



ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਜਲੰਧਰ

PUNJAB TECHNICAL UNIVERSITY JALANDHAR

Max. Marks: 90

Time: 90 Mins.

Entrance Test for Enrollment in Ph.D. Programme

Important Instructions

- Fill all the information in various columns, in capital letters, with blue/black ball point pen.
- Use of calculators is not allowed.
- All questions are compulsory. No negative marking for wrong answers.
- Each question has only one right answer.
- Questions attempted with two or more options/answers will not be evaluated.

Stream (Engg./Arch./Pharm./Mgmt./App.Sci./Life Sci.) ENGINEERING

Discipline / Branch ELECTRONICS ENGINEERING

Name

Father's Name

Roll No. Date: **19-11-2011**

Signature of Candidate

Signature of Invigilator

Q=1 A P-type semiconductor material as a whole is:

- a) Positively charged
- b) Negatively charged
- c) Electrically neutral
- d) None of these.

Q=6 The charge carriers in a P channel FET are:

- a) electrons
- b) holes
- c) both electrons and holes
- d) none of these.

Q=2 Typical value of forbidden energy gap in germanium is:

- a) 1 eV
- b) 1.4 eV
- c) 10 eV
- d) 0.67 eV

Q=7 LED's emit radiations in the:

- a) infra-red region
- b) ultraviolet region
- c) visible region
- d) none of these

Q=3 One of the following is not a semiconductor:

- a) GaAs
- b) Indium
- c) Ge
- d) Si

Q=8 The output resistance of an ideal amplifier is:

- a) infinite
- b) zero
- c) very small
- d) very large

Q=4 Performance of one of the following diodes is not based on its negative resistance characteristic.

- a) Gunn
- b) Impatt
- c) Tunnel
- d) Backward

Q=9 Decibel is defined in terms of:

- a) a power ratio
- b) a voltage level
- c) a current level
- d) none of these.

Q=5 A UJT is also called:

- a) a voltage controlled device
- b) a current controlled device
- c) a relaxation oscillator
- d) none of these.

Q=10 The most stable value of (S) is possessed by:

- a) CE configuration
- b) CB configuration
- c) CC configuration
- d) None of these

- Q=11 Low frequency response of amplifiers is mainly limited by:
- coupling capacitors
 - bypass capacitors
 - biasing circuit
 - input and output capacitors
- Q=12 The common collector amplifier is an example of:
- voltage series feedback
 - voltage shunt feedback
 - current series feedback
 - none of these.
- Q=13 Conversion efficiency of a class AB power amplifier may be as high as:
- 90%
 - 75%
 - 60%
 - 100%
- Q=14 One of the following circuit types can be used to generate a pulse whenever triggered.
- Astable multivibrator
 - Flip-flop
 - Monostable multivibrator
 - None of these.
- Q=15 One of the following is a combinational circuit:
- Shift register
 - Decade counter
 - JK Flip Flop
 - NAND gate.
- Q=16 The only logic family that uses non-saturated transistors is the:
- ECL
 - TTL
 - DTL
 - CMOS
- Q=17 Recommended FAN-out of standard TTL logic family is:
- 5
 - 15
 - 50
 - 10
- Q=18 The basic RS flip flop is:
- a monostable multivibrator
 - a bistable multivibrator
 - an astable multivibrator
 - a schmitt trigger.
- Q=19 Number of comparators needed to build a 6-bit simultaneous A/D converter is:
- 1
 - 63
 - 64
 - 6
- Q=20 The average conversion time in a 4-bit counter type A/D converter run by a 10 MHz clock is:
- 8 us
 - 400 ns
 - 800 ns
 - None of these.
- Q=21 The fastest A/D converter type is:
- Counter type A/D converter
 - Successive approximation type A/D converter.
 - Dual slope integrating type A/D converter.
 - Flash type A/D converter.
- Q=22 The PRESET and CLEAR inputs in flip flops are also referred to as:
- Synchronous inputs
 - Asynchronous inputs
 - Load inputs
 - Serial inputs
- Q=23 The logic family that has highest noise immunity is:
- CMOS
 - TTL
 - ECL
 - DTL
- Q=24 A data selector is also called a :
- De-multiplexer
 - Priority encoder
 - Multiplexer
 - Decoder.
- Q=25 The Half subtractor has:
- 2 inputs and 2 outputs
 - 3 inputs and 2 outputs
 - 2 inputs and 1 output
 - None of these.
- Q=26 Parity generation can be realised by:
- AND gate
 - OR gate
 - NAND gate
 - EX-OR gate.

Q=27 The synchronization between microprocessor and memory is done by:

- a) ALE signal
- b) HOLD signal
- c) READY signal
- d) None of these.

Q=28 In 8085 Program Status Word consists of:

- a) accumulator contents
- b) flags
- c) both accumulator and flag
- d) status bits.

Q=29 The OP-AMP comparator circuit uses:

- a) positive feedback
- b) negative feedback
- c) regenerative feedback
- d) no feedback.

Q=30 A Colpitts oscillator uses:

- a) tapped coil
- b) inductive feedback
- c) tapped capacitance
- d) no tuned LC circuit.

Q=31 Roots of the characteristic equation are nothing but the:

- a) Poles of the system
- b) Zeros of the system
- c) Poles and Zeros of the system
- d) None of these.

Q=32 One of the following methods is used to determine the relative stability of a control system.

- a) Routh stability criterion
- b) Hurwitz stability criterion
- c) Root-locus technique
- d) None of these.

Q=33 A VTVM can be used to measure:

- a) AC only
- b) DC only
- c) Both AC and DC
- d) None of these.

Q=34 A pulse width modulated signal can be generated by:

- a) an astable multivibrator
- b) a monostable multivibrator
- c) integrating the signal
- d) differentiating the PPM signal.

Q=35 Quantizing noise occurs in:

- a) time division multiplex
- b) frequency division multiplex
- c) pulse code modulation
- d) pulse position modulation

Q=36 Pulse communication system that is inherently highly immune to noise is:

- a) PWM
- b) PAM
- c) PPM
- d) PCM

Q=37 One of the following communication system is digital:

- a) AM
- b) FM
- c) Delta
- d) PAM

Q=38 An FM signal contains intelligence in:

- a) its frequency variations
- b) its amplitude variations
- c) both amplitude and frequency variations
- d) none of these.

Q=39 In an FM signal, there are:

- a) no sidebands
- b) two sidebands, upper and lower
- c) infinite number of sidebands
- d) none of these.

Q=40 The filter used in SSB generation is a:

- a) high pass
- b) low pass
- c) band pass
- d) none of these.

Q=41 The knowledge of signal attenuation is very important in communication links as it determines:

- a) bandwidth
- b) maximum power coupling
- c) bit rate
- d) maximum repeaterless spacing

Q=42 In a fiber optic communication link, the source to fiber coupling efficiency is dependent on:

- a) modal dispersion
- b) numerical aperture
- c) v-number
- d) core radius

- Q=43 If the output power is reduced to 25 percent of its original value after passing through a fiber, the loss in db would be:
- 0.3db
 - 0.25db
 - 3db
 - 6db
- Q=44 Optical fibers rely for their operation on the phenomenon of:
- Reflection
 - Refraction
 - Dispersion
 - Total internal reflection
- Q=45 The difference in the refractive indices of the fiber core and fiber cladding in step index fibers is typically :
- 10%
 - 25%
 - 1%
 - 0.01%
- Q=46 Attenuation in optical fibers is:
- mainly due to scattering
 - due to absorption and scattering
 - due to modal and material dispersion
 - none of these.
- Q=47 Which of the following photodetectors has the highest multiplication factor?
- P-N diode
 - Phototransistor
 - Avalanche photodiode
 - P-I-N diode
- Q=48 The divergence theorem applies to:
- static fields only
 - time varying fields only
 - both static as well as time varying fields
 - magnetic fields only.
- Q=49 Four fundamental equations of electromagnetics are grouped under:
- Fleming's laws
 - Faraday's laws
 - Lorentz equations
 - Maxwell's equations
- Q=50 The direction of propagation of electromagnetic waves is given by the direction of:
- vector E
 - vector H
 - vector (E*H)
 - none of these
- Q=51 For good conductors, the co-efficient of reflection for plane electromagnetic waves is:
- zero
 - very small
 - very large
 - close to unity
- Q=52 The Poynting vector for an electromagnetic wave is:
- E*H
 - E.H
 - E/H
 - None of these.
- Q=53 A time varying magnetic field produces:
- an electric field
 - both magnetic and electric fields
 - magnetic field only
 - none of these.
- Q=54 Height of E-layer is approximately:
- 110 km
 - 50 km
 - 190 km
 - 450 km
- Q=55 VHF waves travel as:
- space waves
 - sky waves
 - surface waves
 - ground waves
- Q=56 Tropospheric phenomenon is used with:
- HF
 - VHF
 - UHF
 - VLF
- Q=57 Only one of the following can happen to the electromagnetic waves travelling in free space:
- attenuation
 - reflection
 - refraction
 - absorption

Q=58 The phenomenon of microwaves following the curvature of earth is known as:

- a) troposcatter
- b) super-refraction
- c) ducting
- d) Faraday effect

Q=59 Antenna reciprocity is put to use in:

- a) radar systems
- b) television broadcast systems
- c) commercial radio broadcast systems
- d) none of these.

Q=60 An antenna having a higher 'Q' has:

- a) a higher bandwidth
- b) a lower bandwidth
- c) a flat response
- d) none of these.

Q=61 Smaller the beamwidth angle:

- a) smaller the directivity
- b) smaller the power gain
- c) higher the directivity
- d) none of these.

Q=62 Electrical length of an antenna is:

- a) same as its physical length
- b) greater than its physical length
- c) smaller than its physical length
- d) none of these.

Q=63 One of the following is a non-resonant antenna:

- a) The folded dipole
- b) The endfire array
- c) The broadside array
- d) The rhombic antenna

Q=64 Microwave antennas have:

- a) high gain
- b) high front to back ratio
- c) high input impedance
- d) low input impedance

Q=65 The microwave amplifier characterised by a very high bandwidth is:

- a) the multicavity klystron
- b) the traveling wave tube
- c) the magnetron
- d) two-cavity klystron

Q=66 The backward wave oscillator (BWO) works on the principles of:

- a) TWT
- b) Multicavity klystrons
- c) Reflex klystrons
- d) Magnetrons

Q=67 One of the following microwave tubes uses buncher and catcher cavities:

- a) Reflex klystron
- b) TWT
- c) Klystron
- d) Magnetron

Q=68 Modulation system employed in audio broadcast of commercial television system is:

- a) AM
- b) FM
- c) PM
- d) PCM

Q=69 The most suitable camera for broadcast purpose is:

- a) Image-orthicon
- b) Standard vidicon
- c) Plumbicon
- d) Isocon

Q=70 One of the following radar systems is mainly used in remote sensing applications:

- a) Pulse compression radar
- b) FM-CW radar
- c) Synthetic aperture radar
- d) Phased array radar

Q=71 With reference to radars, better range resolution requires:

- a) larger bandwidth
- b) larger transmitted power
- c) higher pulse repetition rate
- d) larger antenna

Q=72 A radar system uses a rotating antenna to :

- a) determine the target range
- b) determine the target bearing
- c) identify the target
- d) determine target velocity.

Q=73 A 10 GHz signal was beamed, up at a satellite at a distance of about 40,000 kms from earth's surface. The signal undergoes a free space loss of about:

- a) 10 db
- b) 50 db
- c) 200 db
- d) 385 db

Q=74 In the C-band transponders, the uplink frequency is about:

- a) 6 GHz
- b) 4 GHz
- c) 14 GHz
- d) 11 GHz

- Q=75 The location of a geostationary satellite is always given in terms of:
- a) a certain longitude
 - b) a certain latitude
 - c) longitude and latitude
 - d) distance from earth's surface
- Q=76 The multiple satellite access technique suitable only for digital transmission is the:
- a) TDMA
 - b) FDMA
 - c) CDMA
 - d) None of the above.
- Q=77 PCM system is used in satellite communication for transmission of:
- a) television signals
 - b) speech signals
 - c) telegraph signals
 - d) none of these.
- Q=78 When the orbit eccentricity equals 1, the orbit takes the shape of:
- a) an ellipse
 - b) a parabola
 - c) a hyperbola
 - d) circle.
- Q=79 The satellite orbit is termed as a retrograde orbit when its angle of inclination:
- a) becomes 45 degree
 - b) exceeds 90 degree
 - c) zero
 - d) becomes 90 degree
- Q=80 The most powerful computer on the LAN is called the:
- a) Backbone
 - b) Hub
 - c) Server
 - d) Node
- Q=81 The parity bit is added for:
- a) data encoding
 - b) error detection
 - c) data decoding
 - d) indexing
- Q=82 The Internet is an example of a:
- a) Packet switched network
 - b) Circuit switched network
 - c) LAN on a larger scale
 - d) None of the above
- Q=83 Which type of cabling is considered "Category 5" by the Electrical Industries Association (EIA)?
- a) STP
 - b) UTP
 - c) Token ring
 - d) Coaxial
- Q=84 Which layer of the OSI model is responsible for translating the data format?
- a) application layer
 - b) network layer
 - c) presentation layer
 - d) data link layer
- Q=85 Which layer of the OSI model packages raw data bits into data frames?
- a) physical layer
 - b) network layer
 - c) presentation layer
 - d) data link layer
- Q=86 Which of the following networking devices will allow you to transmit Ethernet, Token ring, and voice over a single cable?
- a) router
 - b) multiplexer
 - c) repeater
 - d) bridge
- Q=87 Which of the following route-discovery techniques uses frequent broadcasts that can increase network traffic?
- a) broadcast routing
 - b) distance-vector routing
 - c) comprehensive routing
 - d) link-state routing
- Q=88 Which of the following high-speed network types uses fixed rather than variable length cells to achieve higher speeds?
- a) Fast Ethernet
 - b) Frame relay
 - c) FDDI
 - d) ATM
- Q=89 Which of the following Ethernet components is unique for each card created?
- a) frame type
 - b) CRC address
 - c) IRQ
 - d) MAC address
- Q=90 One cable run in the UTP network is nearly 100 meters long. Which of the following should first be considered if the run experiences communication problems?
- a) EMI
 - b) Crosstalk
 - c) Attenuation
 - d) Dispersion