**BE (E&TC) – Mobile Communication**

**Unit II - Traffic Engineering and Signalling**

1. If a group of trunk is offered 1200 calls during the busy hour & 20 calls are lost along with the average call duration of about 7 min, then what would be the total duration of congestion period?

a. 21.6 sec

b. 42.2 sec

c. 57.6 sec

d. 98.2 sec

ANSWER: c. 57.6 sec

Explanation:

No explanation is available for this question!

2. Which model of loss system allows the usage of Poisson distribution model for traffic analysis especially by assuming infinite number of users?

a. Lost Calls Cleared (LCC)

b. Lost Calls Returned (LCR)

c. Lost Calls Held (LCH)

d. None of the above

ANSWER: a. Lost Calls Cleared (LCC)

3. Which type of holding time distribution is assumed for the voice conversation on telephone?

a. Constant

b. Exponential

c. Both a and b

d. None of the above

ANSWER: b. Exponential

4. If the queuing systems are connected in tandem configuration, what would be the nature of delay?

a. Commutative

b. Distributive

c. Cumulative

d. Deductive

ANSWER: c. Cumulative

5. In analyzing the traffic performance, how is the number of trunk decided with the provision of the Grade of Service (GoS) especially for larger group?

a. By normal load condition

b. By overload condition

c. By underload condition

d. None of the above

ANSWER: a. By overload condition

6. By which name/s is the Grade of Service (GOS) well-known?

a. Call congestion

b. Time congestion

c. Both a and b

d. None of the above

Answer Explanation

ANSWER: Call congestion

7. Percentage of occupancy can be defined as the percentage of \_\_\_\_\_ for which the server seems to be busy.

a. speed

b. distance

c. time

d. volume

ANSWER: c. time

8. How is the relation between Erlang and CCS specified?

a. 1 Erlang = 36 CCS

b. 1 Erlang = 56 CCS

c. 1 Erlang = 76 CCS

d. 1 Erlang = 96 CCS

ANSWER: a. 1 Erlang = 36 CCS

9. If a telephone exchange serves 1500 users with the average BHCA of about 9000 and CCR is about 50%, what would be the busy hour calling rate?

a. 2

b. 3

c. 4.5

d. 5

ANSWER: b. 3

10. The ratio of number of successful calls to the number of call attempts is known as \_\_\_\_\_\_

a. Call Completion Rate (CCR)

b. Call Block Rate (CBR)

c. Busy Hour Call Rate (BHCR)

d. None of the above

ANSWER: a. Call Completion Rate (CCR)

11. In International Telephone Numbering, a digit or combination of digits characterizing the called numbering area within a country is called \_\_\_\_\_\_\_\_ code.

a. Local

b. CCITT

c. Baudot

d. Area

View Answer:

Answer: Option D

Solution:

12. The last two digits of the loaded cable designation 22E66 indicates

a. Spacing

b. Coil inductance

c. Wire gauge

d. Attenuation

View Answer:

Answer: Option B

Solution:

13. A condition of a telephone handset, in which it can be called, is \_\_\_\_\_\_\_ condition.

a. On-hook

b. Off-hook

c. Busy

d. None of these

View Answer:

Answer: Option A

Solution:

14. When digits 3 is dialed using touch tone system, the amount of time needed to send the tone is

a. 0.1 sec

b. 50 msec

c. 0.25 sec

d. 0.25 sec

View Answer:

Answer: Option B

Solution:

15. A telephone number perform the following operations except

a. To route the call

b. To activate the necessary apparatus for proper call charging

c. To order clearing of connection

d. None of the above

View Answer:

Answer: Option C

Solution:

16. The number to be dialed or called to reach a subscriber in the same local network or numbering area is

a. Local code

b. Area code

c. Toll access code

d. Subscriber No.

View Answer:

Answer: Option D

Solution:

17. That part of the telephone network between the telephone instrument at the subscriber premises and the central office equipment is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

a. Inter-office trunk

b. Tie line

c. Subscriber loop

d. Service drop wire

View Answer:

Answer: Option C

Solution:

18. A line linking telephone central offices is called \_\_\_\_\_\_\_\_\_\_\_\_\_ line.

a. Tie

b. Inter-office trunk

c. Routing

d. Connector

View Answer:

Answer: Option B

Solution:

19. A signalling technique wherein a number of voice paths is carried over one common channel instead of having individual voice channels.

a. In band signalling

b. Out of band signalling

c. Common channel signalling

d. Alternate channel signalling

View Answer:

Answer: Option C

Solution:

20. \_\_\_\_\_\_\_\_\_\_\_ is a unit of telephone traffic defined as one user making a call of one second duration.

a. CCS

b. Call-second

c. Erlangs

d. Call-hour

View Answer:

Answer: Option B

Solution:

21. During a busy hour in a telephone system an average of one call is lost, then the grade of service is considered to be:

a. 1.01

b. 10%

c. 0.10%

d. 0.01

View Answer:

Answer: Option D

Solution:

22. If a busy counts are made during the span of 15 minutes, and the average number of occupied circuit is found to be 8, then the traffic, in Erlang, is:

a. 2

b. 8

c. 6

d. 4

View Answer:

Answer: Option A

Solution:

23. In a standard CCITT group, 12 channels FDM, the carrier frequency of the channel No. 1 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

a. 100 kHz

b. 102 kHz

c. 108 kHz

d. 60 kHz

View Answer:

Answer: Option C

Solution:

24. In the FDM hierarchy, a mastergroup is composed of ten supergroups and is equivalent to

a. 600 channels

b. 60 channels

c. 180 channels

d. 120 channels

View Answer:

Answer: Option A

Solution:

25. The approximation process in PCM creates noise called:

a. Thermal

b. White noise

c. Quantizing noise

d. Agitation noise

View Answer:

Answer: Option C

Solution:

26. The criteria to be considered in designing a telephone system

a. Attenuation limit

b. Resistance limit

c. A or B

d. A and B

View Answer:

Answer: Option D

Solution:

27. This refers to loop AC reference frequency measured in decibels

a. Signalling limits

b. Resistance limits

c. Attenuation limits

d. All of these

View Answer:

Answer: Option C

Solution:

28. An inuction coil which is multiple winding transformer intended to interface a 2-wire circuit to be a 4-wire circuit to permit two-way transmission of signals.

a. Hybrid function

b. Speech transformer

c. Transmission regulation circuit

d. A or B

View Answer:

Answer: Option D

Solution:

29. A subscriber loop signalling method in which signalling information is indicated by the presence and absence of a battery and ground condition on the line at the called end of the trunk.

a. Wet-Dry

b. Reverse Battery

c. High-Low

d. Supervisory

View Answer:

Answer: Option A

Solution:

30. An arrangement where the only possible connection between a number of exchanges is through a single tandem or transit exchange where they are all connected.

a. Mesh

b. Star

c. Composite

d. Ring

View Answer:

Answer: Option B

Solution:

31. CCITT recommendation E-161 recommends that not more than \_\_\_\_\_\_\_\_ digits make up an international number, excluding the international prefix.

a. 10

b. 12

c. 16

d. 20

View Answer:

Answer: Option B

Solution:

32. The following are the transmission media used for telephone systems except:

a. Parallel wire

b. Coaxial wire

c. Fiber optics

d. None of these

View Answer:

Answer: Option D

Solution:

33. The subscriber loop provides the following except:

a. Talk battery

b. Ringing voltage

c. Telephone dial

d. Current during on hook

View Answer:

Answer: Option D

Solution:

34. A method of multiplexing in which the total frequency spectrum available is used by each channel, but not part of the time.

a. FDM

b. TDM

c. SDM

d. GSM

View Answer:

Answer: Option B

Solution:

35. The primary cause of echo and singing is

a. Intermodulation noise

b. Crosstalk

c. Impedance mismatch

d. Thermal noise

View Answer:

Answer: Option C

Solution:

36. For crosstalk to be considered intelligible, at least \_\_\_\_\_\_\_\_ words are intelligible to the listener in a seven second period.

a. 5

b. 6

c. 4

d. 3

View Answer:

Answer: Option C

Solution:

37. Noise that is non-continuous, consisting of irregular pulse or noise spikes of short duration and of relatively high amplitude.

a. Solar

b. Intermodulation

c. Impulse

d. Crosstalk

View Answer:

Answer: Option C

Solution:

38. The signal to noise ratio for voice based on customer satisfaction is

a. 30 db

b. 35 db

c. 15 db

d. 20 db

View Answer:

Answer: Option A

Solution:

39. dBa is a noise unit which uses a tone of 1000 Hz and a power level of

a. -85 dBm

b. -90 dBm

c. 85 dBm

d. -80 dBm

View Answer:

Answer: Option A

Solution:

40. The average intensity in one or more traffic paths occupied in the busy hour by one 2-minute call for an aggregate duration of two minutes.

a. CCS

b. Cm

c. Erlang

d. EBHC

View Answer:

Answer: Option D

Solution:

41. A method of handling lost calls wherein a call failing to immediately find a server, waits enters a queue until one becomes available.

a. Lost Calls Cleared

b. Lost Calls Held

c. Lost Calls Delayed

d. None of these

View Answer:

Answer: Option C

Solution:

42. The main terminal used as cross connection point for cables 300 pairs and above.

a. MTTC

b. MDF

c. DP

d. TTC

View Answer:

Answer: Option B

Solution:

43. For PCM, the sampling theorem states that the sampling frequency must be \_\_\_\_\_\_\_\_\_ the highest frequency contained in the analog signal.

a. twice

b. more than twice

c. less than twice

d. equal to

View Answer:

Answer: Option B

Solution:

44. a group of sixty voice channels with bandwidth of 240 kHz is called a

a. group

b. supergroup

c. mastergroup

d. jumbogroup

View Answer:

Answer: Option B

Solution:

45. On the subscriber’s telephone set employing the touch tone technique, how many signals are transmitted to the telephone exchange for every button that is pressed?

a. 2 VHF signals

b. 1 VHF and 1 AF

c. 2 AF tones

d. 16 AF tones

View Answer:

Answer: Option C

Solution:

46. An electronic circuit which is inserted into the 4-wire trunk path effectively to block the passage of reflected signal energy

a. Echo suppressor

b. Loading coil

c. Loop extender

d. Telephone amplifier

View Answer:

Answer: Option A

Solution:

47. The following are signalling functions except:

a. Ringing signals

b. Address signals

c. Supervisory signals

d. None of these

View Answer:

Answer: Option D

Solution:

48. The standard spacing for 19-D-88 cable loading code is

a. 700 ft.

b. 6000 ft.

c. 4500 ft.

d. 3000 ft.

View Answer:

Answer: Option C

Solution:

49. A telephone exchange has a subscriber loop limit of 1800 ohms, excluding the telephone instrument. What is the farthest distance, in miles, that a subscriber can be located away from the telephone exchange, if AWG 26 cable, which has a resistance of 431 ohms/loop mile, is used?

a. 5.95

b. 8.18

c. 3.9

d. 4.18

View Answer:

Answer: Option D

Solution:

50. The Strowger or step-by-step system falls under what type of switching control system?

a. Manual

b. Progressive

c. Common

d. Automatic

View Answer:

Answer: Option B

Solution:

51. For building telephone facilities, the size of entrance conduit shall not be less than \_\_\_\_\_\_\_ in diameter.

a. 30 mm

b. 50 mm

c. 60 mm

d. 75 mm

View Answer:

Answer: Option B

Solution:

52. In telephony, tone dialing takes \_\_\_\_\_\_\_\_ time than pulse dialing.

a. Less

b. More

c. About the same

d. Can’t be determined

View Answer:

Answer: Option A

Solution:

53. A telephone service wherein calls are rerouted into a preassigned station is called \_\_\_\_\_\_\_\_\_.

a. Camp-On

b. Call Forwarding

c. Call Barring

d. Abbreviated Dialing

View Answer:

Answer: Option B

Solution:

54. What type of control system crossbar switches are operating?

a. Manual

b. Progressive

c. Common

d. Automatic

View Answer:

Answer: Option C

Solution:

55. PABX stands for

a. Private All-purpose Broadcasting Exchange

b. Private Automatic Branch Exchange

c. Public Access Bidirectional Exchange

d. Public Address Broadcasting Exchange

View Answer:

Answer: Option B

Solution:

56. A trunk is

a. The base of a communication tower

b. A telephone line connecting two C.O.’s

c. A line connecting one telephone set to the PABX

d. The structure where antenna are attached

View Answer:

Answer: Option B

Solution:

57. The voice frequency channel pass band is:

a. 0 to 4000 Hz

b. 300 to 3000 Hz

c. To carry only speech

d. All of the preceding

View Answer:

Answer: Option A

Solution:

58. What is used to transmit more than one conversation over a path?

a. Hybrid

b. Tandem

c. Multiplexing

d. All of the above

View Answer:

Answer: Option C

Solution:

59. The common channel interoffice signalling method

a. Uses the same channel for signalling as for the related conversation

b. Is used on local loops

c. Uses a separate channel for signalling only

d. Comes the signalling for one related conversation

View Answer:

Answer: Option C

Solution:

60. Telephone switching is accomplished by

a. Manual Switchboard

b. Step-by-step Switches

c. Crossbar switches

d. Any of the these

View Answer:

Answer: Option D

61. In a wireless communication, base station is connected to central hub called \_\_\_\_\_\_\_

a) PSTN

b) MSC

c) CO

d) PBX

View Answer

Answer: b

62. PSTN stands for \_\_\_\_\_\_\_\_

a) Public switched telephone network

b) Personal switched telephone network

c) Personal switched telephone node

d) Public switched telephone node

View Answer

Answer: a

63. MSCs provide connectivity between PSTN and the base stations.

a) True

b) False

View Answer

Answer: a

64. Communication protocol, CAI stands for \_\_\_\_\_\_\_\_\_\_\_

a) Common air interchange

b) Control air interchange

c) Common air interface

d) Control air interchange

View Answer

Answer: a

65. At the base station, the air interface portion of mobile transmission is passed to MSC.

a) True

b) False

View Answer

Answer: b

66. PSTN is \_\_\_\_\_\_\_\_\_\_\_ and wireless networks are \_\_\_\_\_\_\_\_

a) Highly dynamic, virtually static

b) Static, virtually static

c) Highly dynamic, virtually dynamic

d) Virtually static, highly dynamic

View Answer

Answer: d

67. In public switched telephone network, LATA stands for \_\_\_\_\_\_

a) Local access and transport area

b) Land area and transport area

c) Local access and telephone access

d) Local area and telephone access

View Answer

Answer: a

68. LATAs are connected by a company called \_\_\_\_\_\_\_\_\_

a) Land exchange carrier

b) Local exchange carrier

c) Local control exchange

d) Land area exchange

View Answer

Answer: b

69. A long distance telephone company that collects toll is called \_\_\_\_\_\_\_\_\_

a) LATA

b) LEC

c) PSTN

d) IXC

View Answer

Answer: d

70. Wireless networks are extremely hostile and random nature of radio channel.

a) True

b) False

View Answer

Answer: a

71. The technique for separate but parallel signalling channel is called \_\_\_\_\_\_\_\_

a) Common channel signalling

b) Forward channel signalling

c) Reverse channel signalling

d) Separate channel signalling

View Answer

Answer: a

72. In North America, the cellular telephone signalling network uses \_\_\_\_\_\_\_

a) SS7

b) IXC

c) IS-41

d) PSTN

View Answer

Answer: a

73. What is the concept for accommodating a large number of users in a limited radio spectrum?

a) Grade of service

b) Trunking

c) Multiplexing

d) Multitasking

View Answer

Answer: b

74. On termination of call, the occupied channel is not returned to the pool of available channels in trunking.

a) True

b) False

View Answer

Answer: b

Explanation: In a trunked radio system, each user is allocated a channel on a per call basis. Upon termination of the call, the previously occupied channel is immediately returned to the pool of available channels. It is a method for a system to provide network access to many clients by sharing a set of lines or frequencies instead of providing them individually.

75. In trunking system, when the channel is already in use, the call is blocked or queued.

a) True

b) False

View Answer

Answer: a

76. Who developed the fundamental of trunking theory?

a) Newton

b) Ohm

c) Erlang

d) Einstein

View Answer

Answer: c

77. What is the unit for the measure of traffic intensity?

a) Meters

b) Henry

c) Ohm

d) Erlang

View Answer

Answer: d

78. One Erlang represents \_\_\_\_\_\_\_\_\_

a) One call- hour per hour

b) One call-minute per hour

c) One call- hour per minute

d) Many calls- hour per hour

View Answer

Answer: a

79. What is the measure of the ability of user to access a trunked system during the busiest hour?

a) Trunking

b) Grade of Service (GOS)

c) Multiplexing

d) Sectoring

View Answer

Answer: a

80. GOS is typically given as a likelihood that a \_\_\_\_\_\_\_\_

a) Call is in progress

b) Channels are busy

c) Call is blocked

d) Channel are free

View Answer

Answer: c

81. The time requires to allocate a trunked radio channel to a requesting user is called \_\_\_\_\_\_\_

a) Dwell time

b) Holding time

c) Run time

d) Set up Time

View Answer

Answer: d

82. Average duration of a typical call is called \_\_\_\_\_\_\_\_

a) Holding time

b) Dwell time

c) Set up time

d) Run time

View Answer

Answer: a

83. The average number of call requests per unit time is also known as \_\_\_\_\_\_\_\_

a) Request rate

b) Load

c) Grade o Service

d) Traffic intensity

View Answer

Answer: a

84. Traffic intensity offered by each user is the product of \_\_\_\_\_\_\_\_\_\_

a) Set up time and holding time

b) Call request rate and holding time

c) Load and holding time

d) Call request rate and set up time

View Answer

Answer: b

85. AMPS cellular system is designed for a GOS of \_\_\_\_\_ blocking.

a) 10%

b) 50 %

c) 2%

d) 1%

View Answer

Answer: c

86. Blocked calls cleared formula is also known as \_\_\_\_\_\_\_ formula.

a) Erlang C

b) Erlang A

c) Erlang D

d) Erlang B

View Answer

Answer: d

87. Blocked calls delayed formula is also known as \_\_\_\_\_\_\_

a) Erlang A

b) Erlang B

c) Erlang C

d) Erlang D

View Answer

Answer: c