

## ISRO SAMPLE TEST PAPER JULY2006 AT DELHI

1. If sampling frequency doubles then

- a) Quantization noise decreases
- b) Quantization density decreases
- c) Quantization noise increases
- d) Quantization density increases

2. Two signals of 2GHz and 4GHz are frequency modulated on same carrier 10 GHz. Find the ratio of frequency deviation if band widths of both are equal.

- a) 1:2 b) 2:1 c) 1:1 d) 1:4

3. Gray code of 111 is

4.  $3 \times 5^{12} + 7 \times 6^4 + 5 \times 8^3$  then value in binary form contains \_\_\_\_\_ number of 1's.

- a) 7 b) 6 c) 9 d) none

5. The 2's complement of decimal number 19 in 8-bit system is

- a) 11101101

6) The high gain codes are

- a) Turbo codes b) BCH codes c) R-S codes

7) BCH codes are of the type \_\_\_\_\_

- a) Convolutional type b) c)

8) Time constant of LC circuit is

- a)  $L/R$  b)  $L/R^2$  c)  $RL$

9) If  $R$  is doubled and  $C$  is halved then frequency of series RLC circuit is

10) The solution for the equation  $(D^2+4)y = \sin 2x$  is

11) Laplace Transform of  $\sin 3x$  is

12) The Z-transform for the series is

$$X[n] = \{ 7; n = -1$$

{5 n=0

{ 1 n=1

{0 else

13) The magic Tee is a

a) 4 port tee b) c)

14) The register which holds the address of the next instruction is

a) Program counter b) c)

15) The antenna gain is given by.....?

a16) The satellite is in 630km orbit and transmitting at a frequency 5 MHz, when satellite is on your head the Doppler shift is-----

a) b) c) 0 d)

17) The impedance of a lossless transmission line is

a)  $\sqrt{(L/C)}$

18) A  $50\Omega$  line with load impedance  $100\Omega$  the VSWR is

19) In a waveguide measurement, the forward power is 10mW, the reverse power is 1mW then VSWR is \_\_\_\_\_

20) Transmitted power is 100W, gain of the transmitter antenna is 30 dB and the path loss is 50 dB then received power is

21) When transmitted power is 100mW and the path loss 100 dBm then received power is

a) -80 dBm

22) When a em wave is incident normally on a perfect conductor then

a) Totally reflected b) partially reflected

c) Totally transmitted d) none.

23)  $Z_{sc} = 100\Omega$   $Z_{oc} = 1\Omega$  then  $Z_0$  is

a)  $1\Omega$  b)  $10\Omega$  c) \_\_\_ d) \_\_\_

24) When the operating wavelength of line is  $\lambda/4 < \lambda < \lambda/2$ , the impedance is

a) Capacitive b) inductive c) \_\_\_\_\_ D) none

25) The value of L if source is 50V AC of 10 KHz frequency and current is 7.96 A.

a) \_\_\_\_\_

26) The resonant frequency is 50MHz bandwidth 100 KHz then Q factor is

a) \_\_\_\_\_ b) \_\_\_\_\_ c) .....

27) The Q factor of a series RLC circuit is

a) ..... b) .....

28) Q value of a parallel RLC circuit is \_\_\_\_\_

a) ..... b) .....

29) If the lines  $x+y+3=0$ ,  $x-2y+7=0$ ,  $2x+ky+5=0$  are required to be concurrent then the value of k is \_\_\_\_\_

a) \_\_\_\_\_ b) .....

30) The vectors  $i-2j+k$ ,  $2i+3j-k$ ,  $R$  are the complete, then r is given by \_\_\_\_\_

31) If a satellite revolving with angular velocity  $w$  and the velocity is  $v$  then

Curl  $v$  is \_\_\_\_\_

a)  $w$  b)  $2w$  c)  $w^2$  d) .....

32) If each stage amplifier contains 10dB gain the figure of merit of 2-stages is

Given by .....

33) The maximum rate possible in kbps if  $F=15$  and bandwidth is 4 KHz is .....

34) The maximum time allowed for each flip flop for a ripple counter of mod-1024, if clock given to it is 1MHz is .....

35) The maximum time allowed time for each flip flop for a mod 10 synchronous counter if each flip flop delay is 25ns.

a) 25 ns b) 50 ns c) 100 ns d) none

36) The high speed for CML gate is due to operating it in ----- region.

a) non saturation

37) In a micro processor the wait states are inserted to

- a) make the processor to wait during DMA operation
- b) make the processor to wait during an interrupt processing
- c) make the processor wait during a power shutdown.
- d) interface the slow peripherals to the processor.

38) In a digital voltmeter the ADC's used are of type

- 1. successive 2. flash type 3. Dual slope

in ascending order of time is

- 1. a) 2,1,3 b) 1,2,3 c) 3,1,2 d) none

39) The number of NAND gates are required to implement  $A \oplus B$  (XOR), assuming compliments not available .....

40) The resolution for a DAC is given by 0.4% then no. of bits of DAC is

- a) 8- bits

41) The chip capacity is 256 bits, then the no.

of chips required to build 1024 B memory

Is.....

- 1. a) 32 b) 16 c) 15)

42) Which of the following are correct?

- 1. A flip-flop is used to store 1-bit of information
- 2. Race around condition occurs in JK flip flop when both the inputs are 1
- 3. Master slave flip flop is used to store 2 bits of information
- 4. A transparent latch consists of a D- flip flop

- a) 1, 2,3 b) 1,3,4 (ANS) c)1,2,4 d) 2,3,4

43) The bit rate of a QPSK compared to BPSK is

- a)half b) double c) same

44) There are 5 red balls and 5 black balls in a box. The probability to select 2 balls one after other without re-putting is,

a)  $2/9$  b)  $1/90$  c)  $11/90$  d) none

45) The rms voltage is obtained by multiplying peak by a factor

a)  $1/\sqrt{2}$

46)  $H(s)=S/(S+a)$  is a transfer function of \_\_\_\_\_

a) LPF b) Notch c) BPF d) HPF

47) Resistance of a 2 parallel resistors is  $12\Omega$  and the effective resistance when one resistor broke is  $18\Omega$  then the value of resistance in another is \_\_\_\_\_

48) The output of a phase modulator when input applied is integrating signal is

a) FM b) AM c) PM d) none

49) For a transformer the losses which vary with load are

a) core losses b) copper losses c) Hysteresis losses d) none.

50) The waves which cannot be transmitted in waveguide are

a) TE b) TEM c) TM d) none

51) Diplexer is a

a) circulator only b) only transmitter filter c) only receiver filter

d) both transmitter and receiver filter

52)  $\delta(t)$  represents impulse then  $\int_0^{\infty} (\delta(t) \cos 2t) dt$  with limits 0 to infinity is

a) 1, b) -1 c) infinity d) 0

53)  $\int 1/(x\sqrt{x^2-a^2}) dx$  is

A)  $\operatorname{cosec} 2x$