

MOCK BOARD EXAM IN ELECTRONICS (B)

May 21, 2009

1. Refers to a form of dc motor-generator with common field coil for both motor and generator.
 - a. motor-generator
 - b. dyna-motor
 - c. polyphase-motor
 - d. synchronous-motor
2. The condition under which there is no power loss due to reflection at a source/load junction owing to the fact that the load impedance is matched to the source impedance.
 - a. alignment
 - b. resonance
 - c. half-power point
 - d. maximum power
3. How do you call an eight element vacuum tube?
 - a. pentode
 - b. hexode
 - c. octode
 - d. septode
4. Electric power refers to _____.
 - a. joule
 - b. watt second
 - c. volt coulomb
 - d. volt ampere
5. _____ is the process of converting AC input to AC output to DC output.
 - a. radiation
 - b. attenuation
 - c. rectification
 - d. variation
6. Clock periods are measured from _____.
 - a. the high level to the low level
 - b. the low level to the high level
 - c. similar points on the clock waveform
 - d. the clock pulse at 50% of its low or high levels
7. Find the flux density in gauss having a flux of 20, 000 Mx through a perpendicular area of 2 cm squared.
 - a. 20, 000 G
 - b. 10, 000 G
 - c. 40, 000 G
 - d. 22, 000 G
8. Process by which a magnetic substance becomes a magnet when it is placed near a magnet.
 - a. electromagnetic induction
 - b. magnetic reflection
 - c. influx of density
 - d. magnetic induction
9. _____ is the physical motion resulting from the forces of magnetic fields.
 - a. torque action
 - b. repulsion
 - c. motor action
 - d. rotation
10. The purpose of the fetch cycle in a computer is to _____.
 - a. obtain instruction
 - b. obtain input data
 - c. obtain memory data
 - d. implement a specific operation
11. The term used to describe the process whereby two transistors with positive feedback are used to simulate the action of the thyristor.
 - a. arcing
 - b. latching
 - c. damping
 - d. switching
12. _____ is a thin polished slice of a semiconductor crystal on which integrated circuit can be fabricated often in duplicate, for cutting into individual dice.
 - a. silicon
 - b. indium
 - c. gallium
 - d. wafer
13. _____ is a single bit comparator.
 - a. wired OR
 - b. exclusive OR
 - c. NOR gate
 - d. Exclusive NOR
14. The output pulses of the logic pulser _____.
 - a. can damage logic circuits
 - b. are too narrow for the logic probe to respond to
 - c. can only force high nodes to low
 - d. can be used to over drive logic nodes high to low
15. _____ is the output of a half-wave rectifier.
 - a. half-wave rectified signal
 - b. square wave signal
 - c. 100% AC signal
 - d. sinusoidal signal
16. An electronic semiconductor behaves as _____ at absolute zero temperature.
 - a. a variable resistor
 - b. a conductor
 - c. a super conductor
 - d. an insulator
17. One advantage of hydraulic actuator type of an industrial robot is _____.
 - a. intrinsically safe in flammable environment such as painting
 - b. clean-no-oil leaks
 - c. lowest operating cost
 - d. lowest initial cost
18. What conditions does resonance occur in an electrical circuit?
 - a. when the power factor is at minimum
 - b. when the inductive and capacitive reactance are equal
 - c. when the square root of the sum of the capacitive and inductive reactances is equal to the resonant frequency
 - d. when the square root of the product of the capacitive and inductive reactances is equal to the resonant frequency

19. A triac is a/an _____ equivalent of two SCRs.
 - a. series
 - b. inverse-parallel
 - c. parallel-series
 - d. parallel
20. Radio equipment will be used 70% at 50 amperes rating for 5 hours, how much capacity of a dry battery is needed?
 - a. 35
 - b. 17.5
 - c. 250
 - d. 175
21. An insulating element or material has capability of _____.
 - a. conducting large current
 - b. storing voltage
 - c. storing high current
 - d. preventing short circuit between two conducting wires
22. One of the following characteristics of a resistive material which do not change its resistive value with respect to time is its _____.
 - a. fidelity
 - b. stability
 - c. sensitivity
 - d. selectivity
23. What do you call the oscillator circuit that uses a tapped coil in the tuned circuit?
 - a. pierce
 - b. Colpitts
 - c. Hartley
 - d. Ultraudion
24. What do you call the flux does not follow the intended path in magnetic circuit?
 - a. linked flux
 - b. lost flux
 - c. leakage flux
 - d. leakage factor
25. Term for the phenomena which occurs in an electrical circuit when the inductive reactance balances with capacitive reactance.
 - a. reactive equilibrium
 - b. reactive quiescence
 - c. high Q
 - d. resonance
26. Type of diode that is made of metal whisker touching a very small semiconductor die.
 - a. a junction diode
 - b. varactor diode
 - c. point contact diode
 - d. zener diode
27. A _____ is a solid-state memory device which depends on the magnetic polarization of domains, usually in a garnet type material.
 - a. magnetic disk
 - b. magnetic core
 - c. magnetic bubble
 - d. magnetic drum
28. The anode of a semiconductor diode indicates a _____ charge during conduction.
 - a. positive
 - b. either depending on design
 - c. neutral
 - d. negative
29. Determine how long a battery will last whose rating is 100 Ah; 24 volts and will run a 300 watts electronic equipment and a 50 watts light.
 - a. 6.85 hours
 - b. 50.05 hours
 - c. 12.00 hours
 - d. 26.65 hours
30. What is the process used to describe analog-to-digital conversion?
 - a. binarize
 - b. linearize
 - c. digitize
 - d. analogize
31. Find the magnetomotive force of a circuit having 10 V across a relay, 50 turns of 2.5 ohms resistance.
 - a. 20 At
 - b. 200 At
 - c. 20, 000 At
 - d. 2000 At
32. Term used in electronic measuring devices when a metal increases resistance due to heat produced by current flowing through them.
 - a. positive resistance coefficient
 - b. negative resistance coefficient
 - c. positive temperature coefficient
 - d. negative temperature coefficient
33. How many symbols are used in octal digital number system?
 - a. 16
 - b. 4
 - c. 8
 - d. 2
34. Which of the following refers to the point where the intensity of magnetic line of force is maximum?
 - a. magnetic pole
 - b. weak pole
 - c. north pole
 - d. great circle
35. How many silver zinc cells in series are needed for a 9V battery?
 - a. 9
 - b. 6
 - c. 3
 - d. 7
36. How many does an ohmmeter behave if its positive lead is connected to the cathode of a diode while negative to anode?
 - a. has infinite high resistance
 - b. has unstable resistance
 - c. has very low resistance
 - d. has decreasing resistance
37. Where does practically all of the RF current flow in a conductor?
 - a. along the surface
 - b. in the center of the conductor
 - c. in the electromagnetic field in the conductor center
 - d. in the magnetic field around the conductor

38. What is a multi-wire connection between digital circuits?
- bus
 - wire wrap
 - multiplexed cable
 - cable ribbon
39. Clock periods are measured from _____.
- similar points on the clock waveform
 - from the time the clock pulses at 50% of its low-to-high transition until it is at 50% of its high-to-low transition
 - from the high level to the low level
 - from the low level to the high level
40. _____ refers to the majority carrier in an N-type semiconductor.
- hole
 - positive ion
 - negative ion
 - electron
41. As you increase the doping level of a crystal diode its voltages _____.
- destabilizes
 - decreases
 - increases
 - stabilizes
42. Find the thevenin's impedance equivalent across R2 of a linear close circuit having 10 V supply in series with the resistors (R1 = 100 ohms and R2 = 200 ohms).
- 6.666 kohms
 - 66.6 ohms
 - 6.66 ohms
 - 666 ohms
43. A solid-state logical device which only gives a "1" output if all inputs are "0" is called a _____ gate.
- NOT
 - NOR
 - NAND
 - OR
44. Which are the three terminals of a bipolar transistor?
- cathode plate and grid
 - base, collector and emitter
 - input, output and ground
 - gate, source and sink
45. To cause a three-state buffer to output 0-1 levels, the following must be true:
- the output enable must be false
 - the output enable must be true
 - the info. Must have been stored in the buffer
 - the signal OE must be at logic 1
46. _____ is a software that converts a high level language program into machine or assembly language program.
- ALU
 - Cross-assembler
 - Compiler
 - CPU
47. The relation of the voltage across an inductor to its current is describe as
- leading the current by 90 degrees
 - lagging the current by 90 degrees
 - leading the current by 180 degrees
 - in phase with the current
48. Discrete optical waves than can propagate in optical waveguide are called _____.
- modes
 - wavefront
 - nodes
 - step index
49. Reducing the plate and screen-grid voltages of an amplifier will _____ control grid cut-off voltage.
- unstable
 - increase
 - stay stable
 - decrease
50. An electrical temperature sensing device which is composed of a pair of different kinds of metal wires joined together in three complete loops.
- Thermocouple
 - Photoconductive cell
 - Psychrometer
 - Flowmeter
51. How much is the equivalent power in watts can a 3 horse power provide?
- 248.66 watts
 - 1492 watts
 - 2238 watts
 - 300 watts
52. _____ is the term used to express the ratio of the change in dc collector current to a change in base current to a change in base current in a bipolar transistor.
- Alpha
 - Delta
 - Gamma
 - Beta
53. The rapidly flashing logic probe tip tells you that logic node being probe.
- has rapidly changing logic activity
 - is truck
 - is at an illegal logic level
 - has unstable logic activity
54. Which of the following is not used in hexadecimal digital symbols?
- A
 - C
 - H
 - F
55. Which _____ are the advantages of using an LED?
- Low power consumption and long life
 - High lumens per cm per cm and low voltage requirements
 - High lumens per cm per cm and low power consumption
 - A current flows when the device is exposed to a light source
56. A small metal cylinder which is a part of electron gun of the oscilloscope and has hole in one end.
- Aquadag
 - Heater
 - Grid
 - Focus control

57. Find the power across the resistor of 5 ohms delivered from a battery of an internal resistance of an internal resistance of 3 ohms and a constant emf of 4 volts.
- 100 watts
 - 60 watts
 - 120 watts
 - 1.25 watts
58. How many diodes will you use in designing a half-wave rectifier power supply?
- Two
 - One
 - Four
 - Three
59. A half-wave rectifier circuit utilizing one half of an ac input cycle have a ripple frequency in its output equivalent to
- 60 cps
 - 120 cps
 - 110 cps
 - 240 cps
60. _____ is a sequence of instruction that tell to the computer machine on how available data shall be processed.
- Program
 - RAM
 - Command
 - Flowchart
61. A battery should not be charged or discharged at a high current in order to avoid this defect.
- Corrosion
 - Sedimentation
 - Buckling
 - Sulphation
62. How does zener diodes widely used?
- Current limiters
 - Variable resistors
 - Voltage regulators
 - Power collectors
63. Power source that converts desired electricity to the other.
- Motor set
 - Motor-generator set
 - Voltage regulators
 - Power collectors
64. Rust in electrical (wire) connections will result to _____.
- inductance
 - conductance
 - voltage
 - resistance
65. An oscillator which operates on the principle of velocity modulation and changing the speed of electron passing through the tube.
- Magnetron
 - Hartley
 - Klystron
 - Colpitts
66. Identify from the following statement that does not refer to the use of signal generation when testing a receiver out of generating either modulated or unmodulated signal.
- Testing of receiver performance
 - Receiver servicing
 - Receiver alignment
 - Display of voltage or current graphs
67. Which of the following refer to a characteristic of a magnetic line of force?
- Travels from south to north through the surrounding medium of a bar magnet
 - Travels back and fourth between the north and south pole of a bar magnet
 - Travels from north to south through the surrounding of a bar magnet
 - Stay stationary between the north and the south of a bar magnet
68. A two-pole, three-phase motor has _____ fields poles.
- 6
 - 8
 - 2
 - 4
69. Where does the charge of standard electronic capacitor stored?
- air
 - plates
 - one of the terminals
 - terminals
70. When power supply is constructed to operate from either 240V or 120V ac lines such that it will have same secondary output its primary when connected from 240V must be _____.
- completely no split
 - split exactly 1/ 3 from one end
 - split exactly 1/ 4 from one end
 - split exactly 1/ 2 from one end
71. How much power does electronic equipment consume, assuming a 5.50 amperes current and a 120 volt power source?
- 66 watts
 - 60 watts
 - 125 .5 watts
 - 660 watts
72. _____ is the reciprocal of capacitance in electronics.
- Elastance
 - Permittivity
 - Conductance
 - Permeability
73. How does aquadag function?
- Limits incoming signals
 - Collects electrons
 - Measures waveforms
 - Capture desired frequency
74. _____ are individual points in graphic display.
- Row
 - Pixel
 - Resolution
 - Column
75. Which of the following equipment is used to determine location in terms of coordinate, this is now widely used in modern communications?
- Global positioning system
 - Hydrometer
 - Altimeter
 - Bearing meter

76. How do you design direct current ammeter such that it could read high current values?
- Open the circuit
 - Employ series resistors
 - Employ series parallel resistors
 - Employ shunt resistor across
77. Signal generators are classified according to frequency which are either a-f or r-f generators, a-f generators are referred to as
- Hartley oscillators
 - Signal oscillators
 - Audio oscillators
 - Frequency oscillators
78. What does an integrated digital circuits generally made of?
- Hybrid
 - Plastic film
 - Monolithic
 - Thin film
79. Other factors remaining constant, what would be the effect on the current flow in a given circuit if the applied potential were doubled.
- It would double
 - It would remain the same
 - It would increase 4 times
 - It would be reduced by 1/ 2
80. What is the equivalent of decimal 7 in octal?
- 21
 - 49
 - 7
 - 14
81. Which one is the paramagnetic material?
- Copper
 - Oxygen
 - Carbon
 - Bismuth
82. Dc generators develop _____ in its armature
- direct current
 - inductance
 - heat
 - alternating current
83. The region in an electronic transistor that is very lightly doped and very thin is referred to the _____.
- collector-base
 - collector
 - base
 - emitter
84. What is the function of flip-flop as logic element?
- Stored binary data
 - Generates clock signal
 - Relay data
 - Makes decision
85. What is the property of the magnetic circuit that resist the establishment of flux?
- Mutual inductance
 - Inductance
 - Reluctance
 - Permeance
86. Find the value of resistor with the following color codes, Brown, White, Orange, Red
- 19 k ohms 2
 - 190 ohms 10%
 - 19 k ohms 20 %
 - 1.9 k ohms
87. What is the term used to express the amount of electrical energy stored in an electrostatic field
- Volts
 - Watts
 - Coulombs
 - Joules
88. What does the second strip of an electronic resistor color code represent?
- Tolerance
 - Temperature
 - Second digit of the value
 - Multiplier
89. Which is not a part of cathode-ray tube oscilloscope?
- Deflection plates
 - Electrons gun
 - Aquadag coating
 - Digital panel meter
90. An amplifier with an input resistance of 600 ohm has an input current of 500 microamperes. It delivers 100 mA to a 1000-ohm load. Calculate the dB gain of the amplifier.
- 48.2 dB
 - 25.2 dB
 - 35.33 dB
 - 50.4 dB
91. What is a program that translate English-like words of high level language into machine language of a computer?
- Compiler
 - Assembler
 - Monitor program
 - Interpreter
92. Thyratrons in industrial electronics refers to _____
- a gas-filled diode
 - a vacuum tube
 - gas-filled triode
 - an electronic triode
93. _____ is a table based on mathematical probabilities that can be used to calculate the number of circuits needed to a group in order to provide a specified grade of service of a given level of traffic.
- Rayleigh distribution table
 - Probability traffic table
 - Busy hour table
 - Poisson table
94. Refers to the ratio of output voltage to the intensity of sound input of an audio instrument which is normally expressed in decibels.
- Selectivity
 - Electrical ratio
 - Frequency response
 - Sensitivity
95. The decimal 36,020 is equivalent to hexadecimal _____.
- 8CB4

- b. 8SBC
 - c. 8BC8
 - d. 884C
96. How do you describe materials whose permeabilities are a little greater than that of free space?
- a. Diamagnetic
 - b. Non- magnetic
 - c. Paramagnetic
 - d. Ferromagnetic
97. Why is the resistance of a conductor different for RF current than for DC?
- a. Because of skin effect
 - b. Because conductors are non-linear devices
 - c. Because the insulation conducts current at radio frequency
 - d. Because of the Heisenberg effect
98. Which network provide the greatest harmony suppression?
- a. L – network
 - b. Pi – L – network
 - c. Pi – network
 - d. Inverse L – network
99. When you demagnetize properly by applying an AC field and then gradually reduced it to zero, it is called
- a. damping
 - b. decaying
 - c. degaussing
 - d. gaussing
100. What is the equivalent of decimal 14 in binary?
- a. 1110
 - b. 1011
 - c. 1101
 - d. 1111

ANSWER (MOCK BOARD EXAM IN
ELECTRONICS-B)

1. B Dyna- motor
 2. D Maximum power
 3. C Octode
 4. D volt ampere
 5. C Rectification
 6. C similar points on the clock waveform
 7. B 10,000 G
- $B = \phi / A$
 $B = 20,000 \text{ Mx} / 2 \text{ cm}^2 = 10,000 \text{ Mx} / \text{cm}^2$
 $B = 10,000 \text{ Gauss (G)}$
8. D Magnetic induction
 9. C Motor action
 10. A obtain instruction
 11. B Latching
 12. D Wafer
 13. D Exclusive NOR
 14. D can be used to overdrive logic nodes high to low
 15. A Half- wave rectified signal
 16. D an insulator
 17. A intrinsically safe in flammable environment such as painting
 18. B When the inductive and capacitive reactances are equal
 19. B inverse- parallel
 20. D 175
- Capacity = $70\% (50\text{A})(5 \text{ h})$
 $= 175 \text{ Ah}$
21. D preventing short circuit between two conducting wires
 22. B stability
 23. C Hartley
 24. C Leakage flux
 25. D Resonance
 26. C Point contact diode
 27. C magnetic bubble
 28. A positive
 29. A 6.85 hours
- Battery life = Ampere- hour rating / Ampere drawn
 $= 100 \text{ Ah} / 1$
where $1 = P / E = (300 + 50) \text{ W} / 24 \text{ V}$
 $1 = 14.58 \text{ A}$
Battery life = $100 \text{ Ah} / 14.58 \text{ A} = 6.857 \text{ hours}$
30. C Digitize
 31. B 200 At
- $\text{mmf} = It, \text{ Ampere- turn (A.t)}$
 $\text{mmf} = (10\text{V} / 2.5\Omega) (50)$
 $\text{mmf} = 200 \text{ At}$
32. C Positive temperature coefficient
 33. C 8
 34. A Magnetic pole
 35. B 6
- utput of one silver zinc cell = 1.5 V
No. of silver zinc cells = $9 \text{ V} / 1.5 = 6$
36. A Has infinite high resistance
 37. A Along the surface
 38. A Bus
 39. A similar points on the clock waveform
 40. D Electron
 41. C increases
 42. B 66.6 ohms
- Thevenin's impedance = $R_1 R_2 / R_1 + R_2$
 $= (100) (200) / 100 + 200$

- $= 66.67 \text{ ohms}$
43. B Nor
 44. B base collector and emitter
 45. A the output enable must be false
 46. C Compiler
 47. A leading the current by 90 degrees
 48. A modes
 49. B increase
 50. A Thermocouple
 51. C 2238 watts
- $1 \text{ hp} = 746 \text{ watts}$
 $3 \text{ hp} = (746)(3) = 2238 \text{ watts}$
52. D Beta
 53. A has rapidly changing logic activity
 54. C H
 55. A Low power consumption and long life
 56. C Grid
 57. D 1.25 watts
- $P = I^2 R$
Where $1 = 4 / 5 + 3 = 0.5 \text{ A}$
 $P = (0.5)^2 (5) = 1.25 \text{ W}$
58. B One
 59. A 60 cps
 60. A Program
 61. D Sulphation
 62. C Voltage regulators
 63. A Motor set
 64. D resistance
 65. C Klystron
 66. D Display of voltage or current graphs
 67. C Travels from north to south through the surrounding medium of bar magnet
 68. C 2
 69. B plates
 70. A completely no split
-
71. D 660 watts
- $p = EI$
 $p = (120) (5.50)$
 $p = 660 \text{ watts}$
72. A Elastance
 73. B Collects electrons
 74. B Pixel
 75. A Global positioning system
 76. D Employ shunt resistor across
 77. C Audio oscillators
 78. C Monolithic
 79. A It would double
 80. C 7
 81. C Carbon
 82. D alternating current
 83. C base
 84. A stores binary data
 85. C Reluctance
 86. A 19 k ohms 2%
 87. D Joules
 88. C Second digit of the value
 89. D Digital panel meter
 90. A 48.2 dB
- $\text{dB}_{\text{gain}} = 20 \log I_2 / I_1 R_2 / R_1$
 $= 20 \log 100\text{mA} / 500\text{mA} \quad 1000 / 600$
 $= 48.2 \text{ dB}$
91. A Compiler
 92. C gas filled triode
 93. D Poisson table

94. D Sensitivity
95. A 8CB4
96. C Paramagnetic
97. A Because of skin effect

98. B Pi-L network
99. C degaussing
100. A 1110