MOCK BOARD IN ELECTRONIC SYSTEMS AND TECHNOLOGY (B)

May 21, 2009

1) What is a period of a wave?
   a) The number of degrees in one cycle
   b) The number of zeros crossing in one cycle
   c) The amplitude of a wave
   d) The time required to complete one cycle
2) Which of the following colors of light rays has the shortest wavelength?
   a) yellow
   b) violet
   c) red
   d) blue
3) A device that connects two dissimilar networks and performs the protocol conversion.
   a) gateway
   b) coupler
   c) transformer
   d) converter
4) A major and basic advantage for the use of klystron.
   a) High power
   b) Efficiency
   c) Lesser noise
   d) Cheaper
5) A band where most military satellite often operate.
   a) Ku
   b) C
   c) X
   d) L
6) The final power amplifier in an FM transmitter usually operates class
   a) AB
   b) C
   c) B
   d) A
7) A radio land station in the land mobile service
   a) Mobile station
   b) Land station
   c) Base station
   d) Ship earth station
8) Where do the maximum current and minimum voltage values on a resonant Hertz dipole exist?
   a) Center of the antenna
   b) Near the end of the antenna
   c) Near the center of the antenna
   d) Ends of the antenna
9) How can the antenna efficiency of a HF grounded vertical antenna be made comparable to that of a half-wave antenna?
   a) By lengthening the vertical
   b) By shortening the vertical
   c) By installing a good ground radial system
   d) By isolating the coax shield from ground
10) At what distance is VHF propagation normally limited?
    a) Around 500 miles
    b) Around 1500 miles
    c) Around 2000 miles
    d) Around 1000 miles
11) What is meant by the term antenna efficiency?
    a) Efficiency = (effective radiated power / transmitted output) x 100%
    b) Efficiency = (radiation resistance / transmission resistance) x 100%
    c) Efficiency = (total resistance / radiation resistance) x 100%
    d) Efficiency = (radiation resistance / total resistance) x 100%
12) This is referred to as a fixed radio station that broadcasts program material from studio to transmitter by radio link.
    a) Aural BC intercity relay
    b) Aural broadcast STL
    c) Short-wave station
    d) Remote-pickup
13) In television broadcasting, vivid strong colors are often referred as
    a) saturation
    b) hue
    c) chrominance
    d) luminance
14) Which of the following is designated as the international distress, safety and calling frequency for radio telephony for stations of the maritime mobile service when using frequencies in the authorized bands between 156 and 174 MHz?
    a) 165.8 MHz
    b) 156.8 MHz
    c) 158.6 MHz
    d) 168.5 MHz
15) Best describe as an amplifier used in radio telephony?
    a) Magnifier
    b) Class B
    c) Class C
    d) Class A
16) The use of the telecommunication for the transmission of signals to initiate, modify or terminate functions of equipment at a distance.
    a) Tracking
    b) Space command
    c) Telecommand
    d) Trunking
17) Best describe as a dip-meter.
    a) a field strength meter

b) an SWR meter
c) a counter
d) a variable LC oscillator with metered feedback current

18) Refers to an emission designation for facsimile
a) J3E and F4E
b) A3J and A4E
c) A3C and F3C
d) R3E and A3E

19) How does a SSB transmitter output power normally expressed?
a) Average power
b) Peak power
c) In terms of peak-to-peak power
d) In terms of peak envelope power

20) An increase in the effective power radiated by an antenna in a certain desired direction at the expense of power radiated in other directions.
a) Antenna gain
b) Antenna back lobe ratio
c) Antenna total ratio
d) Antenna efficiency

21) Designates the sensation of low or high in the sense of the base and treble.
a) SPL
b) Pitch
c) Frequency
d) Intensity

22) Sound intensity is given as:
a) df / dP
b) dP / dA
c) dE / dP
d) dA / dP

23) A method of expressing the amplitude of complex non-periodic signals such as speech.
a) volume
b) frequency
c) pitch
d) wavelength

24) A large speaker having a large diameter (15 cm and above).
a) tweeter
b) triaxial speaker
c) coaxial speaker
d) woofer

25) Another SEG function that allows a person to be superimposed on another scene.
a) special effect generator
b) chroma keying
c) wiper
d) visual effect

26) A form of telecommunication for the transmission of transient images of fixed moving objects.
a) E-mail
b) Internet
c) Television
d) Radio

27) A good example of a pilot tone system used in commercial frequency modulation stations.
a) FDM
b) Time division
c) Stereo multiplexing
d) Frequency modulation

28) A convenient method of determining antenna impedance.
a) reactance circle
b) stub matching
c) Smith chart
d) Trial and error

29) Unity gain antenna.
a) half-wave dipole
b) rhombic
c) dummy
d) isotropic

30) A region in front of a parabolic antenna.
a) Transmission zone
b) All of these
c) Fraunhofer
d) Fresnel

31) An antenna that can only receive a television signal.
a) Isotropic antenna
b) Reference antenna
c) TVRO
d) Yagi antenna

32) Radiation pattern of a discone
a) figure of eight
b) bi-directional
c) omnidirectional
d) unidirectional

33) Radio wave concentration in the direction of the signal emitted by a directional antenna.
a) Back lobe radiation
b) Transmitted signal
c) Side lobe radiation
d) Major lobe radiation

34) The reflector and director of an antenna array are considered as:
a) Transcendental elements
b) Feed-points
c) Driver elements
d) Parasitic elements

35) An electronic equipment used to measure standing wave ratio.
a) Altimeter
b) Multimeter
c) Reflectometer
d) Wavemeter

36) The product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction.
a) Rated power

b) ERP
c) Peak envelope power
d) Carrier power

37) What makes an antenna physically long but electronically short?
a) Adding C in series
b) All of these
c) Top loading
d) Adding L in series

38) Gateway can interconnect LANs that have ___ protocols and formats.
a) the same
b) different or the same
c) totally different
d) none of these

39) Steps to follow to produce PCM signal.
a) quantizing, sampling & coding
b) sampling, quantizing, & coding
c) sampling, coding, & quantizing
d) coding, quantizing, & coding

40) Transmission sent in both directions simultaneously
a) Full duplex
b) Duplex
c) Half-duplex
d) Simplex

41) ____ detects the satellite signal relayed from the feed and convers it to an electric current, amplifies and lower its frequency.
a) Feedhorn
b) Satellite dish
c) Satellite receiver
d) LNB

42) What kind of battery panels is used in some advance satellites?
a) Gallium Arsenide solar panel
b) Germanium based panels
c) Silicon based panels
d) Gallium Phosphate solar panel

43) Footprint refers to coverage area in the globe.
a) Satellite radiation polarization
b) Satellite navigation
c) Satellite radiation pattern
d) Satellite coverage

44) AsiaSat I covers how many countries in Asia?
a) 38
b) 40
c) 44
d) 42

45) Insertion loss of connector-type splices for a single-mode fiber cable.
a) 0.2 dB
b) 0.3 dB
c) 0.09 db
d) 0.38 dB

46) A non-coherent light source for optical communications system.
a) PIN Diode
b) ILD
c) APD
d) LED

47) Type of fiber that has the highest model dispersion.
a) Step-index multimode
b) Step-index single mode
c) Graded index mode
d) Graded index multimode

48) What do you call of a sound transducer that uses a polarizing potential and depends upon capacitance variation for generation of a corresponding potential difference?
a) electrostatic
b) electroacoustic
c) electrodynamic
d) electromagnetic

49) A special type of electrostatic microphone which holds polarization indefinitely without continued application of a polarizing potential.
a) condenser microphone
b) capacitive microphone
c) electret microphone
d) all of the above

50) Sound transducer whose output potential is generated through the flexing of crystalline elements as it is acted by sound waves.
a) piezoelectric
b) electroacoustic
c) electrodynamic
d) electromagnetic

51) An electroacoustic transducer that radiates acoustic power into the air. The acoustic waveform is equivalent to the electrical input wavefrom.
a) electret
b) diaphragm
c) piezoelectric
d) loudspeaker

52) Loudspeaker low frequencies response will be maximum if positioned in a room at the
a) wall center of the floor level
b) center of room
c) center of wall
d) corner

53) Chromatic dispersion is due to the effect of
a) material dispersion
b) wavelength dispersion
c) Rayleigh distribution
d) A and b

54) What wavelength is most commonly used for long distance, high capacity system?
a) 850 nm

b) 1300 nm
c) 1550 nm
d) any of these

55) What wavelength has the minimum loss in optical fibers?
a) 850 nm
b) 1300 nm
c) 1550 nm
d) 1310 nm

56) The easy way to avoid intermodal dispersion is to use
a) graded index fiber
b) plastic fiber
c) glass fiber
d) single mode fiber

57) Intermodal dispersion may be overcome by using
a) coherent light source
b) highly sensitive detectives
c) step index fiber
d) graded index fiber

58) A microcomputer attached to a network requires a ___.
a) dongle
b) network interface card
c) RS-232
d) Software

59) To ___ is to send a file to a remote computer.
a) upload
b) download
c) call
d) transmit

60) ___ network topology has more than one level of host computer.
a) Star
b) Bus
c) Hierarchical
d) Ring

61) It is the term that is used to describe the form or the shape of a network.
a) network model
b) network layer
c) network topology
d) network protocol

62) The term ___ was devised by the telephone company to describe a specific type of equipment but today, it is used to describe a general carrier system, a date rate, and various framing conventions.
a) OSI System
b) T1 System
c) Digital Service Unit
d) Channel Service Unit

63) It describes how terminals are connected logically by an international link while each terminal is operating within its own packet mode data network.
a) X.24
b) X.25
c) RS-232
d) X.75

64) The connectionless-mode network service manages ___ as independent entities.
a) packets
b) routers
c) frames
d) token

65) It is a widely used transport protocol which has the job to deliver and receive data across network boundaries.
a) Data Link Protocol
b) Transmission Control Protocol
c) Data Field
d) Control Field

66) The ___ protocol provides the user interface to the Medium Access Control Sublayer.
a) Data Link Control
b) Logical Link Control
c) IEEE protocol 802.4
d) IEEE protocol 802.3

67) It is the transmission of documents or graphics.
a) E-mail transmission
b) Facsimile transmission
c) Digital transmission
d) Analog transmission

68) A network switching that creates a dedicated temporary connection between computers in a network.
a) Circuit switching
b) Message switching
c) Packet switching
d) Virtual switching

69) A data network that is built and owned by a common carrier.
a) Public data network
b) Private data network
c) Leased line network
d) Node

70) A data communications component that provides control or supporting services for other computers, terminals, or devices in a network.
a) Host
b) Communications controller
c) Cluster controller
d) Interface equipment

71) A conceptual network in which all transmission lines handle digital or digitized data.
a) Local Area Network
b) Wide Area Network
c) Integrated Services Digital Network
d) Public Switch Telephone Network

72) A device that provides a communication between logically or physically separated network.

a) Router
b) Hub
c) Bridge
d) Modem

73) A radio system that uses digital multiplexing technology to increase the capacity of the special mobile radio channels.
a) Electronic Data System
b) Enhanced Radio Technology
c) Enhanced Special Mobile Radio
d) Electronic Mobile System

74) A feature that permits a subscriber to dial a number by calling the number out to the cellular phone, instead of punching the numbers in the phone. This technology has been offered to several models of mobile phones which contribute to convenience as well as driving safety.
a) automatic dialing system
b) voice-activated dialing
c) automatic call system
d) voice-controlled system

75) It is the commonly used cellular network that transmits voice and data over cellular channels using analog technology.
a) A system
b) B system
c) Circuit-switched
d) Amplitude Modulated System

76) The amount of time the subscriber can leave the fully charges cellular portable or transportable phone turned on before the phone will completely discharge the batteries.
a) battery time
b) standby time
c) battery life
d) cellular time

77) A process that provides security for wireless information. Information is encoded so that it can be read by a device with a matching decoding procedure.
a) wireless decoder
b) cellular decoder
c) encryption
d) decoder

78) A measure of the probability that a call offered to a group of trunks or circuits will fail to find idle circuit at the first attempt.
a) busy hour
b) traffic quantity
c) grade of service
d) erlang

79) The aggregate engagement time or occupancy time of one or more traffic paths.
a) busy hour
b) traffic quantity
c) grade of service
d) erlang

80) Continuous hour period that has the maximum average traffic intensity.
a) busy hour
b) traffic quantity
c) grade of service
d) erlang

81) What is the basic measurement of quality in PCM link?
a) slipping rate
b) bit error rate
c) S/N ratio
d) Average power

82) The part of PCM signal which consist of a series of bit stream after quantizing and coding which contains a full sequence or cycle of PCM process.
a) pulse frame
b) period
c) address
d) data

83) In AM, 100% modulation means an increase in total power by ___.
a) 25%
b) 75%
c) 100%
d) 50%

84) Emission with only one sideband transmission
a) A3E
b) 3AJ
c) 11BE
d) H3E

85) In radio emission designation, what letter in the in the first symbol represent a double-sideband type of modulation?
a) A
b) B
c) C
d) D

86) In radio receivers, mixing process means?
a) interference elimination
b) The combination of two signals to produce sum and difference frequencies.
c) The elimination of noise in a wideband receiver by phase differentiation
d) The elimination of noise in a wideband receiver by phase comparison

87) Emission F3F refers to
a) Facsimile
b) Modulated CW
c) RTTY
d) Television

88) Sound intensity is given as:
a. dP/dA
b. dE/dP
c. df/dP
d. dP/dE

89) Sounds we ordinarily hear have intensities in the range from about.
   a. 10^{-6} to 10^{-16} W/m^2
   b. 10^{-5} to 10^{-16} W/m^2
   c. 10^{-8} to 10^{-1} W/m^2
   d. none of these
90) A dome over a stadium has a diameter of 100 m and an area of 10^4 m^2. If the average intensity of sound passing outward of through this surface is 10^{-3} W/m^2, the total power is about
   a. 20W
   b. 10W
   c. 30W
   d. 40W
91) Sound intensity level is given by: in dB:
   a. 10 log I/I_{ref}
   b. 20 log I/I_{ref}
   c. 10 log P_{ref}/I_{ref}
   d. 20 log I_{ref}/P_{ref}
92) The reference intensity for sound in air is:
   a. 10 – 10 W/m^2
   b. 10 – 12 W/m^2
   c. 10 – 16 W/m^2
   d. 10 – 13 W/m^2
93) The intensity of sound which is 10^{-3} W/m^2 in dB
   a. 90
   b. 80
   c. 70
   d. 60
94) Sound pressure level in dB is:
   a. 20 log P/Pref
   b. 10 log P/Pref
   c. 10 log P/ref/P
   d. 10 log I/Iref
95) Pressure amplitude reference level of sound in air:
   a. 20 millipascal
   b. 20 micropascal
   c. 30 micropascal
   d. 40 micropascal
96) A sound pressure amplitude level of 0.4 Pa corresponds to a sound pressure level in dB equal to:
   a. 26
   b. 40
   c. 86
   d. 56
97) An SPL of 58 dB means:
   a. 0.15 Pa
   b. 0.016 Pa
   c. 1.8 Pa
   d. 2 Pa
98) Absence of reception.
   a. skip distance
   b. maximum usable
   c. shadow zone
   d. twilight zone
99) Each point on a spherical wavefront maybe a source of a secondary spherical wavefront.
   a. Snell's Law
   b. Huygen's Principle
   c. Rayleigh's Principle
   d. De Morgan's theorem
100) Determine the field strength at 1 mile for a vertical antenna ¼ wavelengths high when power is 1 kw and antenna loop resistance is 8 ohms.
   a. 0.4 V/m
   b. 5 mV/m
   c. 1 mV/m
   d. 0.2 V/m

ANSWERS (COMPREHENSIVE EXAM IN COMMUNICATIONS)

1. D The time required to complete one cycle
2. B Violet
3. A Gateway
4. A High Power
5. C X
6. B C
7. C Base station
8. A Center of the antenna
9. C By installing a good ground radial system
10. A Around 500 miles
11. D Efficiency = (radiation resistance / total resistance) x 100%
12. B Aural broadcast STL
13. A saturation
14. B 156.8 MHz
15. C Class C
16. C Telecommand
17. D A variable LC oscillator with metered feedback current
18. C A3C and F3C
19. D In terms of peak envelope power
20. A Antenna gain
21. B pitch
22. B dP / dA
23. A volume
24. D woofer
25. B chroma keying
26. C Television
27. C Stereo multiplexing
28. C Smith Chart
29. D isotropic
30. B all of these
31. C TVRO
32. C omnidirectional
33. D major lobe radiation
34. D parasitic elements
35. C Reflectometer
36. B ERP
37. A adding C in series
38. C totally different
39. B sampling, quantizing, & coding
40. B duplex
41. D LNB
42. A Gallium Arsenide solar panel
43. C Satellite radiation pattern
44. A 38
45. D 0.38 dB
46. D LED
47. B Step-index single mode
48. A electrostatic
49. C electret microphone
50. A piezoelectric
51. D loudspeaker
52. D corner
53. D material dispersion and wavelength dispersion
54. B 1300 nm
55. C 1550 nm
56. D single mode fiber
57. D graded index fiber
58. B network interface card
59. A upload
60. C Hierarchical
61. C network topology
62. B T1 System
63. D X.75
64. A packets
65. B Transmission Control Protocol (TCP)
66. B Logical Link Control
67. B Facsimile transmission
68. A Circuit Switching
69. A Public Data network
70. A Host
71. C Integrated Services Digital Network
72. C Bridge
73. C Enhanced Special Mobile Radio
74. B voice-activated dialing
75. C Circuit-switched
76. B standby time
77. C encryption
78. C grade of service
79. B traffic quantity
80. A busy hour
81. B bit error rate
82. A pulse frame
83. D 50%
84. D H3E
85. A A
86. B The combination of two signals to produce sum and difference frequencies.
87. D Television
88. A dP/dA
89. C 10^{-8} to 10^{-1} W/m^2
90. B 10W
    $P = I_A = (10^3 W/m^2)(10^4 m^2) = 10$ W
91. A 10 log I/I_{ref}
92. B 10 – 12 W/m^2
93. A 90
    dB = 10 log (I/I_{ref})
    dB = 10 log $[(10^{-3} W/m^2) / (10^{-12} W/m^2)]$
    dB = 90
94. A 20 log P/Pref
95. B 20 micropascal
96. C 86
    SPL = 20 log (P/P_{ref})
    Where:
    P = pressure amplitude in pascals, Pa
    P_{ref} = 20 μPa
    SPL = 20 log $[(0.4) / (20 \times 10^{-6})]$ = 86

97. B 0.016 Pa
SPL = 20 log (P/P_{ref})
58 = 20 log ($P/20 \times 10^{-6}$)
P = 0.01588 Pa

98. C Shadow zone

99. B Huygen's Principle

100. A 0.4 V/m