Electronic Science Department
Kurukshetra University Kurukshetra

Instructions to the candidates for the entrance test for M.Tech. (Microelectronics & VLSI Design)

There will be 50 questions of Multiple Choice type, each carrying 2 marks. All are to be attempted.

The syllabus for the entrance test will comprise of the topics in the subjects of B.Tech. (Electronics & Communication Engg.) and M.Sc. (Electronic Science). In addition, there may be some questions of Conceptual and General aptitude type.

Some Sample Questions are given below:

1. The phase velocity of an electromagnetic wave propagating in a hollow metallic rectangular wave guide in the TE10 mode is :

(a) equal to its group velocity
(b) less than the velocity of light in free space
(c) equal to the velocity of light in free space
2. greater than the velocity of light in free space

3. A master-slave flip-flop has the characteristic that:

(a) change in the input immediately reflected in the output
(b) change in the output occurs when the state of the master is affected
(c) change in the output occurs when the state of the slave is affected
4. both the master and the slave states are affected at the same time

5. The cascade amplifier is a multistage configuration of :

(a) CC-CB (b) CE-CB
(c) CB-CC (d) CE-CC

6. Consider a lossless antenna with a directive gain of + 6dB. If I mW of power is fed to it, the total power radiated by the antenna will be :

(a) 4 mW (b) 1 mW
(c) 7 MW (d) ¼ mW

(di)The bandgap of Silicon at room temperature is :

(a) 1.3 eV (b) 0.7 eV
(c) 1.1 eV (d) 1.4 eV

6. In a PCM system, if the code word length is increased from 6 to 8 bits, the signal to quantization noise ratio improves by the factor:

(a) 8/6 (b) 12
(c) 16 (d) 8

8. A digital-to-analog converter with a full-scale output voltage of 3.5 V has a resolution close to 14 mV. Its bit size is:

(a) 4 (b) 8
(c) 16 (d) 32

9. The insulation strength of an EHV transmission line is maginly governed by :

(a) load power factor (b) switching over-voltages
(c) harmonics (d) corona

10. The Q-meter works on the principle of :

(a) mutual inductance (b) self-inductance
(c) series resonance (d) parallel resonance

11. The conduction loss versus device current characteristic of a power MOSFET is best approximated by :

(a) a parabola
(b) a straight line
(c) a rectangular hyperbola
12. an exponentially decaying function

13. Antenna directivity depends on :

(a) The distribution of radiated power in space
(b) Solid angle of the radiated field patters
(c) Both (a) and (b) above
(di)None of the above

7. Long distance short-wave radio broadcasting uses:

(a) Ground wave
(b) lonospheric wave
(c) Direct wave
8. Any of the above

9. In a band stop filter, the shunt element is :

(a) capacitive
(b) Inductive
(c) Series combination of L and C
(d) Shunt combination of L and C

14. Which of the following is the fastest A/D converters/

(a) Comparator converter
(b) Counter type
(c) Successive Approximation
(d) Dual slope converter

15. Which of the following oscillators will be suitable for generating a 1 kHz frequency?

(a) Wien bridge Oscillator
(b) Tuned collector Oscillator
(c) Hartley Oscillator
(d) Colpitts Oscillator