and multiplier the booth,s algorithm generates how many bit product.
13. which window achieves smaller sidelobe width at the cost of greater mainlobe twidth
hamming/hanning/Blackman/Kaiser
14. a highpass RC filter behaves as pure differentiator when $\omega\tau \ll 1/\omega\tau \gg 1/..$
15. what is the lowest atomic concentration that can be measured using SIMS boron concentration method.
16. what type of bond is present in Si and Ge.
17. dynamic characteristics of capacitive transducers are similar when used as HPF/LPF/...
18. what is used as switching element in SMPS at 20-100 kHz UJT/thyristor/triac/MOSFET.
19. how can CMRR be increased-by increasing source resistance/emitter resistance/collector resistance/..
20. avg value of a HWR current signal of peak value I_m .
21. given 3 dB bandwidth and resonance freq of an RLC ckt calc its Q.
22. how many tokens are present in C- 0/1/2/3.
23. for a stretch of code as `int a;a=5/2;` what will be the value stored in a.
24. what does the statement `volatile int a` mean in C.
25. ASCII code of Z.
26. for a stretch of code as `char a =252;a=a+5;` what is the value stored in a.
27. one problem on binary to hexadecimal conversion.
28. 212 address lines address how much memory.
29. 220 address lines address how much memory 2G/2M/...
30. another name for single transfer mode in direct transfer.
31. what signal used for DMA in 8085.
32. sequence of instruction cycles for PUSH B.
33. what are the various steps in one machine cycle of 8085.
34. response time of PIN diode.
35. range of current signal in RS232 serial transfer mode.

36. when an electron is injected into a circular conductor surrounded by an insulator what will happen- it will distribute uniformly/move to the surface/...
37. for a solenoid with end A connected to +ve terminal and end B to -ve terminal what will happen end A will be north pole/end B will be south pole/both will alternately be north poles/it won't behave as a magnet.
38. what is the value stored in an un-initialized static variable in C.
39. what transistor is used in VLSI.
40. number of gates used in GSI.
- 41 supply voltage in HTL logic.
42. given a K-map, obtain a simplified SOP form.
43. 2's complement of -ve 1011.
44. 2's complement of another binary number.
45. why are synchronous ckts difficult to design -they have fast response/they have stability problem/...
46. given 4 equations identify which conforms to Boolean algebra laws.
47. when lower byte is used to address MSW what is it called big endian/little endian/...
48. a 6 V peak sine wave is given to one of the inverters of a 7414. after what value will the o/p change from high to low.
49. given two sequences, calc their product.
50. given two sequences find their convolution.
51. find the ROC of a right sided exponential sequence.
52. the property $x(t)*h(t)=h(t)*x(t)$ is called commutative/associative/distributive/...
53. given the sequence $y(n)=5\cos[4\pi n/31 + \pi/5]$ find the fundamental period of it.
54. in what type of control is hysteresis present -P/I/D/on-off.
55. given mmf and reluctance, calc flux.
56. max no of peripherals that can be connected to 8085 through a PIC.
57. why is class B modulation preferred to class C modulation.
58. given a telemetry channel in which a 4 kHz bandwidth signal is carried by two carriers of 36kHz and 48 kHz calc the freq bands occupied.
59. LVDT is a electrostatic/electrical/electromagnetic/electromechanical device.
60. order of resistance of shunt coil used in Q-meters.
61. what are the minority carriers in an n-type material.
62. the band formed when energy associates combine with valence electrons is...
63. depletion region width can be increased by...
64. minority carrier concentration depends on applied fwd voltae/applied reverse voltage/doping level/...
65. numerical on calc of drift velocity of an electron.
66. maxm power consumption occurs in electrostatic/hotwire/induction/moving iron instrument.
67. for a collector modulated AM ckt given values of L & C of the tuning ckt and the message signal freq calculate the freq spectrum of the AM wave.
68. upon which of the following plots can the Nyquist plot be mapped-bode/root locus/polar/inverse polar.
69. which of the following compensators increases the damping factor-phase lead/phase lag/phase lag-lead/phase lead-lag.
70. for regenerative feedback having fwd path gain $G(s)$ and f/b path gain $H(s)$ calc the transfer function.
71. which is true about the wagner earthing device-it reduces waveform errors/introduces high accuracy in measurement/does not affect AC bridges/changes the freq of measurement.

72. a 2nd order LTI system acts as which of the following-HPF/LPF/BPF/..
73. which of the following adds linearly-Ls in series/Cs in series/Rs in parallel/..
74. relation between mobility and diffusion constant.
75. at 308K value of E_g for Si.
76. what indicates the efficiency of transport of electrons injected from the emitter into the collector by the base-base transport factor/base injection factor/...
77. error detection can be achieved by potentiometer/amplidyne/armature controlled/field controlled AC motor.
78. which of the following can act as an input to an AC bridge-RPS/oscillator/amplifier/...
79. if some i/p voltages are to be added without changing their values in an op-amp having f/b resistance as 1k, the i/p resistances should be..

80. given ρ, l and d for a copper wire, calc its resistance.
81. if the length of a wire is increased what happens to its resistance-increases linearly/increases exponentially/...
82. for a current carrying coil if the current is doubled then the field strength is doubled/halved/increased 4 times/..
83. some value of L and C is connected to a 150V,60Hz source. What value of inductor will make the same current lag behind the same voltage with the same capacitor.
84. loss due to dielectric distortion in a capacitor is called...
85. for an ideal MOS capacitor if the gate voltage is less than 0 it behaves in what mode..
86. given a ckt with a parallel combination of a 1 F capacitor and a (1 Ω resistor and 0.5H inductor in series) excited by a source of value $\cos t$, calc the current given by the source.
87. anti-side tone ckts are used in telephones to introduce/eliminate/attenuate sidebands.
88. in a radio receiver noise occurs in the mixer/oscillator/amplifier/... stages.
89. for a 4k RAM with starting address 4000H the last address will be...
90. RST 5.5 is vectored to which address
91. among RST 5.5/6.5/7.5 which is serviced last.
92. a capacitor of some value is charged thru a resistor of some value and a 6 V battery. Calc the time taken by the capacitor to charge to its maxm value.
93. given an eqn for FM, identify the carrier freq.
94. how many invalid states are present in a mod-6 counter.
95. when ckts are connected in tandem which method is easier to analyze them-h parameters/OC impedance parameters/transmission parameters/SC admittance parameters.
96. from a 75 MHz counter what is the value of the smallest time period of the signal that can be obtained.
97. Cgd for a FET in the small signal low freq model is in the range of...
98. kirchoff's law is not applicable to which of the following ckts-nonlinear/dual/linear/distributed parameter.
99. why is a diac preferred to turn on a triac-for slower turn-on/faster turn-off/better stability/...
100. resistance of the epitaxial layer depends on...
101. which of these is an active transducer-photoconductive/photovoltaic cell/selsyn/...
102. DC blocking in a transistor is achieved by.....
103. what current is drawn by a 10 W lamp connected to a 220 V,60 Hz source.
104. noise margin of CMOS is 0/infinite/high/medium...
105. schotky barriers are frequently used as.....
106. octave freq range is represented by....
107. i/p impedance of a digital instrument is of the order of....
108. what is the time taken to multiply a 14 bit no. with a 1 MHz clock.

109. parity error checking identifies error occurring in 1 bit/2/3/4 bits only.
110. when RESET IN(active low) is affected in an 8085 what happens.
111. how many times will a for loop going from 20 to 100 in steps of 10 be executed.
112. if the control statement is made outside the body of a function in C what is it called.
113. which of the following can be a variable in C-8ab/total salary/gross_salary_2008/net_income_2008.
114. if the units of both current and voltage are increased 20 times of their present value how will the units of capacitance change.

115. what type of non-linearity is present in a servomotor-backlash/coulomb friction/dead space/...
116. given the i/p signals to a differential amplifier calc its o/p voltage.