# University of Mumbai

## Examination 2020 under Cluster 06

## (Lead College: Vidyavardhini's College of Engg Tech)

**Examinations Commencing from 23rd December 2020 to 6th January 2021**

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2016

Examination: TE Semester VI

Course Code: ELX 604 and Course Name: Signals and System

Time: 2 hour Max. Marks: 80

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**R16_ETRX_VI_ELX604_QP1**

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| **Q1.** | **Choose the correct option for following questions. All the Questions are compulsory and carry equal marks** |
|---|---|
| | |
| 1. | Condition for energy signal is |
| Option A: | $0 < E < \infty$ |
| Option B: | $E=0$ |
| Option C: | $E=\infty$ |
| Option D: | $E= -\infty$ |
| | |
| 2. | Condition for continuous periodic signal is |
| Option A: | $X(t) = X(t+T)$ |
| Option B: | $X(t) = X^*(t+T)$ |
| Option C: | $X(t) = X(t-T)$ |
| Option D: | $X(t) = X^*(t)$ |
| | |
| 3 | What is the area of a Unit Impulse function? |
| Option A: | Zero |
| Option B: | Half of Unity |
| Option C: | Depends on the function |
| Option D: | Unity |
| | |
| 4 | A discrete signal is said to be even or symmetric if x(-n) is equal to |
| Option A: | x(n) |
| Option B: | 0 |
| Option C: | -x(n) |
| Option D: | -x(-n) |
| | |

| | |
|---|---|
| 5 | A system is memoryless if |
| Option A: | Output at any time depends at present input and past input |
| Option B: | Output at any time depends at present input, past input and future input |
| Option C: | Output at any time depends only at present input |
| Option D: | Having memory |
| | |
| 6 | A system is said to be defined as non causal, when |
| Option A: | the output at the present depends on the input at an earlier time |
| Option B: | the output at the present does not depend on the factor of time at all |
| Option C: | the output at the present depends on the input at the current time |
| Option D: | the output at the present depends on the input at a time instant in the future |
| | |
| 7 | Convolution of the two discrete time sequences $x_1(n)$ = { 1, 1, 1, 1} and $x_2$ = {4,4,4,4} |
| Option A: | { 1, 1, 1, 1} |
| Option B: | {4, 8, 12, 16, 12, 8, 4} |
| Option C: | {4, 3, 1, 1, 1, 2, -2} |
| Option D: | {1, 1, 1, -2, 2, 3, 4} |
| | |
| 8 | The system described by y(n) = nx(n) is |
| Option A: | Linear, time variant and stable |
| Option B: | Non linear, time invariant and unstable |
| Option C: | Non linear, time variant and stable |
| Option D: | Linear, time variant and unstable |
| | |
| 9 | Laplace Transform of the signal $x(t) = u(t-1)$ |
| Option A: | 1/s-1 |
| Option B: | $e^{-s}/s$ |
| Option C: | $e^{-s}/(s-1)$ |
| Option D: | (s-1) |
| | |
| 10 | Laplace transform of A cos wt u(t) is |
| Option A: | $As/(s^2-w^2)$ |

| | |
|---|---|
| Option B: | $As/(s^2+w^2)$ |
| Option C: | $A/(s^2+w^2)$ |
| Option D: | $s/(s^2+w^2)$ |
| | |
| 11 | The Laplace Transform of $t^n u(t)$ is |
| Option A: | $\frac{n!}{s^{n+1}}$ |
| Option B: | $\frac{n!}{s^n}$ |
| Option C: | $\frac{n}{s^{n+1}}$ |
| Option D: | $\frac{n}{s^n}$ |
| | |
| 12 | Time shifting property of Laplace transform is given as |
| Option A: | $L\{x(t-k)\} = e^{-sk} X(s)$ |
| Option B: | $L\{x(t-k)\} = e^{-2sk} X(s)$ |
| Option C: | $L\{x(t-k)\} = e^{-sk/2} X(s)$ |
| Option D: | $L\{x(t-k)\} = e^{-sk/4} X(s)$ |
| | |
| 13 | If $Z\{x_1(n)\} = X_1(z)$ and $Z\{x_2(n)\} = X_2(z)$ then |
| Option A: | $Z\{x_1(n) * x_2(n)\} = X_1(z) + X_2(z)$ |
| Option B: | $Z\{x_1(n) * x_2(n)\} = X_1(z) - X_2(z)$ |
| Option C: | $Z\{x_1(n) * x_2(n)\} = X_1(z)\ X_2(z)$ |
| Option D: | $Z\{x_1(n) * x_2(n)\} = \frac{X1(z)}{X2(z)}$ |
| | |
| 14 | What is the set of all values of z for which X(z) attains a finite value? |
| Option A: | Region of convergence |
| Option B: | Radius of divergence |
| Option C: | Feasible solution |
| Option D: | Particular solution |
| | |
| 15 | Find Z-Transform of $a^n u(n)$ |
| Option A: | $\frac{z}{z-a}$ |

| | |
|---|---|
| Option B: | $\frac{z}{z+a}$ |
| Option C: | $\frac{1}{z-a}$ |
| Option D: | $\frac{1}{z+a}$ |
| | |
| 16 | Fourier transform of signal x(t) = $e^{2t}u(-t)$ is given by |
| Option A: | $X(\omega) = \frac{1}{2-j\omega}$ |
| Option B: | $X(\omega) = \frac{2}{1-j\omega}$ |
| Option C: | $X(\omega) = \frac{1}{j2-\omega}$ |
| Option D: | $X(\omega) = \frac{2}{j2-\omega}$ |
| | |
| 17 | The Fourier Transform of signal x(n) = $a^n u(n)$ is given by |
| Option A: | $\frac{1}{1-ae^{j\omega}}$ |
| Option B: | $\frac{1}{1+ae^{j\omega}}$ |
| Option C: | $\frac{1}{1-ae^{-j\omega}}$ |
| Option D: | $\frac{1}{a+e^{-j\omega}}$ |
| | |
| Q18. | The Fourier transform of x(t) = cos $\Omega_0$ t u(t) is |
| Option A: | $\frac{\Omega 0}{\Omega 0^2 + \Omega^2}$ |
| Option B: | $\frac{\Omega 0}{\Omega 0^2 - \Omega^2}$ |
| Option C: | $\frac{-\Omega 0}{\Omega 0^2 + \Omega^2}$ |
| Option D: | $\frac{-j\Omega}{\Omega 0^2 + \Omega^2}$ |
| | |
| Q19. | Which property of periodic signal in DTFS gets completely clarified / identified by the equation x (n – $n_0$ )? |
| Option A: | Conjugation |
| Option B: | Time Shifting |

| | |
|---|---|
| Option C: | Frequency Shifting |
| Option D: | Time Reversal |
| | |
| Q20. | Which are the Fourier coefficients in the following? |
| Option A: | $a_0$, $a_n$ and $b_n$ |
| Option B: | $a_n$ |
| Option C: | $b_n$ |
| Option D: | $a_n$ and $b_n$ |
| | |

| **Q2** | |
|---|---|
| **A** | **Solve any Two** **5 marks each** |
| i. | Distinguish between power signals and energy signals. (5M)<br>Determine the power and energy of the following continuous time signal<br>$x(t) = 3\cos 5\Omega_0 t$ |
| ii | Prove time Scaling property of Laplace transform (5M) |
| iii. | Check whether the system described by $y(t) = e^{t\,x(t)}$ is Memory less,<br>Linearity, Time Variant, Causal, and stable (5M) |
| **B** | **Solve any One** **10 marks each** |
| i | A D.T. system is represented as<br>$y(n)=0.5\ y(n-1)- 0.06\ y(n-2) +x(n)$ with $y(-1)=y(-2)=1$ as initial condition .<br>find the response of the system in closed form for an input $x(n)=(0.2)^n u(n)$ |
| ii | $\frac{d^2y(t)}{dt^2} + \frac{5dy(t)}{dt} + 6y(t) = \frac{7dx(t)}{dt} - 3x(t)$ Determine transfer function and obtain impulse response |

| **Q3.** | |
|---|---|
| **A** | **Solve any Two** **5 marks each** |
| i) | Determine whether the signal is periodic or not? If a signal is periodic calculate it's fundamental period.<br>$x(t) = 3\cos(5t + \frac{\pi}{6})$ |
| ii) | Prove time shifting property of Z transform. |
| iii) | State the initial value theorem in Laplace transform and find initial and final value if $X(s)=\frac{s+10}{s^2+2s+2}$ |
| **B** | **Solve any One** **10 marks each** |
| i) | Determine the spectra of periodic signal $x(n)=\{1,1,1,0\}$ with period N=4 |

| | |
|---|---|
| ii) | Compute the Fourier transform and sketch the magnitude and phase phase function of causal three sample sequence given by $x(n)=\frac{1}{3}$ ; $0 \leq n \leq 2$<br>Otherwise 0 |

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: ELXDLO6022 and Course Name: Electronic Product Design

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

| | |
|---|---|
| Q1. | The ability of any electronic product to perform its intended function in the electromagnetic environment and not to be source of electromagnetic radiation to that environment is called |
| Option A: | Electromagnetic field |
| Option B: | Electromagnetic interference |
| Option C: | Electrostatic discharge |
| Option D: | Electromagnetic compatibility |
| | |
| Q2. | _____ is due to the formation of a current loop that generates a magnetic flux and couples energy between the circuits. |
| Option A: | Capacitive Coupling |
| Option B: | Electrostatic Coupling |
| Option C: | Electromagnetic Coupling |
| Option D: | Inductive Coupling |
| | |
| Q3. | _____is the first phase of new product development. |
| Option A: | System specification |
| Option B: | Prototype |
| Option C: | Architectural design |
| Option D: | Requirements definition |
| | |
| Q4. | The process of exercising or evaluating a system or system component by manual or automated means to verify that it satisfied specified requirements or to identify differences between expected and actual results is |
| Option A: | Hardware testing |
| Option B: | Software testing |
| Option C: | System partitioning |
| Option D: | Architecture testing |
| | |
| Q5. | _____language is dependent on processor architecture. |
| Option A: | High level |
| Option B: | Assembly |

| | |
|---|---|
| Option C: | Object Oriented Programming |
| Option D: | Computer Aided Software Engineering |
| | |
| Q6. | In which of the following model, the software development activity is divided into different phases and each phase consists of series of tasks and has different objectives. |
| Option A: | Waterfall model |
| Option B: | Spiral model |
| Option C: | Structured model |
| Option D: | Physical model |
| | |
| Q7. | _____ is a layer of copper or similar conductive internal to a PCB. |
| Option A: | Image Plane |
| Option B: | RF Plane |
| Option C: | Glass Plane |
| Option D: | Analog Plane |
| | |
| Q8. | The PCB in which conductors are on only one surface of a dielectric base. |
| Option A: | Single sided PCB |
| Option B: | Double sided PCB |
| Option C: | Multi-layer PCB |
| Option D: | 6 layer PCB |
| | |
| Q9. | What is the first goal of testing process? |
| Option A: | Bug prevention |
| Option B: | Testing |
| Option C: | Execution |
| Option D: | Analysis |
| | |
| Q10. | An ideal op-amp requires infinite bandwidth because |
| Option A: | Signals can be amplified without attenuation |
| Option B: | Output common-mode noise voltage is zero |
| Option C: | Output voltage occurs simultaneously with input voltage changes |
| Option D: | Output can drive infinite number of devices |
| | |
| Q11. | _____includes checking documents, design, codes and programs |
| Option A: | Checking |
| Option B: | Validation |
| Option C: | Verification |
| Option D: | Building |
| | |
| Q12. | Which of following is not visual techniques of documentation? |
| Option A: | Drawing |
| Option B: | Photographs |
| Option C: | Chart |
| Option D: | Memos |

| | |
|---|---|
| | |
| Q13. | _____ is a document that describes how to use a given product effectively and efficiently. |
| Option A: | Proposal |
| Option B: | Instructional Manual |
| Option C: | Service Manual |
| Option D: | Memo |
| | |
| Q14. | These are not the guidelines to deal with vibrations and shocks |
| Option A: | Use short component leads |
| Option B: | Avoid sliding joints |
| Option C: | Firmly fix transformer batteries |
| Option D: | Clamp small components |
| | |
| Q15. | Black box tests are _____driven and white box tests are _____driven. |
| Option A: | Data, logic |
| Option B: | logic, Data |
| Option C: | Data, Data |
| Option D: | Logic, logic |
| | |
| Q16. | Risk management is responsibility of the |
| Option A: | Investor |
| Option B: | Customer |
| Option C: | Project team |
| Option D: | Developer |
| | |
| Q17. | Critical frequencies have a wavelength greater than |
| Option A: | λ/40 |
| Option B: | λ/2 |
| Option C: | λ/20 |
| Option D: | λ/10 |
| | |
| Q18. | _____ routing topology provides for enhanced noise immunity against the propagation of radiated RF emissions. |
| Option A: | Stripline |
| Option B: | Ring |
| Option C: | Bus |
| Option D: | Microstrip |
| | |
| Q19. | The _____ depends on the number of turns, current and core material that can increase the relative permeability. |
| Option A: | Capacitance |
| Option B: | Resistance |
| Option C: | Relay |
| Option D: | Inductance |
| | |

| | |
|---|---|
| Q20. | Declaration of conformity is included in_____ |
| Option A: | Service Manual |
| Option B: | Proposal |
| Option C: | Instructional Manual |
| Option D: | Memo |
| | |
| Q21. | Liability usually refers to a_____, while accountability refers to a _____ |
| Option A: | Legal responsibility, social responsibility |
| Option B: | Social responsibility, legal responsibility |
| Option C: | Software, hardware |
| Option D: | Hardware, software |
| | |
| Q22. | _____ is important in PCB for optimal functionality and EMC suppression. |
| Option A: | Vertical Partitioning |
| Option B: | Horizontal Partitioning |
| Option C: | Functional Partitioning |
| Option D: | Symmetrical Partitioning |
| | |
| Q23. | Risk Exposure can be defined as: |
| Option A: | Probability* impact |
| Option B: | Probability / impact |
| Option C: | Impact/probability |
| Option D: | Probability + impact |
| | |
| Q24. | _____ is a heuristic that provides an estimate of how interdependent the modules are. |
| Option A: | Cohesion |
| Option B: | Coupling |
| Option C: | Functional design |
| Option D: | Architectural design |
| | |
| Q25. | The choice of the best suited hardware and software is done in the _____ phase of product development. |
| Option A: | System Specification |
| Option B: | Functional design |
| Option C: | Architectural design |
| Option D: | Prototype |

**Program: BE (Electronics) Engineering**

Curriculum Scheme: **Revised - 2016**

Examination: **Third Year Semester VI**

Course Code: **ELXDLO6023** and Course Name: **Wireless Communication**

Time: **1-hour** Max. Marks: **50**

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**Note to the students:- All the Questions are compulsory and carry equal marks .**

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|---|---|
| Q1. | Handoff threshold is the level |
| Option A: | At the beginning of starting of Handoff process. |
| Option B: | In between the level of handoff process started and the minimum acceptable signal level. |
| Option C: | After the minimum acceptable signal level. |
| Option D: | At which call is terminated |
| | |
| Q2. | _____ cell shape is preferred to represent cells in a cellular system. |
| Option A: | Square |
| Option B: | Triangular |
| Option C: | Hexagonal |
| Option D: | Circular |
| | |
| Q3. | Cluster size is given by the equation N = _____. |
| Option A: | $i^2 + ij + j^2$ |
| Option B: | $i^2 - ij + j^2$ |
| Option C: | $i^2 + ij - j^2$ |
| Option D: | $i + ij + j$ |
| | |
| Q4. | In dynamic channel assignment policy following is not strategy related to it. |
| Option A: | Channels are allocated to cells permanently |
| Option B: | Allocate channels based on request by base station from MSC. |
| Option C: | Reduce the likelihood of blocking and increase capacity |
| Option D: | Increases the load on the MSC. |
| | |
| Q5. | Capacity of the system increases four-fold if the radius of cell is _____. |
| Option A: | Halved |
| Option B: | Doubled |
| Option C: | Tripled |
| Option D: | Quadrupled |
| | |
| Q6. | Signal to interference ratio in dB for a cellular communication system having N=12 and i0=6 is |
| Option A: | 15.56 dB |

| | |
|---|---|
| Option B: | 14.56 dB |
| Option C: | 13 dB |
| Option D: | 12 dB |
| | |
| Q7. | In Mobile radio propagation environment, the typical value of path loss exponent $\gamma$ is_____. |
| Option A: | 2 |
| Option B: | 3 |
| Option C: | 4 |
| Option D: | 5 |
| | |
| Q8. | Diffraction at high frequencies does not depends upon, |
| Option A: | Geometry of the subject |
| Option B: | Polarisation of the incident wave |
| Option C: | Amplitude of the incident wave |
| Option D: | Frequency of the incident wave |
| | |
| Q9. | _____ results from the presence of objects between the transmitter and the receiver |
| Option A: | Scattering |
| Option B: | Refraction |
| Option C: | Shadow Fading |
| Option D: | Doppler Effect |
| | |
| Q10. | Fresnel reflection coefficients is not a factor of |
| Option A: | Geometry of the object |
| Option B: | Polarization of the wave |
| Option C: | Properties of the material at which reflection occurs. |
| Option D: | Angle of incidence of wave |
| | |
| Q11. | Free space propagation path loss is _____. |
| Option A: | Inversely proportional to frequency of transmission |
| Option B: | Directly proportional to frequency of transmission |
| Option C: | Independent of frequency of transmission |
| Option D: | Directly proportional to square of the frequency of transmission |
| | |
| Q12. | Fading is not caused due to |
| Option A: | Obstacles |
| Option B: | Multipath propagation |
| Option C: | Frequency variation at the source |
| Option D: | Variation in amplitude and phase at receiver |
| | |
| Q13. | CDMA is a multiple access strategy for wireless communications based on _____. |
| Option A: | DSSS |

| | |
|---|---|
| Option B: | Fast FHSS |
| Option C: | Slow FHSS |
| Option D: | THSS |
| | |
| Q14. | _____ mobile equipment are the most complex. |
| Option A: | CDMA |
| Option B: | TDMA |
| Option C: | FDMA |
| Option D: | GSM |
| | |
| Q15. | In GSM, the Mobile Number of the subscriber is linked to the _____. |
| Option A: | ME |
| Option B: | SIM |
| Option C: | Both ME and SIM |
| Option D: | Neither ME and SIM |
| | |
| Q16. | The interface between BSC and MSC is referred to as _____. |
| Option A: | HLR |
| Option B: | Abis |
| Option C: | A |
| Option D: | U |
| | |
| Q17. | In GSM, Security triplets refer to _____ . |
| Option A: | Kc, Ki and RAND |
| Option B: | RAND, SRES and Kc |
| Option C: | RAND and Kc |
| Option D: | Ki and RAND |
| | |
| Q18. | The differentiation between the carrier frequencies of the forward channels and reverse channels is an important design parameter related to _____. |
| Option A: | FDMA |
| Option B: | TDMA |
| Option C: | SDMA |
| Option D: | CDMA |
| | |
| Q19. | In which of the following the total available bandwidth is split into many channels of smaller bandwidth plus guard spaces between the channels? |
| Option A: | FHSS |
| Option B: | DSSS |
| Option C: | Both A and B |
| Option D: | Neither A nor B |
| | |
| Q20. | Which of these is not a function of the Service Middleware in the IP Core Network? |

| | |
|---|---|
| Option A: | Media Conversion |
| Option B: | Radio Resource Management |
| Option C: | Wireless Data transmission |
| Option D: | Mobility Management |
| | |
| Q21. | The Synchronisation Channel is assigned the Walsh Code _____. |
| Option A: | W0 |
| Option B: | W32 |
| Option C: | W1 |
| Option D: | W43 |
| | |
| Q22. | Which of the following leads to evolution of 3G networks in CDMA systems? |
| Option A: | IS-95 |
| Option B: | IS-95B |
| Option C: | CDMA One |
| Option D: | CDMA2000 |
| | |
| Q23. | What does SGSN stands for? |
| Option A: | Serial Gateway Supporting Node |
| Option B: | Supporting GGSN Support Node |
| Option C: | Supporting GPRS Support Node |
| Option D: | Supporting Gateway Support Node |
| | |
| Q24. | The mobile originated data packets are routed to the desired network by the _____. |
| Option A: | GGSN |
| Option B: | SGSN |
| Option C: | MSC |
| Option D: | BSC |
| | |
| Q25. | Power Control in CDMA2000 is carried out at _____. |
| Option A: | 800 Hz on both links |
| Option B: | 1500 Hz on both links |
| Option C: | 800 Hz on Uplink and 1500 Hz on Downlink |
| Option D: | 1500 Hz on Uplink and 800 Hx on Downlink |

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: ELXDLO6024 and Course Name: Computer Organization and Architecture

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

| | |
|---|---|
| Q1. | Which one of the following is a multiplication algorithm |
| Option A: | Restoring method |
| Option B: | Non restoring method |
| Option C: | Quick sort algorithm |
| Option D: | Booth's algorithm |
| | |
| Q2. | The double precision representation of a floating point number in IEEE 754 format has a mantissa field of _____bits |
| Option A: | 32 |
| Option B: | 8 |
| Option C: | 52 |
| Option D: | 23 |
| | |
| Q3. | In Booth's algorithm , the multiplicand is added to accumulator when the extreme right bits are |
| Option A: | 00 |
| Option B: | 10 |
| Option C: | 01 |
| Option D: | 11 |
| | |
| Q4. | Express the IEEE754 representation as decimal<br>0 10000001 01010000000000000000000 |
| Option A: | 5.25 |
| Option B: | 52.5 |
| Option C: | 525 |
| Option D: | 50.5 |
| | |
| Q5. | A k bit address can address upto _____ locations of memory |
| Option A: | 2^k |
| Option B: | 2*k |
| Option C: | k |
| Option D: | 2/k |
| | |

| | |
|---|---|
| Q6. | If the control signals are generated by combinational logic, then they are generated by a _____ controlled unit. |
| Option A: | Micro programmed |
| Option B: | vertical |
| Option C: | Interrupt |
| Option D: | Hardwired |
| | |
| Q7. | The microinstruction *MDRout,IRin* is implying which of the following actions? |
| Option A: | The data is placed in IR |
| Option B: | The opcode is placed in IR |
| Option C: | Data is placed on data bus and contents of R is read |
| Option D: | Data is placed on data bus and R is written into |
| | |
| Q8. | Which memory is on top of memory hierarchy for computer system from smallest to highest size |
| Option A: | Registers |
| Option B: | Cache |
| Option C: | Main Memory |
| Option D: | Magnetic Disk |
| | |
| Q9. | Which among the following memories is optical type of memory |
| Option A: | Semiconductor Memory |
| Option B: | Magnetic disk |
| Option C: | Magnetic Tape |
| Option D: | Compact disk |
| | |
| Q10. | How many Transistors required in implementation of 1- bit DRAM? |
| Option A: | 0 |
| Option B: | 1 |
| Option C: | 4 |
| Option D: | 6 |
| | |
| Q11. | Number of address line required for accessing 4096 bytes of memory |
| Option A: | 10 |
| Option B: | 12 |
| Option C: | 14 |
| Option D: | 16 |

| | |
|---|---|
| | |
| Q12. | With a Main memory Size of 16KB and Cache Size of 512 bytes. Size of TAG in bits required in Direct mapping |
| Option A: | 4 bits |
| Option B: | 5 bits |
| Option C: | 6 bits |
| Option D: | 8 bits |
| | |
| Q13. | Which locality of reference takes advantage of program loops |
| Option A: | Temporal Locality |
| Option B: | Spatial Locality |
| Option C: | Sequential Locality |
| Option D: | Dynamic Locality |
| | |
| Q14. | A set-associative cache consists of 64 lines, or slots, divided into four-line sets. Main memory contains 4K blocks of 128 words each. Show the format of main memory addresses. |
| Option A: | tag=8, set=4, word=7 |
| Option B: | tag=4, set=8, word=7 |
| Option C: | tag=4 set=4, word=4 |
| Option D: | tag=8, set=8, word=8 |
| | |
| Q15. | One of the reasons the PCI bus is called a green machine as |
| Option A: | It has incident wave switching |
| Option B: | it has CMOS drivers |
| Option C: | it floats the address and data bus |
| Option D: | It does not employ pus parking |
| | |
| Q16. | The technique whereby the DMA controller steals the access cycles of the processor to operate is called _____ |
| Option A: | Fast conning |
| Option B: | Memory Con |
| Option C: | Cycle stealing |
| Option D: | Memory stealing |
| | |

| | |
|---|---|
| Q17. | _____ provides a separate physical connection to the memory. |
| Option A: | PCI BUS |
| Option B: | PCI interface |
| Option C: | PCI bridge |
| Option D: | Switch circuit |
| | |
| Q18. | What is the correct definition of the term 'SIMD'? |
| Option A: | Single Input, Multiple Destinations |
| Option B: | Single Integration, Multiple Dynamics |
| Option C: | Single Instruction, Multiple Data |
| Option D: | Single Interrupt, Multiple Distribution |
| | |
| Q19. | Which one of the following is a technique to avoid data hazards? |
| Option A: | Operand forwarding |
| Option B: | Internal data forwarding |
| Option C: | Store-Load forwarding |
| Option D: | Load-Load forwarding |
| | |
| Q20. | In which group of the following computers, there are more than one processor units having the ability to execute several instructions in different data simultaneously ? |
| Option A: | SISD |
| Option B: | MIMD |
| Option C: | SIMD |
| Option D: | MISD |
| | |
| Q21. | Which of the following processors features superscalar architecture? |
| Option A: | IBM 370 |
| Option B: | Intel 80486 |
| Option C: | SPARC |
| Option D: | Pentium |
| | |
| Q22. | Which of the following techniques are used to solve Write After Read and Write After Write dependencies in superscalar architecture? |
| Option A: | Reorder buffer |
| Option B: | Multiple Pipelines |

| | |
|---|---|
| Option C: | Loop Buffers |
| Option D: | Register renaming |
| | |
| Q23. | Uniform Memory Access is applicable for |
| Option A: | Real time applications |
| Option B: | real-time applications and time-critical applications. |
| Option C: | general purpose applications and time-sharing applications |
| Option D: | Time critical applications |
| | |
| Q24. | Non Uniform Memory Access is --------- to uniform Memory Access. |
| Option A: | Faster |
| Option B: | slower |
| Option C: | Equal |
| Option D: | Comparable |
| | |
| Q25. | Which among the following is type Memory Interleaving |
| Option A: | Memory Hierarchy |
| Option B: | Memory Banking |
| Option C: | Memory Segmentation |
| Option D: | Virtual Memory |

# University of Mumbai
## Examination 2020 under cluster Vidyavardhini's College of Engg & Tech
**Program: BE Electronics Engineering**

**Curriculum Scheme: Revised 2016 (CBCGS)**

**Examination: Third Year Semester VI**

**Course Code: ELX601 Course Name: Embedded System and RTOS**

**Time: 1 hour** **Max. Marks: 50**

==========

Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

| | |
|---|---|
| Q1. | Which is not an essential tight constraint/s related to the design metrics of an embedded system? |
| Option A: | Low power consumption |
| Option B: | Fast data processing for real-time operations |
| Option C: | Lesser memory requirement |
| Option D: | Able to support generic hardware |
| | |
| Q2. | Which of the following is related with I2C protocol? |
| Option A: | MOSI |
| Option B: | MISO |
| Option C: | SDA |
| Option D: | SCLK |
| | |
| Q3. | In embedded system as volume of production increases |
| Option A: | The per-product cost decreases |
| Option B: | The per-product cost increases |
| Option C: | NRE cost increases |

| | |
|---|---|
| Option D: | Time to market increases |
| | |
| Q4. | In an embedded system reducing clock frequency results to |
| Option A: | Increase in power consumption |
| Option B: | decrease in power consumption |
| Option C: | Increase in performance |
| Option D: | Decrease in execution time |
| | |
| Q5. | RM Schedulable upper bound for a system with 4 tasks is |
| Option A: | 0.66 |
| Option B: | 0.95 |
| Option C: | 0.76 |
| Option D: | 0.44 |
| | |
| Q6. | In the FSM diagram, what does the information below the line in the circle represent? |
| Option A: | Change of state |
| Option B: | Output value |
| Option C: | State |
| Option D: | Initial state |
| | |
| Q7. | Which of the following is an example of 2 wire Communication Interface? |
| Option A: | SCI |
| Option B: | Wi-Fi |
| Option C: | Ethernet |
| Option D: | EEE1394 |
| | |

# University of Mumbai

## Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

| | |
|---|---|
| Q8. | In a CAN bus messages are |
| Option A: | Transmitted from one node to another based on addresses |
| Option B: | Not received by all nodes |
| Option C: | Embedded in the CAN message itself. |
| Option D: | Not message-based protocol |
| | |
| Q9. | A secure ATM card application uses |
| Option A: | CAN |
| Option B: | I2C |
| Option C: | SCI |
| Option D: | SPI |
| | |
| Q10. | Which of the following is not a characteristics of SPI bus |
| Option A: | Uses only 4 wires |
| Option B: | No start and stop bits |
| Option C: | Only single master is enabled at a time |
| Option D: | No extra error checking bits |
| | |
| Q11. | Specify the type of motor is used for alignment and throttle control in ACC. |
| Option A: | DC motor |
| Option B: | AC motor |
| Option C: | Stepper motor |
| Option D: | Servo Motor |
| | |
| Q12. | Interrupt priority is needed to |
| Option A: | Interrupt the processor unnecessarily |
| Option B: | To resolve priority conflicts due to concurrent arriving interrupts |
| Option C: | To disable nesting of interrupts |

| | |
|---|---|
| Option D: | To reduce interrupt latency |
| | |
| Q13. | One of the major drawbacks of assembly language programming over C is |
| Option A: | Codes are not portable |
| Option B: | Program executes faster |
| Option C: | Lower memory requirements |
| Option D: | hardware specific instructions are available |
| | |
| Q14. | Which of the following is a data structure in C |
| Option A: | data types |
| Option B: | Stacks |
| Option C: | Pointers |
| Option D: | modifiers |
| | |
| Q15. | Real Time kernel main components are |
| Option A: | Timing logic, control logic, sequencing |
| Option B: | Scheduler, RTOS objects, Services |
| Option C: | Clock system, JTAG interface, SFRs |
| Option D: | White box, Scheduler, timing logic |
| | |
| Q16. | Function of TCB (Task control block) is |
| Option A: | keeps task priority during program execution |
| Option B: | decides the dead-time of the task |
| Option C: | keeps task specific information during context switch |
| Option D: | keeps the information about semaphore |
| | |
| Q17. | Which of the following is a method of IPC |
| Option A: | semaphore |
| Option B: | pipe |

| | |
|---|---|
| Option C: | TCB |
| Option D: | Spin lock |
| | |
| Q18. | Software testing method which is used to test software without knowing internal structure of code or program |
| Option A: | Black Box Testing |
| Option B: | White Box Testing |
| Option C: | Boundary Scan |
| Option D: | Unit Testing |
| | |
| Q19. | µCOS-II is based on which of the following kernel model. |
| Option A: | A microkernel |
| Option B: | A megakernel |
| Option C: | An Exokernel |
| Option D: | A hybrid kernel |
| | |
| Q20. | In an OS the number of tasks executed per unit of time is called as |
| Option A: | turn around time |
| Option B: | Response time |
| Option C: | CPU utilization |
| Option D: | Throughput |
| | |
| Q21. | Which is the MicroC function responsible for starting the different OS kernel data structure? |
| Option A: | OSInit() |
| Option B: | OSIdle() |
| Option C: | OSStart() |
| Option D: | OSTaskCreate() |
| | |
| Q22. | In circuit emulator is a hardware device which emulates |

| | |
|---|---|
| Option A: | memory |
| Option B: | target CPU |
| Option C: | I/O device |
| Option D: | software |
| | |
| Q23. | Choose the appropriate Characteristic of a Logic Analyzer. |
| Option A: | It measures Signal Amplitudes |
| Option B: | Detects Transients and Unwanted Pulses |
| Option C: | Characterize waveform and jitter |
| Option D: | Detects Timing Violations |
| | |
| Q24. | Which of the following port is not available in the ACVM? |
| Option A: | Port_Refund |
| Option B: | Port_Collect |
| Option C: | Port_Deliver |
| Option D: | Port_Decode |
| | |
| Q25. | Which of the following is not in the list of Requirements Table for an Automatic Chocolate Vending Machine (ACVM)? |
| Option A: | Logic |
| Option B: | Inputs |
| Option C: | Outputs |
| Option D: | Purpose |
| | |

# University of Mumbai

## Examination 2020 under Cluster 06

## (Lead College: Vidyavardhini's College of Engg Tech)

**Examinations Commencing from 23rd December 2020 to 6th January 2021**

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2016

Examination: TE Semester VI

Course Code: ELXDLO6023 and Course Name: Wireless Communication

Time: 2 hour Max. Marks: 80

| **Q1.** | **Choose the correct option for following questions. All the Questions are compulsory and carry equal marks** |
|---|---|
| | |
| 1. | A regular _____ shaped cell is the closest approximation to a circle out which has been used for cellular system design. |
| Option A: | Circular |
| Option B: | Triangular |
| Option C: | Square |
| Option D: | Hexagonal |
| | |
| 2. | The ability of base station to pick up the correct signal as mobile enters from cell one to cell two is_____. |
| Option A: | Cell splitting |
| Option B: | Soft hand off |
| Option C: | Coverage |
| Option D: | Cell sectoring |
| | |
| 3. | In mobile radio channels, the _____ is commonly used to describe the statistical time varying nature of the received fading signal. |
| Option A: | Rayleigh distribution |
| Option B: | Binomial Distribution |
| Option C: | Ricean distribution |
| Option D: | Poisson Distribution |
| | |
| 4. | Path loss in free space model is defined as difference of _____. |
| Option A: | Effective transmitted power and gain |
| Option B: | Effective received power and distance between transmitter and receiver |
| Option C: | Gain and received power |
| Option D: | Effective transmitter power and receiver power |
| | |
| 5. | Small scale fading describes the _____ fluctuations of the amplitude, phases of a signal. |
| Option A: | Slow |
| Option B: | Instantaneous |
| Option C: | Rapid |
| Option D: | Different |
| | |

| | |
|---|---|
| 6. | Doppler frequency or Doppler shift is given by_____. (where λc is the wavelength of the carrier signal, Vm is the relative velocity of the mobile, the angle θ is between the motion of the mobile and direction of arrival of the scattered waves. ) |
| Option A: | $\lambda_c V_m \cos\theta$ |
| Option B: | $(1/\lambda_c) V_m \cos\theta$ |
| Option C: | $[1/(\lambda_c V_m)] \cos\theta$ |
| Option D: | $(1/ V_m) \lambda_c \cos\theta$ |
| | |
| 7. | The period of a PN sequence produced by a linear m stage shift register cannot exceed _____ symbols. |
| Option A: | 2m |
| Option B: | M |
| Option C: | $2^m$-1 |
| Option D: | $2^m$ |
| | |
| 8. | Which of the following is not a property of spread spectrum techniques? |
| Option A: | Difficult to jam the signals |
| Option B: | Cross-talk elimination |
| Option C: | Multipath fading |
| Option D: | Co-existence with other systems |
| | |
| 9. | The differentiation between the carrier frequencies of the forward channels and reverse channels is an important design parameter related to _____ technique. |
| Option A: | TDMA |
| Option B: | FDMA |
| Option C: | CDMA |
| Option D: | SDMA |
| | |
| 10. | The guard time between the time slots in a TDMA frame helps in minimizing the interference due to _____along different radio paths in the wireless channel. |
| Option A: | Propagation Delays |
| Option B: | Adjacent Channel |
| Option C: | Multipath Fading |
| Option D: | Timing inaccuracies |
| | |
| 11. | Which of the following multiple access techniques are used by second generation cellular systems? |
| Option A: | FDMA/FDD and TDMA/FDD |
| Option B: | TDMA/FDD and CDMA/FDD |
| Option C: | FDMA/FDD and CDMA/FDD |
| Option D: | FDMA/FDD only |
| | |
| 12. | The _____ is the database at MSC that keeps the information about the identity of mobile phone equipment. |
| Option A: | HLR |
| Option B: | VLR |

| | |
|---|---|
| Option C: | AuC |
| Option D: | EIR |
| | |
| 13. | The gross data rate of each carrier channel in GSM is_____. |
| Option A: | 270.833 kbps |
| Option B: | 33.854 kbps |
| Option C: | 24.7 kbps |
| Option D: | 13.4 kbps |
| | |
| 14. | The 2G GSM technology uses a carrier separation of_____. |
| Option A: | 30KHz |
| Option B: | 200KHz |
| Option C: | 1.25MHz |
| Option D: | 300Hz |
| | |
| 15. | Which of the following services is not defined by the GSM? |
| Option A: | Bearer |
| Option B: | Supplementary |
| Option C: | Complimentary |
| Option D: | Tele |
| | |
| 16. | The CDMA reverse channel employs _____ digital modulation technique. |
| Option A: | BPSK |
| Option B: | OQPSK |
| Option C: | QPSK |
| Option D: | OFDM |
| | |
| 17. | Each IS-95 channel occupies _____ of spectrum on each one way link. |
| Option A: | 1.25 MHz |
| Option B: | 1.25 kHz |
| Option C: | 200 kHz |
| Option D: | 125 kHz |
| | |
| 18. | The ____ channel is used for sending short messages including broadcast messages. |
| Option A: | Forward Traffic |
| Option B: | Paging |
| Option C: | Sync |
| Option D: | Pilot |
| | |
| 19. | Which is not an advantage of 4G LTE network over 3G network? |
| Option A: | Low power consumption |
| Option B: | More Spectral Efficiency |
| Option C: | Flexibility with other networks |
| Option D: | Non Scalability |

| | |
|---|---|
| 20. | What is the chip rate of W-CDMA? |
| Option A: | 1.2288 Mcps |
| Option B: | 270.833 Ksps |
| Option C: | 3.84 Mcps |
| Option D: | 100 Mcps |

# Option 1

| **Q2** | **Solve any Four out of Six 5 marks each** |
|---|---|
| A | Explain the concept of frequency reuse. Derive the expression for relationship between the size of the cluster "N" and the frequency reuse distance "D". |
| B | Classify the small scale fading in wireless channel based on multipath time delay spread and explain its features. |
| C | Explain Frequency Hopping Spread Spectrum (FHSS) with block diagram. |
| D | Describe the services and features of GSM. |
| E | Enlist and Explain the three identifiers used in GSM. |
| F | Explain RAKE receiver used in CDMA system with neat diagram. |
| | |
| **Q3.** | **Solve any Four out of Six 5 marks each** |
| A | What is meant by Co-channel interference? Derive the expression for S/I Ratio (Signal to Co-channel interference). |
| B | Explain free space propagation model. |
| C | Differentiate between TDMA, FDMA and CDMA. |
| D | Draw architecture of GSM along with the interfaces used in it and explain all the entities of GSM. |
| E | Explain the working of forward channels of CDMA IS-95 modulation. process. |
| F | Write a short note on W-CDMA. |

**University of Mumbai**
**Examination 2020 under Cluster 06**
**(Lead College: Vidyavardhini's College of Engg Tech)**
**Examinations Commencing from 23rd December 2020 to 6th January 2021**
Program: **Electronics Engineering**
Curriculum Scheme: Rev 2016
Examination: TE Semester VI
Course Code: ELXDLO6024 and Course Name: Computer Organization and Architecture
Time: 2 hour Max. Marks: 80

==========

| **Q1.** | **Choose the correct option for following questions. All the Questions are compulsory and carry equal marks** |
|---|---|
| | |
| 1. | The double precision representation of a floating-point number in IEEE 754 format has a mantissa field of _____bits |
| Option A: | 32 |
| Option B: | 8 |
| Option C: | 52 |
| Option D: | 23 |
| | |
| 2. | In a _____ control unit, the control signals are generated by combinational logic. |
| Option A: | Microprogrammed |
| Option B: | vertical |
| Option C: | Logical |
| Option D: | Hardwired |
| | |
| 3. | The microinstruction MDRout, IRin is implying which of the following actions? |
| Option A: | The data is placed in IR |
| Option B: | The opcode is placed in IR |
| Option C: | Data is placed on data bus and contents of R is read |
| Option D: | Data is placed on data bus and R is written into |
| | |
| 4. | How many Transistors required in implementation of 1- bit DRAM? |
| Option A: | 0 |
| Option B: | 1 |
| Option C: | 4 |
| Option D: | 6 |
| | |
| 5. | If direct mapped cache memory has 128 blocks of 16 words each and main memory has 64K words arranged as 4K block of 16 words each, then the main memory address is arranged as |
| Option A: | tag=5, set=7, word=4 |
| Option B: | tag=16, set=4, word=7 |
| Option C: | tag=4 set=16, word=4 |
| Option D: | tag=12, set=7, word=4 |
| | |
| 6. | Which locality of reference takes advantage of program loops |
| Option A: | Temporal Locality |
| Option B: | Spatial Locality |
| Option C: | Sequential Locality |
| Option D: | Dynamic Locality |
| | |

| | |
|---|---|
| 7. | One of the reasons the PCI bus is called a green machine as |
| Option A: | It has incident wave switching |
| Option B: | it has CMOS drivers |
| Option C: | it floats the address and data bus |
| Option D: | It does not employ pus parking |
| | |
| 8. | Which of the following techniques are used to solve Write After Read and Write After Write dependencies in superscalar architecture? |
| Option A: | Reorder buffer |
| Option B: | Multiple Pipelines |
| Option C: | Loop Buffers |
| Option D: | Register renaming |
| | |
| 9. | If 16k X 8 memory chips are used to construct 32k x16 memory, how many chips will be required? |
| Option A: | 8 Chips |
| Option B: | 12 Chips |
| Option C: | 4 Chips |
| Option D: | 2 Chips |
| | |
| 10. | A microprogram sequencer |
| Option A: | Generates the address of next micro instruction to be executed |
| Option B: | Generates the control signals to execute a microinstruction. |
| Option C: | Sequentially averages all microinstructions in the control memory. |
| Option D: | Enables the efficient handling of a micro program subroutine. |
| | |
| 11. | The hardware mechanism that allows a device to notify the CPU is called _____ |
| Option A: | Polling |
| Option B: | Interrupt |
| Option C: | Driver |
| Option D: | Controller |
| | |
| 12. | The technique whereby the DMA controller steals the access cycles of the processor to operate is called _____ |
| Option A: | Memory stealing |
| Option B: | Bus stealing |
| Option C: | Cycle stealing |
| Option D: | I/O stealing |
| | |
| 13. | When two instructions contend for the same functional unit, following occurs? |
| Option A: | Data hazard |
| Option B: | Branch hazard |
| Option C: | Resource hazard |
| Option D: | RAW hazard |

| | |
|---|---|
| | |
| 14. | Which of the following processor organizations is suitable for vector operations? |
| Option A: | SISD |
| Option B: | MIMD |
| Option C: | SIMD |
| Option D: | MISD |
| | |
| 15. | Consider following two pseudo instructions:<br>Y = A + B<br>X = Z + Y<br>While executing above instructions in a pipelined processor, a delay was introduced due to unavailability of result from first instruction. This is known as_____ hazard |
| Option A: | Data |
| Option B: | Control |
| Option C: | Resource |
| Option D: | Structural |
| | |
| 16 | _____ address space gives the PCI its plug and play capability. |
| Option A: | Configuration. |
| Option B: | I/O |
| Option C: | Stack |
| Option D: | Memory |
| | |
| 17. | A 512K x 8 memory chip has _____data lines |
| Option A: | 8 |
| Option B: | 9 |
| Option C: | 19 |
| Option D: | 18 |
| | |
| 18. | SPEC stands for _____ |
| Option A: | Standard Performance Evaluation Code |
| Option B: | System Processing Enhancing Code |
| Option C: | System Performance Evaluation Corporation |
| Option D: | Standard Processing Enhancement Corporation |
| | |
| 19. | Which of the following options indicate steps required for an instruction fetch cycle ? |
| Option A: | MAR← PC,<br>MDR← [MAR],<br>PC← PC+1,<br>MDR← IR |
| Option B: | MAR← PC,<br>MDR← [MAR],<br>PC← PC+1,<br>IR← MDR |
| Option C: | MAR← PC,<br>[MAR] ← MDR,<br>PC ← PC+1 |

| | |
|---|---|
| | IR← MDR |
| Option D: | PC← MAR,<br>[MAR] ← MDR,<br>PC ← PC+1,<br>IR ← MDR |
| | |
| 20. | Which of the following is false regarding VLIW architecture |
| Option A: | Requires complex compiler |
| Option B: | No structural hazard checking |
| Option C: | Has out of order execution |
| Option D: | Reduces hardware complexity |

| | |
|---|---|
| **Q2** | |
| **A** | **Solve any Two 5 marks each** |
| i. | Write short notes on any two hazards in Pipelining |
| ii. | Write short notes on memory mapped and I/O mapped I/O |
| iii. | Write short notes on GPU |
| **B** | **Solve any One** **10 mark each** |
| i. | Explain various methods to achieve cache coherency. |
| ii. | Explain the DMA modes of transfer. State its advantages over the other I/O transfer methods. |
| **Q3.** | |
| **A** | **Solve any Two 5 marks each** |
| i. | Explain single precision format for floating point number representation. |
| ii. | Write short notes on nano programming |
| iii. | Write short notes on superscalar architecture. |
| **B** | **Solve any One** **10 marks each** |
| i. | Explain execution of a complete instruction with details. Use single bus organisation. |
| ii. | Explain how a virtual address is converted into a physical address using paging. Also explain Translation Look- aside Buffer |

# University of Mumbai
## Examination 2020 under Cluster 06
## (Lead College: Vidyavardhini's College of Engg Tech)

**Examinations Commencing from 23rd December 2020 to 6th January 2021**

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2016

Examination: TE Semester: VI

Course Code: ELXDLO6021 and Course Name: Microwave Engineering

Time: 2 hour Max. Marks: 80

==========

| **Q1.** | **Choose the correct option for following questions. All the Questions are compulsory and carry equal marks** |
|---|---|
| | |
| 1. | During TM mode of propagation through rectangular waveguide which field component is zero? |
| Option A: | Hx |
| Option B: | Ez |
| Option C: | Hz |
| Option D: | Ey |
| | |
| 2. | For radius r=5 cm air filled circular waveguide with parameter $X'_{11}$= 1.841 what will be the cut-off frequency for dominant $TE_{11}$ mode? |
| Option A: | 1.758 GHz |
| Option B: | 0.967 GHz |
| Option C: | 2.675 GHz |
| Option D: | 3.954 GHz |
| | |
| 3. | Guide wavelength for waveguide in labortrary is measured using ----------. |
| Option A: | Magic tee |
| Option B: | Directional coupler |
| Option C: | Slotted waveguide with probe |
| Option D: | Isolator |
| | |
| 4. | Which one of the following devices can be used for broadband amplification of microwave energy? |
| Option A: | Reflex klystron |
| Option B: | Two cavity klystron |
| Option C: | Travelling-wave tube |
| Option D: | Magnetron |
| | |
| 5. | The transmission line using two ground planes is ----------. |
| Option A: | Microstrip |
| Option B: | Strip line |
| Option C: | Parallel wire line |
| Option D: | Coaxial line |
| | |
| 6. | A hollow rectangular waveguide cannot propagate TEM waves because of -------. |
| Option A: | High losses |
| Option B: | Type of conducting material used |

| | |
|---|---|
| Option C: | Waveguide is one conductor system |
| Option D: | Low frequency |
| | |
| 7. | In a two-cavity klystron, velocity modulation of the electron beam is produced by ----------. |
| Option A: | Collector |
| Option B: | Buncher cavity |
| Option C: | Catcher cavity |
| Option D: | Cathode |
| | |
| 8. | The purpose of the magnet, which surrounds a travelling-wave tube, is to --------. |
| Option A: | Accelerate the electron beam |
| Option B: | Modulate the velocity of the electron beam |
| Option C: | Slow down the electromagnetic wave on the helix |
| Option D: | Hold the electron beam from spreading out |
| | |
| 9. | Which one of the following is a Transferred Electron Device (TED)? |
| Option A: | TRAPATT diode |
| Option B: | Crystal diode |
| Option C: | Gunn diode |
| Option D: | PIN Diode |
| | |
| 10. | Microwave component immediately connected after reflex klystron in microwave bench set is ----------. |
| Option A: | Slotted waveguide |
| Option B: | Frequency meter |
| Option C: | Attenuator |
| Option D: | Isolator |
| | |
| 11. | H-plane Tee is also known as …… |
| Option A: | Shunt Tee |
| Option B: | Series Tee |
| Option C: | Magic Tee |
| Option D: | Hybrid Tee |
| | |
| 12. | Indentify correct statement in relation with two cavity klystron amplifier and travelling wave tube amplifier (TWT). |
| Option A: | In two cavity klystron amplifier RF field is moving & electron beam is stationary whereas in TWT both are stationary |
| Option B: | In two cavity klystron amplifier RF field is moving & electron beam is stationary whereas in TWT both are moving |
| Option C: | In two cavity klystron amplifier RF field is stationary & electron beam is moving whereas in TWT both are moving |
| Option D: | In two cavity klystron amplifier RF field is stationary & electron beam is moving whereas in TWT RF field is moving & electron beam is stationary |
| | |
| 13. | Which is not a mode of Gunn Diode? |
| Option A: | Limited Space Charge |
| Option B: | Drift Space Mode |
| Option C: | Transit Time Domain |
| Option D: | Quenched Domain |

| | |
|---|---|
| | |
| 14. | Value of bunching parameter X is…….. for two cavity klystron. |
| Option A: | 2.408 |
| Option B: | 1.732 |
| Option C: | 1.414 |
| Option D: | 1.841 |
| | |
| 15. | Scattering parameter $S_{12}$ signifies power flow from…….. |
| Option A: | Port 2 to port 1 |
| Option B: | Port 1 to port 2 |
| Option C: | Port 1 to port 1 |
| Option D: | Port 2 to port 2 |
| | |
| 16. | Gyrator is a device that produces a phase shift of ……..between the input and output. |
| Option A: | 90º |
| Option B: | 180º |
| Option C: | 45º |
| Option D: | 270º |
| | |
| 17. | …… microwave diode can be used as a switch. |
| Option A: | PIN Diode |
| Option B: | TRAPATT |
| Option C: | GUNN |
| Option D: | IMPATT |
| | |
| 18. | Zero property of S matrix involves multiplication of element of any row or column to it's …… element of row or column. |
| Option A: | adjacent |
| Option B: | same |
| Option C: | Zero |
| Option D: | infinity |
| | |
| 19. | When the propagation constant has negative sign in imaginary part it signifies ……. wave in TWTA. |
| Option A: | Forward |
| Option B: | Constant |
| Option C: | Infinite |
| Option D: | Backward |
| | |
| 20. | For four port directional coupler, identify correct relation, where I=Isolation, C= Coupling, D= Directivity. Note that I, C, D are in dB. |
| Option A: | D=I+C |
| Option B: | I=C+D |
| Option C: | C=D+I |
| Option D: | I=C*D |

| **Q2**<br>**(20 Marks)** | **Solve any four questions out of six of the following. Each question carries five marks.** |
|---|---|
| A | Explain in brief advantages & applications of microwaves. |
| B | Explain in brief operation of magic i.e. E-H plane tee |
| C | Explain in brief role of slow wave structure in TWT. |
| D | Draw & explain structure of IMPATT diode. State disadvantages of it. |
| E | Differentiate between O-type & M-type microwave tubes. |
| F | For 3.5 GHz microwave signal propagating through air filled rectangular waveguide of dimension 7.0cm x 3.5 cm, calculate cut-off frequency ($f_c$), guide wavelength ($\lambda_g$) and phase velocity for $TE_{10}$ mode. |

| **Q3**<br>**(20 Marks)** | **Solve any two questions out of three of the following. Each question carries ten marks.** |
|---|---|
| A | Draw schematic of four port directional coupler and derive scattering matrix for it. |
| B | Derive an expression for Hull cut-off voltage and magnetic field density equation in cylindrical magnetron. |
| C | Draw microwave bench set up for measurement of unknown load impedance in labortrary and explain in details steps involved in it. |

University of Mumbai

Examination 2020 under Cluster 06

(Lead College: Vidyavardhini's College of Engg Tech)

Examinations Commencing from 23rd December 2020 to 6th January 2021

Program: Electronics Engineering

Curriculum Scheme: Rev 2016

Examination: TE Semester VI

Course Code: ELXDLO6022 and Course Name: Electronic Product Design

Time: 2-hour Max. Marks: 80

==========

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|---|---|
| | |
| 1. | The purpose of shielding is to control _____from one region to the other. |
| Option A: | the propagation of electric field and magnetic field |
| Option B: | the propagation of magnetic field only |
| Option C: | the propagation of electric field only |
| Option D: | the propagation of either electric field or magnetic field |
| | |
| 2. | The _____model describes the physical architecture of the system based on real components such as microprocessors, arrayed logics, special purpose processors, analog and digital components, and the many interconnections between them. |
| Option A: | Functional |
| Option B: | Prototype |
| Option C: | Waterfall |
| Option D: | Architectural |
| | |
| 3. | Accountability usually refers to a_____, while liability refers to a_____. |
| Option A: | Hardware, software |
| Option B: | social responsibility, legal responsibility |
| Option C: | Software, hardware |
| Option D: | legal responsibility, social responsibility |
| | |
| 4. | IEEE Standard for Software Test Documentation defines _____ as "a document describing the scope, approach, resources and schedule of intended testing activities" |
| Option A: | White box testing |
| Option B: | Test Planning |
| Option C: | Black box testing |
| Option D: | Grey box testing |
| | |
| 5. | Electromagnetic coupling of noise occurs at |
| Option A: | DC to 10 MHZ |
| Option B: | > 3 KHz |

| | |
|---|---|
| Option C: | >1 KHz |
| Option D: | >15 MHz |
| | |
| 6. | White box tests are _____driven and black box tests are _____driven. |
| Option A: | logic, data |
| Option B: | data, logic |
| Option C: | data, data |
| Option D: | logic, logic |
| | |
| 7. | The source listings, schematics, and engineering notebooks are which type of document? |
| Option A: | Reviews and reports |
| Option B: | Design documents |
| Option C: | Instructions |
| Option D: | Plans |
| | |
| 8. | Which of the following elements comprise of all of the passive devices? |
| Option A: | Resistors, Capacitors and SCRs |
| Option B: | Transformers, TRIACs and DIACs |
| Option C: | Transformers, Inductors and Diodes |
| Option D: | Vacuum Tubes, SCRs and Diodes |
| | |
| 9. | What is not true with respect to Verification: |
| Option A: | It is the process to ensure whether the product that is developed is right or not. |
| Option B: | It is Static testing |
| Option C: | It is the process of checking that a software achieves its goal without any bugs |
| Option D: | It is Dynamic testing |
| | |
| 10. | The distance spacing between ground stitch locations in PCB should not exceed ___ of the highest frequency, or harmonic of concern. |
| Option A: | λ/3 |
| Option B: | λ/5 |
| Option C: | λ/20 |
| Option D: | λ/2 |
| | |
| 11. | Risk Exposure can be defined as: |
| Option A: | Probability + impact |
| Option B: | Probability / impact |
| Option C: | Probability × impact |
| Option D: | Impact/probability |
| | |
| 12. | _____ deal with the mental processes and capabilities of human being to process information and interact with data. |
| Option A: | Physical Ergonomics |
| Option B: | Organizational Ergonomics |
| Option C: | Cognitive Ergonomics |
| Option D: | Test cases |
| | |

| | |
|---|---|
| 13. | Which statement is not correct with respect to image plane? |
| Option A: | Image planes provide a high-impedance path for RF currents to return to their source. |
| Option B: | This layer may be identified as a voltage plane, ground plane, or 0 V reference plane physically adjacent to a circuit or signal routing layer. |
| Option C: | An image plane is a layer of copper or similar conductive internal to a PCB. |
| Option D: | An image plane reduces ground noise voltage. |
| | |
| 14. | _____ is the capability of electrical and electronic systems, equipment, and devices to operate in their intended electromagnetic environment within a defined margin of safety, and at design levels or performance, without suffering or causing unacceptable degradation as a result of electromagnetic interference. |
| Option A: | Immunity |
| Option B: | Electromagnetic compatibility (EMC) |
| Option C: | Radio Frequency (RF) |
| Option D: | Containment |
| | |
| 15. | Which statement is not the reason, of why the Spiral model is an improvement on the Waterfall and V models? |
| Option A: | it provides for multiple builds as well as several opportunities for risk assessment and for customer involvement. |
| Option B: | it is elaborate |
| Option C: | difficult to manage |
| Option D: | always keep all developers occupied during all of the phases |
| | |
| 16. | Test cases are created in which phase? |
| Option A: | Test Planning |
| Option B: | Test Specification |
| Option C: | Test Requirement |
| Option D: | Test Configuration |
| | |
| 17. | The presence of error at the time of execution of the software is |
| Option A: | Fault |
| Option B: | Error |
| Option C: | Failure |
| Option D: | Bug |
| | |
| 18. | _____ is a relative measure of a device, or a system's propensity to be disrupted or damaged by EMI exposure to an incident field or signal. It is the lack of immunity. |
| Option A: | Containment |
| Option B: | Suppression |
| Option C: | Immunity |
| Option D: | Susceptibility |
| | |
| 19. | The _____is similar to the Waterfall model except that it places greater emphasizes on the importance of addressing testing activities up front instead of later in the life cycle. |
| Option A: | V Cycle |
| Option B: | Spiral |

| | |
|---|---|
| Option C: | Image plane |
| Option D: | Microstrip |
| | |
| 20. | The drawback of using ---------- is that the outer layers of the PCB can occasionally radiate RF energy to the environment, without the protection of a plane on both sides. |
| Option A: | Grounding |
| Option B: | Stripline |
| Option C: | Microstrip |
| Option D: | Image planes |

| | |
|---|---|
| Q2 | Solve any Two Questions out of Three 10 marks each |
| A | Explain how mapping of functions to hardware is done in architectural design. |
| B | Define documentation and explain different types of documentation with their specific use and format. |
| C | Explain different routing topologies used in PCB designing. |

| | |
|---|---|
| Q3. | Solve any Two Questions out of Three 10 marks each |
| A | Explain the need of ESD protection in PCB designing and the techniques used in ESD protection. |
| B | What is the role of characterization in case of debugging and troubleshooting? |
| C | Draw a sketch of front panel of Cathode Ray Oscilloscope and explain how ergonomics and aesthetics design considerations are taken care of this device. |

# University of Mumbai

## Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

**Program: BE Electronics Engineering**

**Curriculum Scheme: Revised 2016 (CBCGS)**

**Examination: Third Year Semester VI**

**Course Code: ELX602** **Course Name: Computer Communication and Networks**

**Time: 1 hour** **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

| | |
|---|---|
| Q1. | Which protocol is used to convert the IP address to Ethernet address? |
| Option A: | RARP |
| Option B: | ARP |
| Option C: | ICMP |
| Option D: | IP |
| | |
| Q2. | _____cable is used for voice and data communication. |
| Option A: | twisted pair |
| Option B: | coaxial cable |
| Option C: | fiber optic |
| Option D: | shielded twisted pair |
| | |
| Q3. | RG-59 is used in |
| Option A: | radio |
| Option B: | thick ethernet |
| Option C: | thin ethernet |
| Option D: | cable TV |
| | |
| Q4. | Twisted pair cable |
| Option A: | can be used for Voice and data communication |
| Option B: | can be used for only for voice communication |
| Option C: | can be used for only for data communication |
| Option D: | Not suitable for voice or data communication |
| | |
| Q5. | Physical address is also called as |
| Option A: | Logical address |
| Option B: | Network address |
| Option C: | Hardware address |
| Option D: | Port address |
| | |
| Q6. | _____refers to the way in which the nodes of a network are linked together. |
| Option A: | network |
| Option B: | topology |

| | |
|---|---|
| Option C: | connection |
| Option D: | interconnectivity |
| | |
| Q7. | _____topology has the highest reliability. |
| Option A: | star |
| Option B: | mesh |
| Option C: | ring |
| Option D: | tree |
| | |
| Q8. | OSI model is a _____standard that covers all aspects of network communication. |
| Option A: | ANSI |
| Option B: | EIA |
| Option C: | ISO |
| Option D: | ICANN |
| | |
| Q9. | The basis for all bit oriented protocol in use today is _____ |
| Option A: | SDLC |
| Option B: | PPP |
| Option C: | LAP |
| Option D: | HDLC |
| | |
| Q10. | If the HLEN field of IPV4 header is decimal 10 then, |
| Option A: | There are 10 bytes of options |
| Option B: | There are 40 bytes of options |
| Option C: | There are 10 bytes in the header |
| Option D: | There are 40 bytes in the header |
| | |
| Q11. | The IPV4 header size |
| Option A: | Is always 20 bytes long |
| Option B: | Is always 40 bytes long |
| Option C: | Is 20 bytes to 60 bytes long |
| Option D: | Depends on MTU |
| | |
| Q12. | The transmission mechanism used by TCP/IP is |
| Option A: | ARP |
| Option B: | IP |
| Option C: | RARP |
| Option D: | PPP |
| | |
| Q13. | Datagram approach and virtual circuit approach are the two popular approaches to |
| Option A: | Circuit switching |
| Option B: | Message switching |
| Option C: | Packet switching |
| Option D: | Datagram switching |
| | |
| Q14. | Stop and wait ARQ is the |
| Option A: | Flow control technique |
| Option B: | Error control technique |

| | |
|---|---|
| Option C: | Congestion control technique |
| Option D: | Session management technique |
| | |
| Q15. | A receiver using stop and wait ARQ sends NAK frames numbered |
| Option A: | 0 and 1 only |
| Option B: | Sequentially beginning with 0 |
| Option C: | Sequentially beginning with 1 |
| Option D: | The frames are not numbered |
| | |
| Q16. | In _____ methods the stations consult each other to find which station has the right to send data. |
| Option A: | Multiple access |
| Option B: | Random access |
| Option C: | Controlled access |
| Option D: | channelization |
| | |
| Q17. | The method of address aggregation is designed for |
| Option A: | Class full addressing |
| Option B: | Class less addressing |
| Option C: | Link addressing |
| Option D: | Hardware addressing |
| | |
| Q18. | What is the host id for address 129.3.109.6? |
| Option A: | 129.3.109 |
| Option B: | 109.6 |
| Option C: | 129.3 |
| Option D: | 6 |
| | |
| Q19. | The header size of ICMP message is |
| Option A: | 16 bytes |
| Option B: | 8 bytes |
| Option C: | 20 bytes |
| Option D: | 40 bytes |
| | |
| Q20. | To report a problem in an IP packet ____protocol is used. |
| Option A: | ICMP |
| Option B: | ARP |
| Option C: | RARP |
| Option D: | IGMP |
| | |
| Q21. | Which of the following is the most commonly used data structure for implementing Dijkstra's Algorithm? |
| Option A: | Max priority queue |
| Option B: | Stack |
| Option C: | Circular queue |
| Option D: | Min priority queue |
| | |

| | |
|---|---|
| Q22. | UDP is called a _____protocol. |
| Option A: | Connection oriented, unreliable |
| Option B: | Connection less, unreliable |
| Option C: | Connection oriented, reliable |
| Option D: | Connection less, reliable |
| | |
| Q23. | TCP is a _____ protocol. |
| Option A: | Message oriented |
| Option B: | Stream oriented |
| Option C: | Block oriented |
| Option D: | Transport oriented |
| | |
| Q24. | The repository of information from points all over the world is |
| Option A: | HTTP |
| Option B: | HTTPS |
| Option C: | WWW |
| Option D: | DNS |
| | |
| Q25. | The IEEE standard for CSMA/CD is |
| Option A: | IEEE 802.3 |
| Option B: | IEEE 802.11 |
| Option C: | IEEE 802.4 |
| Option D: | IEEE 802.5 |

# University of Mumbai
# Examination 2020 under cluster Vidyavardhini's College of Engg Tech

Program: BE Electronics Engineering

**Curriculum Scheme: Revised 2016 (CBCGS)**

**Examination: Third Year Semester VI**

**Course Code: ELX603 Course Name: VLSI Design**

**Time: 1-hour** **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

| | |
|---|---|
| Q1. | In saturation mode operation of MOSFET, gate to drain capacitance is zero due to _____ |
| Option A: | Gate and drain are interconnected |
| Option B: | Channel length is reduced |
| Option C: | Inversion layer doesn't exist |
| Option D: | Drain is connected to ground |
| | |
| Q2. | NA is acceptor impurity in the substrate of a NMOS process, after full scaling the changes in the value of NA will be |
| Option A: | $N_A/S$ |
| Option B: | $S*N_A$ |
| Option C: | $S^2N_A$ |
| Option D: | $N_A/S^2$ |
| | |
| Q3. | The value of Power dissipation (P) in a CMOS circuit after constant voltage scaling changes to |
| Option A: | $P/S^2$ |
| Option B: | $PS^2$ |
| Option C: | PS |
| Option D: | P/S |
| | |
| Q4. | Which of the following statement is true about full scaling of a MOSFET? |
| Option A: | This scaling option attempts to preserve the magnitude of internal electric fields in the MOSFET, while the dimensions are scaled down by a factor of S. |
| Option B: | This scaling option attempts to preserve the magnitude of internal electric fields in the MOSFET, while the dimensions are scaled up by a factor of S. |
| Option C: | This scaling option attempts to increase the magnitude of internal electric fields in the MOSFET, while the dimensions are scaled down by a factor of S. |
| Option D: | This scaling option attempts to decrease the magnitude of internal electric fields in the MOSFET, while the dimensions are scaled down by a factor of S. |
| | |
| Q5. | The steady state power dissipation of CMOS is |
| Option A: | High |
| Option B: | Almost negligible |

| | |
|---|---|
| Option C: | Infinite |
| Option D: | 40W |
| | |
| Q6. | LAMBDA is a measure of the---------- in saturation. |
| Option A: | Output conductance |
| Option B: | Input conductance |
| Option C: | Output Resistance |
| Option D: | Input transconductance |
| | |
| Q7. | The main advantage of implementing CMOS Inverter over Resistive load Inverter |
| Option A: | sharp VTC transition and better noise margin |
| Option B: | single power supply |
| Option C: | smaller overall layout area |
| Option D: | higher power dissipation |
| | |
| Q8. | The number of MOSFETs required for forming AND gate using static CMOS logic is: --- |
| Option A: | 2 |
| Option B: | 4 |
| Option C: | 6 |
| Option D: | 8 |
| | |
| Q9. | When Kn>Kp, threshold voltage of CMOS Inverter move closer to |
| Option A: | Zero |
| Option B: | Infinity |
| Option C: | Midpoint Value |
| Option D: | Supply Voltage |
| | |
| Q10. | In pseudo NMOS inverter, when input voltage goes slightly higher than threshold voltage, the NMOS works in ----------region. |
| Option A: | linear |
| Option B: | Triode |
| Option C: | Saturation |
| Option D: | Cutoff |
| | |
| Q11. | In dynamic logic CMOS circuit, output enters in evaluation mode when clock phi Φ=? |
| Option A: | 0 |
| Option B: | 1 |
| Option C: | 20 |
| Option D: | 30 |
| | |
| Q12. | Measure difference between pass transistor and transmission gate logic is that transmission gate has ----------. |
| Option A: | No difference between both |
| Option B: | Random Failures |
| Option C: | Full output voltage swing |
| Option D: | Zero output voltage |

| | |
|---|---|
| | |
| Q13. | Which of the following statement is true? |
| Option A: | The basic circuit architecture of Zipper CMOS is essentially identical to NORA CMOS, with no exception of the clock signals. |
| Option B: | The basic circuit architecture of Zipper CMOS is essentially identical to NORA CMOS. |
| Option C: | There are lot of differences between Zipper CMOS and NORA CMOS Logic. |
| Option D: | The basic circuit architecture of Zipper CMOS is essentially identical to NORA CMOS, with the exception of the clock signals. |
| | |
| Q14. | Which of the following is not a CMOS logic? |
| Option A: | Domino logic |
| Option B: | Dynamic logic |
| Option C: | Clocked CMOS logic |
| Option D: | Pre-charge logic |
| | |
| Q15. | Which logic is used as refreshing logic in 6T SRAM cell? |
| Option A: | Battery backup |
| Option B: | Pseudo-NMOS logic |
| Option C: | Separate Refreshing circuit |
| Option D: | Static CMOS logic |
| | |
| Q16. | Which element stores the charge in DRAM circuit? |
| Option A: | Resister |
| Option B: | Transistor |
| Option C: | Capacitor |
| Option D: | Inductor |
| | |
| Q17. | Which of the following has the capability to store the information permanently? |
| Option A: | RAM |
| Option B: | ROM |
| Option C: | Both RAM and ROM |
| Option D: | Capacitance |
| | |
| Q18. | The ROM (read only memory) is a _____ |
| Option A: | Sequential circuit |
| Option B: | Combinational circuit |
| Option C: | Magnetic circuit |
| Option D: | Static circuit |
| | |
| Q19. | Which of the following statement is true? |
| Option A: | The complexity of circuit is more in carry look ahead than ripple carry adder circuit. |
| Option B: | The complexity of circuit is less in carry look ahead circuit than ripple carry adder circuit. |
| Option C: | The complexity of circuit is less in Manchester carry chain adder circuit than ripple carry adder circuit. |
| Option D: | The circuit complexity in fast adders is less than that of ripple carry adder circuit. |
| | |

| | |
|---|---|
| Q20. | The main disadvantage of Manchester carry chain is _____ |
| Option A: | Ripple factor |
| Option B: | Propagation delay |
| Option C: | Capacitive load |
| Option D: | Both propagation delay and capacitive load |
| | |
| Q21. | The drawback of ripple carry adder circuit is ----- |
| Option A: | Slow |
| Option B: | Large area |
| Option C: | Both slow and Large area |
| Option D: | Complicated |
| | |
| Q22. | The connecting wires in integrated chips are called as |
| Option A: | Connection |
| Option B: | Interconnect |
| Option C: | Wiring |
| Option D: | PCB |
| | |
| Q23. | Cross talk in VLSI chip occurs due to ------ |
| Option A: | Capacitive coupling between two wires |
| Option B: | Resistance between two wires |
| Option C: | Inductive coupling between two wires |
| Option D: | Interference between two wires |
| | |
| Q24. | Which type of clock distribution is preferred in Chip design? |
| Option A: | T-tree distribution |
| Option B: | I-tree distribution |
| Option C: | H-tree distribution |
| Option D: | U-tree distribution |
| | |
| Q25. | ESD (Electro static discharge) protection circuits have |
| Option A: | Current limiting resistor |
| Option B: | Diode clamps |
| Option C: | Both current limiting resistor and diode clamps |
| Option D: | Resistors |

# University of Mumbai
# Examination 2020 under cluster Vidyavardhini's College of Engg Tech

**Program: BE Electronics Engineering**

**Curriculum Scheme: Revised 2016 (CBCGS)**

**Examination: Third Year Semester VI**

**Course Code: ELX604 Course Name: Signals and systems**

**Time: 1 hour** **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

| | |
|---|---|
| Q1. | Which of the following is an example of amplitude scaling? |
| Option A: | Electronic amplifier |
| Option B: | Electronic attenuator |
| Option C: | Both amplifier and attenuator |
| Option D: | d) Adder |
| | |
| Q2. | Time scaling is an operation performed on _____ |
| Option A: | Dependent variable |
| Option B: | Independent variable |
| Option C: | Both dependent and independent variable |
| Option D: | Neither dependent nor independent variable |
| | |
| Q3. | Y (t) = x (2t) is _____ |
| Option A: | Compressed signal |
| Option B: | Expanded signal |
| Option C: | Shifted signal |
| Option D: | Amplitude scaled signal by a factor of 2 |
| | |
| Q4. | In discrete signal, if y [n] = x [k*n] and k>1 then _____ |
| Option A: | Some samples are lost from x [n] |
| Option B: | Some samples are added to x [n] |
| Option C: | It has no effect on samples |
| Option D: | Samples will be increased with factor k |
| | |
| Q5. | y(t) = sin(x(t-1)) : Comment on its memory aspects. |
| Option A: | Having memory |
| Option B: | Needn't have memory |
| Option C: | Memoryless system |
| Option D: | Time invariant system |
| | |
| Q6. | Construct the inverse system of y(t) = 2x(t) |
| Option A: | y(t) = 0.5x(t) |

| | |
|---|---|
| Option B: | y(t) = 2x(t) |
| Option C: | y(2t) = x(t) |
| Option D: | d) y(t) = x(2t) |
| | |
| Q7. | Comment on the causality of y[n] = x[-n]. |
| Option A: | Time invariant |
| Option B: | Causal |
| Option C: | Non causal |
| Option D: | Time varying |
| | |
| Q8. | Comment on the linearity of y[n] = n*x[n]. |
| Option A: | Linear |
| Option B: | Only additive |
| Option C: | Not scalable |
| Option D: | Non linear |
| | |
| Q9. | Which of the following systems is linear? |
| Option A: | y(t) = sin(x(t)) |
| Option B: | y(t) = log(x(t)) |
| Option C: | y(t) = cos(x(t)) |
| Option D: | y(t) = dx(t)/dt |
| | |
| Q10. | Which of the following systems is stable? |
| Option A: | y(t) = log(x(t)) |
| Option B: | y(t) = exp(x(t)) |
| Option C: | y(t) = sin(x(t)) |
| Option D: | y(t) = tx(t) + 1 |
| | |
| Q11. | For what value of k, will the following system be time invariant?<br>y(t) = x(t) + x(kt) – x(2t) + x(t-1) |
| Option A: | 1 |
| Option B: | 2 |
| Option C: | 3 |
| Option D: | 2.5 |
| | |
| Q12. | In a continuous-time physical system, memory is directly associated with _____ |
| Option A: | Storage registers |
| Option B: | Time |
| Option C: | Storage of energy |
| Option D: | Number of components in the system |
| | |
| Q13. | The convolution of a discrete time system with a delta function gives |
| Option A: | The square of the system |
| Option B: | The system itself |
| Option C: | The derivative of the system |
| Option D: | The integral of the system |
| | |

| | |
|---|---|
| Q14. | How is a time domain system analyzed? |
| Option A: | Study of a system in accordance to changes in its inputs over time |
| Option B: | Study of a system in accordance to changes in its over time |
| Option C: | Study of a system in accordance to changes in its overall structure over time |
| Option D: | Study of a system in accordance to how a system change itself overall in a time |
| | |
| Q15. | What is the frequency domain? |
| Option A: | Analysis of signals in a frequency range |
| Option B: | Analysis of signals in their bandwidth |
| Option C: | Analysis of a signal with respect to its frequency |
| Option D: | Study of a system in accordance to changes in its overall frequency |
| | |
| Q16. | What are the mathematical tools to convert a system from a time domain to frequency domain? |
| Option A: | Fourier series, Fourier transform, Laplace transform, Z-transform |
| Option B: | Fourier series only |
| Option C: | Fourier series and Laplace transform only |
| Option D: | Fourier series, Fourier transform and Laplace transform only |
| | |
| Q17. | What is the rule h*(x+y) = (y+x)*h called? |
| Option A: | Commutativity rule |
| Option B: | Associativity rule |
| Option C: | Distributive rule |
| Option D: | Transitive rule |
| | |
| Q18. | When do DTFT and ZT are equal? |
| Option A: | When $\sigma = 0$ |
| Option B: | When $r = 1$ |
| Option C: | When $\sigma = 1$ |
| Option D: | When $r = 0$ |
| | |
| Q19. | Find the Z-transform of u(-n). |
| Option A: | $\frac{1}{1-z}$ |
| Option B: | $\frac{1}{1+z}$ |
| Option C: | $\frac{z}{1-z}$ |
| Option D: | $\frac{z}{1+z}$ |
| | |
| Q20. | The z-transform of {3,0,0,0,0,6,1,-4} (1 as the reference variable) is _____ |
| Option A: | $3z^5 + 6 + z^{-1} - 4z^{-2}$, $0 \leq \lvert z \rvert < \infty$ |
| Option B: | $3z^5 + 6 + z^{-1} - 4z^{-2}$, $0 < \lvert z \rvert < \infty$ |
| Option C: | $3z^5 + 6 + z - 4z^{-2}$ $0 < \lvert z \rvert < \infty$ |

| | |
|---|---|
| Option D: | $3z^5 + 6 + z^{-1} - 4z^{-2}$, $0 \le \|z\| < \infty$ |
| | |
| Q21. | Given the z-transform pair<br><br>$X[n] \leftrightarrow \frac{32}{z^2 - 16}, \|z\| < 4$<br>The z-transform of the signal x [n-2] is _____ |
| Option A: | $\frac{z^4}{z^2 - 16}$ |
| Option B: | $\frac{(z+2)^2}{(z+2)^2 - 16}$ |
| Option C: | $\frac{1}{(z^2 - 16}$ |
| Option D: | $\frac{(z-2)^2}{(z-2)^2 - 16}$ |
| | |
| Q22. | Find the Z-transform of the causal sequence x(n) = {1,0,-2,3,5,4}. (1 as the reference variable) |
| Option A: | $1 - 2z^{-2} + 3z^{-3} + 5z^{-4} + 4z^{-5}$ |
| Option B: | $1 - 2z^2 + 3z^3 + 5z^4 + 4z^5$ |
| Option C: | $z^{-1} - 2z^2 + 3z^3 + 5z^4 + 4z^5$ |
| Option D: | $z - 2z^3 + 3z^4 + 5z^5 + 4z^6$ |
| | |
| Q23. | Given a discrete time signal x[k] defined by x[k] = 1, for $-2 \le k \le 2$ and 0, for $\|k\| > 2$. Then, y[k] = x[3k-2] is _____ |
| Option A: | y[k] = 1, for k = 0, 1 and 0 otherwise |
| Option B: | y[k] = 1, for k = 1 and -1 for k=-1 |
| Option C: | y[k] = 1, for k = 0, 1 and -1 otherwise |
| Option D: | y[k] = 1, for k = 0, 1 and 0 otherwise |
| | |
| Q24. | A Discrete signal is said to be even or symmetric if X(-n) is equal to _____ |
| Option A: | X(n) |
| Option B: | 0 |
| Option C: | –X(n) |
| Option D: | –X(-n) |
| | |
| Q25. | The Fourier transform of the signal $\delta(t+1) + \delta(t-1)$ is _____ |
| Option A: | $\frac{2}{1 + j\omega}$ |
| Option B: | $\frac{2}{1 - j\omega}$ |

| | |
|---|---|
| Option C: | 2 cos ω |
| Option D: | 2 sin ω |

# University of Mumbai
## Examination 2020 under cluster Vidyavardhini'sCollege of Engg Tech
### Program: BE Electronics Engineering

### Curriculum Scheme: Revised 2016 (CBCGS)

### Examination: Third Year Semester VI

**Course Code: ELXDLO6021** **Course Name: Microwave Engineering**

**Time: 1 hour** **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

| | |
|---|---|
| Q1. | When the propagation constant has negative sign in imaginary part it signifies ……. wave in TWTA. |
| Option A: | Forward |
| Option B: | Constant |
| Option C: | Infinite |
| Option D: | Backward |
| | |
| Q2. | The dominant mode of rectangular waveguide is …… |
| Option A: | $TE_{01}$ |
| Option B: | $TM_{11}$ |
| Option C: | $TE_{10}$ |
| Option D: | $TM_{01}$ |
| | |
| Q3. | For radius r=5 cm air filled circular waveguide with parameter $X'_{11}$= 1.841 what will be the cut-off frequency for dominant $TE_{11}$ mode? |
| Option A: | 1.758 GHz |
| Option B: | 0.967 GHz |
| Option C: | 2.675 GHz |
| Option D: | 3.954 GHz |
| | |
| Q4. | For four port directional coupler, identify correct relation, where I=Isolation, C= Coupling, D= Directivity. Note that I, C, D are in dB. |
| Option A: | D=I+C |
| Option B: | I=C+D |
| Option C: | C=D+I |
| Option D: | I=C*D |
| | |
| Q5. | Indentify correct statement in relation with two cavity klystron amplifier and travelling wave tube amplifier (TWT) (C) |
| Option A: | In two cavity klystron amplifier RF field is moving & electron beam is stationary whereas in TWT both are stationary |
| Option B: | In two cavity klystron amplifier RF field is moving & electron beam is stationary whereas in TWT both are moving |
| Option C: | In two cavity klystron amplifier RF field is stationary & electron beam is moving |

| | |
|---|---|
| | whereas in TWT both are moving |
| Option D: | In two cavity klystron amplifier RF field is stationary & electron beam is moving whereas in TWT RF field is moving & electron beam is stationary |
| | |
| Q6. | Which is not a mode of Gunn Diode? |
| Option A: | Limited Space Charge |
| Option B: | Drift Space Mode |
| Option C: | Transit Time Domain |
| Option D: | Quenched Domain |
| | |
| Q7. | H-plane Tee is also known as …… |
| Option A: | Shunt Tee |
| Option B: | Series Tee |
| Option C: | Magic Tee |
| Option D: | Hybrid Tee |
| | |
| Q8. | Hybrid ring is also called as…… |
| Option A: | TEE junction |
| Option B: | Directional coupler |
| Option C: | Phase shifter |
| Option D: | Rat race circuit |
| | |
| Q9. | Toroidal cavity, Radial cavities are all examples of ……cavities. |
| Option A: | Re-entrant |
| Option B: | hybrid |
| Option C: | TEE |
| Option D: | slotted |
| | |
| Q10. | Circulator allows signals to propagate in……..port. |
| Option A: | diagonal |
| Option B: | forward adjacent |
| Option C: | opposite |
| Option D: | same |
| | |
| Q11. | TWTA is a …… amplifier. |
| Option A: | narrowband |
| Option B: | broadband |
| Option C: | attenuator |
| Option D: | parametric |
| | |
| Q12. | Value of bunching parameter X is…….. for two cavity klystron. |
| Option A: | 2.408 |
| Option B: | 1.732 |
| Option C: | 1.414 |
| Option D: | 1.841 |
| | |
| Q13. | Velocity modulation takes place in……of two cavity klystron. |

| | |
|---|---|
| | |
| Option A: | buncher |
| Option B: | catcher |
| Option C: | cathode |
| Option D: | collector |
| | |
| Q14. | For 2cm × 4cm rectangular waveguide filled with dielectric constant εr = 2.25, what will be the cut-off frequency for dominant $TE_{10}$ mode? |
| Option A: | 1.75 GHz |
| Option B: | 2.75 GHz |
| Option C: | 3.75 GHz |
| Option D: | 2.50 GHz |
| | |
| Q15. | Scattering parameter $S_{12}$ signifies power flow from…….. |
| Option A: | Port 2 to port 1 |
| Option B: | Port 1 to port 2 |
| Option C: | Port 1 to port 1 |
| Option D: | Port 2 to port 2 |
| | |
| Q16. | GUNN diode is a …… resistance device. |
| Option A: | Negative |
| Option B: | positive |
| Option C: | imaginary |
| Option D: | constant |
| | |
| Q17. | Gyrator is a device that produces a phase shift of ……..between the input and output. |
| Option A: | 90º |
| Option B: | 180º |
| Option C: | 45º |
| Option D: | 270º |
| | |
| Q18. | …… microwave diode can be used as a switch. |
| Option A: | PIN Diode |
| Option B: | TRAPATT |
| Option C: | GUNN |
| Option D: | IMPATT |
| | |
| Q19. | Which diode of the following is most noisy diode? |
| Option A: | TUNNEL |
| Option B: | Varactor Diode |
| Option C: | IMPATT |
| Option D: | Schottky Diode |
| | |
| Q20. | In microwave power measurement using bolometer, the principle of working is the variation …….. |
| Option A: | Induction with absorption of power |

| | |
|---|---|
| Option B: | Resistance with the absorption of power |
| Option C: | Capacitance with absorption of power |
| Option D: | Cavity dimensions with heat generated by power |
| | |
| Q21. | Measurement of frequency can be done using……. |
| Option A: | Frequency meter |
| Option B: | Power meter |
| Option C: | Attenuator |
| Option D: | Directional coupler |
| | |
| Q22. | The value of dielectric constant of hollow metallic waveguide will be……. |
| Option A: | 0 |
| Option B: | 1 |
| Option C: | infinity |
| Option D: | 4.33 |
| | |
| Q23. | Zero property of S matrix involves multiplication of element of any row or column to it's …… element of row or column. |
| Option A: | adjacent |
| Option B: | same |
| Option C: | Zero |
| Option D: | infinity |
| | |
| Q24. | Microwave component immediately connected after reflex klystron in microwave bench set is ……. |
| Option A: | Slotted waveguide |
| Option B: | Frequency meter |
| Option C: | Attenuator |
| Option D: | Isolator |
| | |
| Q25. | Guide wavelength in labortrary is measured using …… |
| Option A: | Magic tee |
| Option B: | Directional coupler |
| Option C: | Slotted waveguide with probe |
| Option D: | Isolator |

# University of Mumbai

## Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

**Program: BE Electronics Engineering**

**Curriculum Scheme: Revised 2016 (CBCGS)**

**Examination: Third Year Semester VI**

**Course Code:** ELX DLO6022 **Course Name:** Electronic Product Design

**Time: 1 hour** **Max. Marks: 50**

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| | |
|---|---|
| Q1. | _____ deal with the mental processes and capabilities of human being to process information and interact with data. |
| Option A: | Physical Ergonomics |
| Option B: | Cognitive Ergonomics |
| Option C: | Organizational Ergonomics |
| Option D: | Test cases |
| | |
| Q2. | The purpose of shielding is to control _____from one region to the other. |
| Option A: | the propagation of electric field only |
| Option B: | the propagation of magnetic field only |
| Option C: | the propagation of electric field and magnetic field |
| Option D: | the propagation of either electric field or magnetic field |
| | |
| Q3. | Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital PCBs? |
| Option A: | Decrease in the distance between conductors |
| Option B: | Shielding of clock lines with guard strips |
| Option C: | Reduction in the loop area of circuits |
| Option D: | Avoid running of parallel traces for longer distances especially for asynchronous signals |
| | |
| Q4. | The _____model describes the physical architecture of the system based on real components such as microprocessors, arrayed logics, special purpose processors, analog and digital components, and the many interconnections between them. |
| Option A: | Architectural |
| Option B: | Functional |
| Option C: | Waterfall |
| Option D: | Prototype |
| | |
| Q5. | Black box testing is also known as _____. |
| Option A: | Clear box testing |
| Option B: | Structural testing |
| Option C: | Functional testing |
| Option D: | Glass box testing. |
| | |
| Q6. | IEEE Standard for Software Test Documentation defines _____ as "a |

| | |
|---|---|
| | document describing the scope, approach, resources and schedule of intended testing activities" |
| Option A: | Test Planning |
| Option B: | Black box testing |
| Option C: | White box testing |
| Option D: | Grey box testing |
| | |
| Q7. | Black box tests are _____driven and white box tests are _____driven. |
| Option A: | Logic, data |
| Option B: | Data, logic |
| Option C: | Data, data |
| Option D: | Logic, logic |
| | |
| Q8. | Test cases are created in which phase? |
| Option A: | Test Planning |
| Option B: | Test Specification |
| Option C: | Test Requirement |
| Option D: | Test Configuration |
| | |
| Q9. | Risk management is responsibility of the |
| Option A: | Investor |
| Option B: | customer |
| Option C: | Project team |
| Option D: | Developer |
| | |
| Q10. | Risk Exposure can be defined as: |
| Option A: | Probability + impact |
| Option B: | Probability / impact |
| Option C: | Impact/probability |
| Option D: | Probability × impact |
| | |
| Q11. | A step in the waterfall model that involves a meeting with the customer to understand the requirements. |
| Option A: | Implementation |
| Option B: | Requirement Analysis and Gathering |
| Option C: | System design |
| Option D: | Integration and Testing |
| | |
| Q12. | The presence of error at the time of execution of the software is |
| Option A: | Bug |
| Option B: | Error |
| Option C: | Fault |
| Option D: | Failure |
| | |
| Q13. | End result of Software Requirement Analysis is _____. |
| Option A: | Functional and Behavioral |

| | |
|---|---|
| Option B: | Architectural and Structural |
| Option C: | Usability and Reliability |
| Option D: | Algorithmic and Data Structure |
| | |
| Q14. | _____ is a relative measure of a device, or a system's propensity to be disrupted or damaged by EMI exposure to an incident field or signal. |
| Option A: | Containment |
| Option B: | Immunity |
| Option C: | Susceptibility |
| Option D: | Suppression |
| | |
| Q15. | What effects can be observed if the separate power and ground planes are provided with large conducting surfaces for better decoupling in PCB layouts? |
| Option A: | Increase in self inductance |
| Option B: | Reduction in self inductance |
| Option C: | Stability in self inductance |
| Option D: | Increase in mutual inductance |
| | |
| Q16. | The drawback of using ---------- is that the outer layers of the PCB can occasionally radiate RF energy to the environment, without the protection of a plane on both sides. |
| Option A: | Microstrip |
| Option B: | Stripline |
| Option C: | Grounding |
| Option D: | Image planes |
| | |
| Q17. | Which statement is not correct with respect to image plane? |
| Option A: | An image plane is a layer of copper or similar conductive internal to a PCB. |
| Option B: | This layer may be identified as a voltage plane, ground plane, or 0 V reference plane physically adjacent to a circuit or signal routing layer. |
| Option C: | An image plane reduces ground noise voltage. |
| Option D: | Image planes provide a high-impedance path for RF currents to return to their source. |
| | |
| Q18. | The distance spacing between ground stitch locations in PCB should not exceed ___ of the highest frequency, or harmonic of concern |
| Option A: | λ/2 |
| Option B: | λ/4 |
| Option C: | λ/20 |
| Option D: | λ/10 |
| | |
| Q19. | What is not true with respect to Verification: |
| Option A: | It is Static testing |
| Option B: | It is Dynamic testing |
| Option C: | It is the process of checking that a software achieves its goal without any bugs |
| Option D: | It is the process to ensure whether the product that is developed is right or not. |
| | |
| Q20. | Which of the following elements comprise of all of the passive devices? |
| Option A: | Transformers, TRIACs and DIACs |

| | |
|---|---|
| Option B: | Vacuum Tubes, SCRs and Diodes |
| Option C: | Resistors, Capacitors and SCRs |
| Option D: | Transformers, Inductors and Diodes |
| | |
| Q21. | An ideal op-amp requires infinite bandwidth because |
| Option A: | Signals can be amplified without attenuation |
| Option B: | Output common-mode noise voltage is zero |
| Option C: | Output voltage occurs simultaneously with input voltage changes |
| Option D: | Output can drive infinite number of devices |
| | |
| Q22. | Which among the below mentioned types of redundancy exhibits maximum failure rate? |
| Option A: | Cold standby |
| Option B: | Warm |
| Option C: | Hot or Active |
| Option D: | Tepid |
| | |
| Q23. | The source listings, schematics, and engineering notebooks are which type of document? |
| Option A: | Instructions |
| Option B: | Reviews and reports |
| Option C: | Design documents |
| Option D: | Plans |
| | |
| Q24. | Which of the following should describe the technical terms used in the document? |
| Option A: | Preface |
| Option B: | Glossary |
| Option C: | Acknowledgement |
| Option D: | Index |
| | |
| Q25. | Liability usually refers to a_____, while accountability refers to a_____. |
| Option A: | Hardware, software |
| Option B: | social responsibility, legal responsibility |
| Option C: | Software, hardware |
| Option D: | legal responsibility, social responsibility |

# University of Mumbai
# Examination 2020 under cluster Vidyavardhini's College of Engg Tech

**Program: BE Electronics Engineering**

**Curriculum Scheme: Revised 2016 (CBCGS)**

**Examination: Third Year Semester VI**

**Course Code: ELXDLO6023** **Course Name: Wireless Communication**

**Time: 1 hour** **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

| | |
|---|---|
| Q1. | Frequency reuse can be maximized by------- |
| Option A: | Increasing the size of the cells |
| Option B: | Decreasing the size of the cells |
| Option C: | Increasing the size of the clusters |
| Option D: | Increasing the number of users |
| | |
| Q2. | Cells sectorization is done to ---------- |
| Option A: | Accommodate more traffic |
| Option B: | Accommodate more area |
| Option C: | Save power |
| Option D: | Increase frequency reuse |
| | |
| Q3. | If the cluster size is increased |
| Option A: | The inter-channel interference reduces |
| Option B: | The transmission power increases |
| Option C: | The co-channel interference reduces |
| Option D: | The number of reuse frequency increases |
| | |
| Q4. | Hard handover means ---------- |
| Option A: | Handing over the cell to another mobile |
| Option B: | Changing over the communication channel |
| Option C: | Increase in power while moving to another base station |
| Option D: | Handing over the call to an MSC |
| | |
| Q5. | Which of the following angle is suitable for sectorization? |
| Option A: | $45^o$ |
| Option B: | $60^o$ |
| Option C: | $100^o$ |
| Option D: | $80^o$ |
| | |
| Q6. | Small scale fading describes the -------- in the amplitude and phase of the signal. |
| Option A: | Rapid fluctuations |
| Option B: | instantaneous fluctuations |

| | |
|---|---|
| Option C: | slow fluctuations |
| Option D: | Small fluctuations |
| | |
| Q7. | Free space propagation model is used to predict which of these? |
| Option A: | Transmitted power |
| Option B: | Gain of receiver |
| Option C: | Received signal strength |
| Option D: | Gain of transmitter |
| | |
| Q8. | The Direct sequence spread spectrum (DSSS) exhibits mainly ----------characteristic. |
| Option A: | Bandwidth reduction |
| Option B: | Power control |
| Option C: | Correlation |
| Option D: | Anti jamming |
| | |
| Q9. | The multiple access techniques :TDMA-FDMA together is implemented in which of these ? |
| Option A: | GSM |
| Option B: | IS-95 |
| Option C: | AMPS |
| Option D: | GPRS |
| | |
| Q10. | The effect of spread spectrum modulation is that the bandwidth of the spreaded signal ----- |
| Option A: | Remains constant |
| Option B: | Increases significantly |
| Option C: | Increases marginally |
| Option D: | decreases |
| | |
| Q11. | Which of the following multiple access methods allows all users to simultaneously use the whole bandwidth? |
| Option A: | TDMA |
| Option B: | FDMA |
| Option C: | CDMA |
| Option D: | SDMA |
| | |
| Q12. | Which of these is the reverse channel in IS-95 , CDMA system? |
| Option A: | Pilot channel |
| Option B: | Synchronization channel |
| Option C: | Paging channel |
| Option D: | Access channel |
| | |
| Q13. | In IS-95 system , the synchronization channel is assigned the Walsh code ---- |

| | |
|---|---|
| Option A: | $W_0$ |
| Option B: | $W_1$ |
| Option C: | $W_{32}$ |
| Option D: | $W_{63}$ |
| | |
| Q14. | The flat fading channel is one in which ---------- |
| Option A: | BW of the signal > bw of the channel |
| Option B: | BW of the signal < bw of the channel |
| Option C: | BW of the signal = bw of the channel |
| Option D: | BW of the signal + bw of the channel |
| | |
| Q15. | The Doppler shift is ----when mobile station(MS) is moving away from the direction of arrival of the wave |
| Option A: | Positive |
| Option B: | Negative |
| Option C: | exponential |
| Option D: | constant |
| | |
| Q16. | Which of these identifier in GSM system is used to validate the MS as a valid subscriber? |
| Option A: | IMEI |
| Option B: | MSRN |
| Option C: | IMSI |
| Option D: | LAI |
| | |
| Q17. | A single time slot in TDMA frame of GSM has ----------duration. |
| Option A: | 577 micro seconds |
| Option B: | 4.615 milli seconds |
| Option C: | 120 milli seconds |
| Option D: | 6.12 seconds |
| | |
| Q18. | The uplink frequency of GSM is |
| Option A: | 1800-1900MHz |
| Option B: | 935-960 MHz |
| Option C: | 890- 915kHz |
| Option D: | 890-915 MHz |
| | |
| Q19. | The permanent database of all registered subscribers is maintained in the ---- |
| Option A: | VLR |
| Option B: | AUC |
| Option C: | EIR |
| Option D: | HLR |
| | |
| Q20. | Which of these is a dedicated control channel in GSM? |
| Option A: | AGCH |
| Option B: | SACCH |
| Option C: | PCH |

| | |
|---|---|
| Option D: | RACH |
| | |
| Q21. | Which of these is an air interface between BTS and BSC? |
| Option A: | Um |
| Option B: | A |
| Option C: | A'bis |
| Option D: | Iuc |
| | |
| Q22. | The IS-95 CDMA system, reverse channel employs ------ digital modulation technique. |
| Option A: | BPSK |
| Option B: | Offset QPSK |
| Option C: | OFDM |
| Option D: | QPSK |
| | |
| Q23. | Which of the following systems is a 3G system? |
| Option A: | AMPS |
| Option B: | EDGE |
| Option C: | DECT |
| Option D: | UMTS |
| | |
| Q24. | GPRS supports ----- |
| Option A: | voice |
| Option B: | data |
| Option C: | Voice and data |
| Option D: | video |
| | |
| Q25. | The transmission schemes for uplink and downlink direction in LTE are |
| Option A: | OFDMA & SC-FDMA |
| Option B: | CDMA & FDD |
| Option C: | TDMA & FDMA |
| Option D: | TDMA & FDD |

# University of Mumbai

## Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

**Program: BE Electronics Engineering**

**Curriculum Scheme: Revised 2016 (CBCGS)**

**Examination: Third Year Semester VI**

**Course Code: ELXDLO6024 Course Name: Computer Organization and Architecture**

**Time: 1 hour** **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

| | |
|---|---|
| Q1. | The interval from the time of submission of a process to the time of completion is termed as _____ |
| Option A: | Waiting Time |
| Option B: | Turnaround Time |
| Option C: | Response Time |
| Option D: | Throughput |
| | |
| Q2. | If a RAM chip has n address input lines then it can access memory locations up to |
| Option A: | $2^{(n-1)}$ |
| Option B: | $2^{(n+1)}$ |
| Option C: | $2^{n}$ |
| Option D: | $2^{2n}$ |
| | |
| Q3. | Restoring division and Non-restoring division algorithm are based on |
| Option A: | Addition/subtraction and shift category |
| Option B: | Addition category |
| Option C: | Subtraction category |
| Option D: | Shift category |
| | |
| Q4. | What process happens in an instruction cycle |
| Option A: | It is the process of fetching, decoding and executing the instructions |
| Option B: | It is the process of only decoding. |
| Option C: | It is the process of preparing instructions. |
| Option D: | It is the process of encoding instructions. |
| | |
| Q5. | The CISC architecture stands for _____ |
| Option A: | Computer Instruction Set Complement |
| Option B: | Complete Instruction Set Complement |
| Option C: | Computer Indexed Set Components |
| Option D: | Complex Instruction set Computer |
| | |

| | |
|---|---|
| Q6. | If the control signals are generated by combinational logic, then they are generated by a type of _____ controlled unit. |
| Option A: | Logic |
| Option B: | Software |
| Option C: | Hardwired |
| Option D: | Micro programmed |
| | |
| Q7. | Delay Element method is an example_____. |
| Option A: | Hardwired control unit design |
| Option B: | Hardcore control unit design |
| Option C: | Microprogrammed control unit design |
| Option D: | Macroprogammed control unit design |
| | |
| Q8. | Each of the control steps in the control sequence of an instruction defines the unique combination of _____ in the control word. |
| Option A: | 0's and 1's |
| Option B: | 0's |
| Option C: | controls |
| Option D: | signals |
| | |
| Q9. | In computer performance MIPS stands for |
| Option A: | Millions Of Instructions Per Second |
| Option B: | Millions Of Floating Point Instructions Per Second |
| Option C: | Millions Of Instructions Per System |
| Option D: | Millions Of Floating Point Instructions Per System |
| | |
| Q10. | In Memory Interleaving, the lower bits of the address is used to |
| Option A: | Get the data |
| Option B: | Get the address of the module |
| Option C: | Get the address of the data within the module |
| Option D: | Get the address of the register within the module |
| | |
| Q11. | In memory Hierarchy going from up to down level |
| Option A: | Increasing cost / bit |
| Option B: | Decreasing access time |
| Option C: | Increasing frequency of access |
| Option D: | Increasing capacity |
| | |
| Q12. | The write-through procedure is used ____ |
| Option A: | To write onto the memory directly |
| Option B: | To write and read from memory simultaneously |
| Option C: | To write directly on the memory and the cache simultaneously |
| Option D: | To write onto the cache directly |
| | |
| Q13. | The correspondence between the main memory blocks and those in the cache is given by |

| | |
|---|---|
| Option A: | Hash function |
| Option B: | Mapping function |
| Option C: | Locale function |
| Option D: | Assign function |
| | |
| Q14. | The number of successful accesses to memory stated as a fraction is called as _____ |
| Option A: | Hit rate |
| Option B: | Miss rate |
| Option C: | Success rate |
| Option D: | Access rate |
| | |
| Q15. | The advantage of I/O mapped devices to memory mapped devices is |
| Option A: | The former offers faster transfer of data |
| Option B: | The devices connected using I/O mapping have a bigger buffer place |
| Option C: | The devices have to deal with fewer address lines |
| Option D: | No advantages as such |
| | |
| Q16. | PCI stands for |
| Option A: | Peripheral Component Interconnect |
| Option B: | Peripheral Computer Internet |
| Option C: | Processor Computer Interconnect |
| Option D: | Processor Cable Interconnect |
| | |
| Q17. | Which of the following is the fastest method of bus arbitration? |
| Option A: | Daisy chaining |
| Option B: | Independent request |
| Option C: | Polling |
| Option D: | Priority checking |
| | |
| Q 18. | The SCSI BUS uses _____ arbitration. |
| Option A: | Centralised |
| Option B: | Distributed |
| Option C: | Daisy Chain |
| Option D: | Hybrid |
| | |
| Q 19. | Data hazards occur when: |
| Option A: | Pipeline changes the order of read/write access to operands |
| Option B: | Greater performance loss |
| Option C: | Machine size is limited |
| Option D: | Some functional unit is not fully pipelined |
| | |
| Q 20. | _____ leads to concurrency. |
| Option A: | Serial processing |
| Option B: | Parallelism |
| Option C: | Distribution |
| Option D: | Serialization |
| | |

| | |
|---|---|
| Q 21. | A given application is run on a 64 processor machine and that 70% of the application is parallelizable then the expected speedup improvement is: |
| Option A: | 3.50 |
| Option B: | 3.22 |
| Option C: | 2.33 |
| Option D: | 2.89 |
| | |
| Q 22. | In super-scalar processors, _____ mode of execution is used. |
| Option A: | In-order |
| Option B: | Post order |
| Option C: | Out of order |
| Option D: | Past order |
| | |
| Q 23. | The set of loosely connected computers are called as _____ |
| Option A: | Cluster |
| Option B: | WAN |
| Option C: | Workstation |
| Option D: | LAN |
| | |
| Q 24. | The time lost due to the branch instruction is often referred to as _____ |
| Option A: | Latency |
| Option B: | Branch penalty |
| Option C: | Delay |
| Option D: | Stalling |
| | |
| Q 25. | Uniform Memory Access is applicable for |
| Option A: | Real time applications |
| Option B: | Real-time applications and time-critical applications. |
| Option C: | General purpose applications and time-sharing applications |
| Option D: | Time critical applications |

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: ELX602 and Course Name: Computer Communication and Networks

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

| | |
|---|---|
| Q1. | TCP/IP model does not have _____ layer but OSI model have this layer. |
| Option A: | Session layer |
| Option B: | Transport layer |
| Option C: | Application layer |
| Option D: | Network layer |
| | |
| Q2. | Which layer is used to link the network support layers and user support layers? |
| Option A: | Session layer |
| Option B: | Data link layer |
| Option C: | Transport layer |
| Option D: | Network layer |
| | |
| Q3. | Which address is used to identify a process on a host by the transport layer? |
| Option A: | Physical address |
| Option B: | logical address |
| Option C: | Port address |
| Option D: | Specific address |
| | |
| Q4. | _____cable consists of inner copper core and a second conducting outer sheath |
| Option A: | Twisted pair |
| Option B: | Coaxial cable |
| Option C: | Fiber optic |
| Option D: | Shielded twisted pair |
| | |
| Q5. | In an optical fiber the inner core is _____the cladding |
| Option A: | Denser than |
| Option B: | less dense than |
| Option C: | The same density as |
| Option D: | Another name for |

| | |
|---|---|
| | |
| Q6. | The inner core of optical fiber is _____ in composition |
| Option A: | Glass or plastic |
| Option B: | Copper |
| Option C: | Bimetallic |
| Option D: | liquid |
| | |
| Q7. | RG-59 is used in |
| Option A: | Radio |
| Option B: | Thick Ethernet |
| Option C: | Thin Ethernet |
| Option D: | Cable TV |
| | |
| Q8. | We add r redundant bits to each block to make the length n = k + r. The resulting n-bit blocks are called _____ |
| Option A: | Blockword |
| Option B: | Dataword |
| Option C: | Code word |
| Option D: | Word |
| | |
| Q9. | In a linear block code, the _____ of any two valid Codewords creates another valid codeword |
| Option A: | XORing |
| Option B: | ORing |
| Option C: | ANDing |
| Option D: | NOTing |
| | |
| Q10. | In _____, the station configuration is unbalanced. We have one primary station and multiple secondary stations |
| Option A: | ARM |
| Option B: | NBM |
| Option C: | NRM |
| Option D: | ABM |
| | |
| Q11. | The checksum of 1111 and 1111 is |
| Option A: | 1111 |
| Option B: | 0000 |
| Option C: | 1110 |
| Option D: | 0111 |
| | |
| Q12. | Most packet switches use this principle _____ |
| Option A: | Stop and wait |
| Option B: | Store and forward |
| Option C: | Store and wait |
| Option D: | Stop and forward |
| | |

| | |
|---|---|
| Q13. | If there are N routers from source to destination, the total end to end delay in sending packet P(L-> number of bits in the packet R-> transmission rate) is equal to _____ |
| Option A: | N |
| Option B: | (N*L)/R |
| Option C: | (2N*L)/R |
| Option D: | L/R |
| | |
| Q14. | The required resources for communication between end systems are reserved for the duration of the session between end systems in _____ method. |
| Option A: | Packet switching |
| Option B: | Circuit switching |
| Option C: | Line switching |
| Option D: | Frequency switching |
| | |
| Q15. | In _____ systems, resources are allocated on demand. |
| Option A: | Packet switching |
| Option B: | Circuit switching |
| Option C: | line switching |
| Option D: | Frequency switching |
| | |
| Q16. | Switching in the internet is done by using the datagram approach in packet switching at the _____ |
| Option A: | Data link layer |
| Option B: | Network Layer |
| Option C: | Transport layer |
| Option D: | Physical Layer |
| | |
| Q17. | What is the host id for address 130.8.119.1 |
| Option A: | 8.119.1 |
| Option B: | 119.1 |
| Option C: | 1 |
| Option D: | 130.8.119 |
| | |
| Q18. | The network address in class A without subnetting has _____ zeros in decimal notation. |
| Option A: | 3 |
| Option B: | 2 |
| Option C: | 1 |
| Option D: | 0 |
| | |
| Q19. | Which of the following is false with respect to UDP? |
| Option A: | Connection-oriented |
| Option B: | Unreliable |
| Option C: | Transport layer protocol |
| Option D: | Low overhead |

| | |
|---|---|
| | |
| Q20. | What is the header size of a UDP packet? |
| Option A: | 8 bytes |
| Option B: | 8 bits |
| Option C: | 16 bytes |
| Option D: | 124 bytes |
| | |
| Q21. | …… addresses use 21 bits for the and 8 bits for the portion of the IP address for TCP/IP network. |
| Option A: | Class A |
| Option B: | Class B |
| Option C: | Class C |
| Option D: | Class D |
| | |
| Q22. | If you use either Telnet or FTP, which is the highest layer you are using to transmit data? |
| Option A: | Application |
| Option B: | Presentation |
| Option C: | Session |
| Option D: | Transport |
| | |
| Q23. | In one of the pairs of protocols given below, both the protocols can use multiple TCP connections between the same client and the server. Which one is that? |
| Option A: | HTTP,FTP |
| Option B: | HTTP,TELNET |
| Option C: | FTP,SMTP |
| Option D: | HTTP,SMTP |
| | |
| Q24. | Mostly _____ is used in wireless LAN. |
| Option A: | Time division multiplexing |
| Option B: | Orthogonal frequency division multiplexing |
| Option C: | Space division multiplexing |
| Option D: | Channel division multiplexing |
| | |
| Q25. | The wireless LAN specification is defined by IEEE called _____which covers the data link and physical layer |
| Option A: | IEEEE 802.2 |
| Option B: | IEEE 802.11 |
| Option C: | IEEE 802.3 |
| Option D: | IEEE 802.5 |

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: ELX603 and Course Name: VLSI DESIGN

Time: 1 hour Max. Marks: 50

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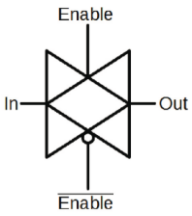
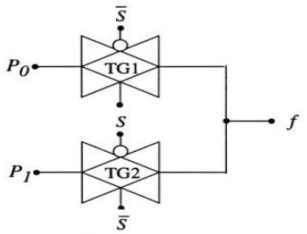
Note to the students:- All the Questions are compulsory and carry equal marks .

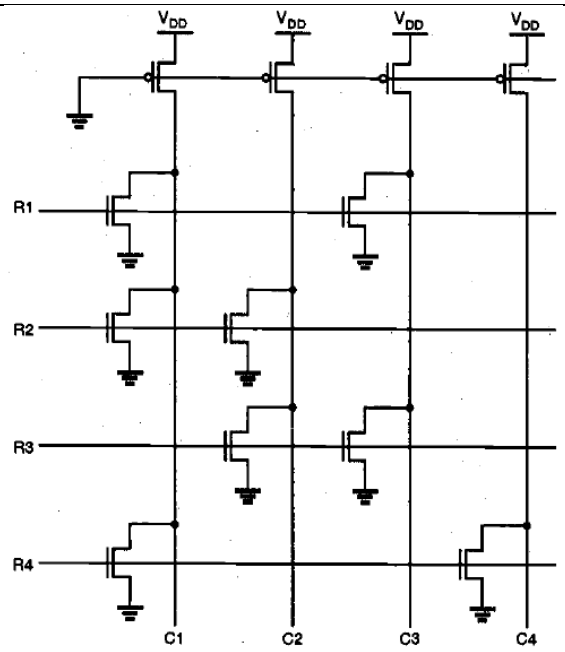
| | |
|---|---|
| Q1. | In case of bipolar technology----------parameter is better compared to CMOS technology? |
| Option A: | static power dissipation |
| Option B: | noise margin |
| Option C: | drive current |
| Option D: | input impedance |
| | |
| Q2. | In cut-off mode, the gate-to-source (Cgs) and the gate-to-drain (Cgd) MOSFET capacitances are both equal to----------. |
| Option A: | zero |
| Option B: | infinite |
| Option C: | 0.5 |
| Option D: | 0.66 |
| | |
| Q3. | In full scaling, the power dissipation of the MOSFET transistor will be reduced by the factor ----------. |
| Option A: | $s$ |
| Option B: | $s^2$ |
| Option C: | $s^3$ |
| Option D: | $s^4$ |
| | |
| Q4. | The value of scaling factor‘s’ is ----------. |
| Option A: | less than one |

| | |
|---|---|
| Option B: | equal to one |
| Option C: | greater than one |
| Option D: | equal to 0.1 |
| | |
| Q5. | MOSFET LEVEL 1 (MOS1) is described by ----------. |
| Option A: | a semi-empirical model |
| Option B: | a square-law current-voltage characteristic |
| Option C: | a detailed analytical MOSFET model |
| Option D: | a Berkeley Short-Channel IGFET Model |
| | |
| Q6. | In case of CMOS inverter, steady state power dissipation is ----------. |
| Option A: | infinite |
| Option B: | virtually negligible |
| Option C: | very large value |
| Option D: | is more than resistive load inverter |
| | |
| Q7. | In case of CMOS inverter, when Vin < Vto,n and Vout =$V_{OH}$, nMOS and pMOS operating in----------mode respectively. |
| Option A: | cut-off and linear |
| Option B: | saturation and linear |
| Option C: | saturation |
| Option D: | linear and cut-off |
| | |
| Q8. | Consider a CMOS Inverter circuit with the following parameters:<br>$V_{DD} = 3.3\ V$ ,<br>$V_{T0,n} = 0.6\ V$,<br>$V_{T0,p} = -0.7\ V$<br>$K_n = 200\ \mu A/V^2$,<br>$K_p = 80\ \mu A/V^2$<br>Calculate $V_{IL}$ |
| Option A: | 1.08 V |

| | |
|---|---|
| Option B: | 1.55 V |
| Option C: | 3.3 V |
| Option D: | 0 V |
| | |
| Q9. | Identify type of passive load inverter from the following list. |
| Option A: | Enhancement Load nMOS Inverter |
| Option B: | Depletion Load nMOS Inverter |
| Option C: | Resistive Load nMOS Inverter |
| Option D: | CMOS Inverter |
| | |
| Q10. | For symmetric CMOS inverter----------. |
| Option A: | (Kn/Kp) = 0.4 |
| Option B: | (Kn/Kp) = 4 |
| Option C: | (Kn/Kp) = 1.5 |
| Option D: | (Kn/Kp) = 1 |
| | |
| Q11. | Identify the following logic symbol.<br>  |
| Option A: | Pass Transistor |
| Option B: | CMOS |
| Option C: | AND gate |
| Option D: | Transmission Gate |
| | |
| Q12. | Name the following circuit implemented using Transmission Gate. |

| | |
|---|---|
| |  |
| Option A: | 2:1 Decoder |
| Option B: | 4:1 Mux |
| Option C: | 1:2 De-mux |
| Option D: | 2:1 Mux |
| | |
| Q13. | Which statement is true for NORA logic? |
| Option A: | In this logic style the static CMOS inverters are replaced by the dynamic logic circuits using nMOSFETs. |
| Option B: | In this logic style the static CMOS inverters are replaced by the dynamic logic circuits using pMOSFETs and nMOSFETs. |
| Option C: | In this logic style the static CMOS inverters are replaced by the $C^2$MOS logic circuits using pMOSFETs. |
| Option D: | In this logic style the static CMOS inverters are replaced by the dynamic logic circuits using pMOSFETs |
| | |
| Q14. | To implement N input static CMOS logic circuit requires ---------- number of transistors. |
| Option A: | N |
| Option B: | N/2 |
| Option C: | 2N |
| Option D: | N+1 |
| | |
| Q15. | Domino logic is same as ---------- with static inverter at the output terminal. |
| Option A: | clocked CMOS logic |
| Option B: | dynamic CMOS logic |

| | |
|---|---|
| Option C: | gate logic |
| Option D: | switch logic |
| | |
| Q16. | Which of the following semiconductor memory uses a MOSFET and a capacitor as its memory cell? |
| Option A: | ROM |
| Option B: | DRAM |
| Option C: | DROM |
| Option D: | SRAM |
| | |
| Q17. | Which is true from the following for Flash Memory? |
| Option A: | It uses neither control gate nor floating gate |
| Option B: | It uses control gate only |
| Option C: | It uses floating gate only |
| Option D: | It uses both control gate and floating gate |
| | |
| Q18. | Which circuit is used for read operation in SRAM? |
| Option A: | Attenuator |
| Option B: | Stabilizer |
| Option C: | Filter |
| Option D: | Sense Amplifier |
| | |
| Q19. | Following is the figure of MOS NOR ROM Cell Array, If R1=R2=R3=0 and R4=1, what value is available at C1, C2, C3, C4? |

| | |
|---|---|
| |  |
| Option A: | 0101 |
| Option B: | 1100 |
| Option C: | 0110 |
| Option D: | 1001 |
| | |
| Q20. | The ripple carry adder is slow as--------. |
| Option A: | the carry bits are transferred through every stage |
| Option B: | the sum bits are transferred through every stage |
| Option C: | the sum and carry bits are transferred through every stage |
| Option D: | the carry bits are transferred through alternate stage |
| | |
| Q21. | Carry generator in full adder has expression ------. |
| Option A: | $g_i = a_i . b_i$ |
| Option B: | $g_i = a_i + b_i$ |
| Option C: | $g_i = a_i - b_i$ |
| Option D: | $g_i = a_i \div b_i$ |
| | |
| Q22. | The Manchester carry scheme is based on building a switch-logic network for the basic equation--------. |

| | |
|---|---|
| Option A: | $C_{i+1} = g_i + c_i$ |
| Option B: | $C_{i+1} = g_i + g_i . c_i$ |
| Option C: | $C_{i+1} = g_i + p_i . c_i$ |
| Option D: | $C_{i+1} = g_i . p_i . c_i$ |
| | |
| Q23. | The high speed adder can be implemented by using --------- scheme. |
| Option A: | sum skip |
| Option B: | carry save |
| Option C: | propagate skip |
| Option D: | generate select |
| | |
| Q24. | An ideal on chip clock distribution network would be the ---------- structure. |
| Option A: | Y-tree |
| Option B: | H-tree |
| Option C: | A-tree |
| Option D: | L-tree |
| | |
| Q25. | The Switching Power (Dynamic power) Dissipation in CMOS is equal to-------. |
| Option A: | $P_{dynamic} = C_{load} . V_{dd}^2 . T$ |
| Option B: | $P_{dynamic} = C_{load} . V_{dd}^2$ |
| Option C: | $P_{dynamic} = C_{load} . f$ |
| Option D: | $P_{dynamic} = C_{load} . V_{dd}^2 . f$ |

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: ELX 604 and Course Name: Signals and Systems

Time: 1hour Max. Marks: 50

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**3009_R16_ETRX_VI_ELX604_QP1**

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Note to the students:- All the Questions are compulsory and carry equal marks .

| | |
|---|---|
| Q1. | Signals which can be defined by mathematical expressions are called as: |
| Option A: | Random Signals |
| Option B: | Deterministic Signals |
| Option C: | Causal Signals |
| Option D: | Static Signals |
| | |
| Q2. | _____ is a physical quantity which varies with any independent variable |
| Option A: | System |
| Option B: | Current |
| Option C: | Signal |
| Option D: | Weight |
| | |
| Q3. | Main step to convert continuous time signal to discrete time is: |
| Option A: | Sampling |
| Option B: | Modulating |
| Option C: | Integrating |
| Option D: | Differentiation |
| | |
| Q4. | Let x1(t) and x2(t) be periodic signals with fundamental periods T1 and T2 respectively. Which of the following must be a rational number for x(t)=x1(t)+x2(t) to be periodic? |
| Option A: | $T_1 + T_2$ |
| Option B: | $T_1 - T_2$ |
| Option C: | $T_1 / T_2$ |
| Option D: | $T_1 * T_2$ |
| | |
| Q5. | If a signal x(t) is processed through a system to obtain the signal $x(t^2)$, then the system is said to be _____ |
| Option A: | Linear |
| Option B: | Non Linear |

| | |
|---|---|
| Option C: | Exponential |
| Option D: | Static |
| | |
| Q6. | Which of the following is an energy signal? |
| Option A: | $x(t) = Ae^{j\Omega t}$ |
| Option B: | $x(t) = A\sin\Omega t$ |
| Option C: | $x(t) = B\cos\Omega t$ |
| Option D: | $x(t) = Ae^{-a\,t}\,u(t)$ |
| | |
| Q7. | If $h_1(n)$ and $h_2(n)$ are impulse responses of two stable LTI systems connected in cascade, then it's overall impulse response is |
| Option A: | $h_1(n) * h_2(n)$ |
| Option B: | $h_1(n) + h_2(n)$ |
| Option C: | $h_1(n) - h_2(n)$ |
| Option D: | $h_1(n) . h_2(n)$ |
| | |
| Q8. | The type of systems which are characterized by input and the output capable of taking any value in a particular set of values are called as: |
| Option A: | Analog |
| Option B: | Discrete |
| Option C: | Continuous |
| Option D: | Digital |
| | |
| Q9. | The system characterized by equation y(t) = ax(t) + b is |
| Option A: | Linear for any value of b |
| Option B: | Linear if b > 0 |
| Option C: | Linear if b < 0 |
| Option D: | Non linear |
| | |
| Q10. | Convolution of the two discrete time sequences $x_1(n) = \{1, 2, 3, 4\}$ and $x_2 = \{1, -1, 0, 1\}$ |
| Option A: | { 1, 1, 1, 1} |
| Option B: | {1, 1, 1, 2, -2, 3, 4} |
| Option C: | {4, 3, 1, 1, 1, 2, -2} |
| Option D: | {1, 1, 1, -2, 2, 3, 4} |
| | |
| Q11. | Laplace Transform of the signal $x(t) = u(t)$ is: |
| Option A: | 1/s |
| Option B: | $1/s^2$ |
| Option C: | s |
| Option D: | 1 |
| | |
| Q12. | The ROC of causal signal x(t) is |
| Option A: | Entire S -plane |
| Option B: | RHS of S- plane |
| Option C: | LHS of S- plane |

| | |
|---|---|
| Option D: | RHS of S- plane except at s = 0 |
| | |
| Q13. | The Laplace transform of x(t)=u(t-2) |
| Option A: | $e^{-2s}\frac{1}{S+2}$ |
| Option B: | $e^{-s}\frac{2}{S}$ |
| Option C: | $e^{-s}\frac{1}{S+2}$ |
| Option D: | $e^{-2s}\frac{1}{S}$ |
| | |
| Q14. | Laplace transform of A sinwt u(t) |
| Option A: | $\frac{Aw}{s^2+w^2}$ |
| Option B: | $\frac{w}{s^2+w^2}$ |
| Option C: | $\frac{As}{s^2+w^2}$ |
| Option D: | $\frac{1}{s^2+w^2}$ |
| | |
| Q15. | The Z –Transform X(z) = $3+2z^{-1}+5z^{-2}+7z^{-3}$ is for the following signal |
| Option A: | {3, 2, 5, 7} centre at 2 |
| Option B: | {3, 2, 5, 7}centre at 3 |
| Option C: | {3, 2, 5, 7} centre at 5 |
| Option D: | {3, 2, 5, 7}centre at 7 |
| | |
| Q16. | Z transform of $3^n$ u(n-10) |
| Option A: | $Z^{-10}\frac{z}{z-3}$ |
| Option B: | $Z^{10}\frac{z}{z-3}$ |
| Option C: | $Z^{-3}\frac{z}{z-10}$ |
| Option D: | $Z^{3}\frac{z}{z-10}$ |
| | |
| Q17. | $Z\{a_1x_1(n)+a_2x_2(n)\} = a_1X_1(z) + a_2X_2(z)$ is the |
| Option A: | Causality Property |
| Option B: | Linearity Property |
| Option C: | Non Linearity Property |
| Option D: | Time Invariant Property |
| | |
| Q18. | Z transform of $2^n$ u(n-2) |
| Option A: | 2(Z-2) |
| Option B: | $\frac{4}{Z^2-2Z}$ |
| Option C: | $\frac{Z}{Z^2-2Z}$ |
| Option D: | $\frac{4}{Z^2-4Z}$ |
| | |
| Q19. | The z-transform of (n-k) is |
| Option A: | $z^{-n}$ |

| | |
|---|---|
| Option B: | $z^{-k}$ |
| Option C: | $\frac{1}{z-n}$ |
| Option D: | $\frac{1}{z-k}$ |
| | |
| Q20. | The Fourier transform of the signal $e^{-4\|t\|}$ is _____ |
| Option A: | $8/(16+\omega)^2$ |
| Option B: | $-8/(16+\omega)^2$ |
| Option C: | $4/(16+\omega)^2$ |
| Option D: | $-4/(16+\omega)^2$ |
| | |
| Q21. | By convolution property of Fourier transform , F{x(t) * h(t)} is |
| Option A: | $\frac{1}{2\pi}\int_{-\infty}^{\infty} X(j\,\Omega)\,\mathrm{H(j}\Omega\,)\,\mathrm{d}\Omega$ |
| Option B: | $X(j\Omega)\mathrm{H(j}\Omega)$ |
| Option C: | $X(j\Omega)-\mathrm{H(j}\Omega)$ |
| Option D: | $X(j\Omega)+\mathrm{H(j}\Omega)$ |
| | |
| Q22. | The Fourier transform of a function $x(t)$ is $X(j\Omega)$. Then, the Fourier transform of $\frac{d}{dx}\,x(t)$ will be |
| Option A: | $\frac{dX(\Omega)}{dF}$ |
| Option B: | $j2\pi\Omega\mathrm{X(}\Omega)$ |
| Option C: | $j\Omega\mathrm{X(j}\Omega)$ |
| Option D: | $\frac{X(\Omega)}{j\Omega}$ |
| | |
| Q23. | If the signal $x(t)$ has half wave symmetry, then, the Fourier series will have only, |
| Option A: | Odd harmonics of sine terms. |
| Option B: | Constant term and odd harmonics of cosine terms. |
| Option C: | Even harmonics of sine terms. |
| Option D: | Odd harmonics of cosine terms |
| | |
| Q24. | The Fourier coefficient '$a_n$' can be calculated as |
| Option A: | $a_n = \frac{2}{T}\int_{-\infty}^{\infty} x(t)\,\mathrm{cosn}\,\Omega_0 t\,dt$ |
| Option B: | $a_n = \frac{2}{T}\int_{0}^{T} x(t)\,\mathrm{cosn}\,\Omega_0 t\,dt$ |
| Option C: | $a_n = \frac{2}{T}\int_{-T/2}^{T/2} x(t)\,\mathrm{sin\ n}\,\Omega_0 t\,dt$ |
| Option D: | $a_n = \frac{2}{T}\int_{0}^{\infty} x(t)\,\mathrm{cosn}\,\Omega_0 t\,dt$ |
| | |
| Q25. | DTFT is periodic with period |
| Option A: | π |
| Option B: | 2π |
| Option C: | π/2 |
| Option D: | π/4 |