يتكون هذا الاختبار من (100) سؤال موضوعي من نوع الاختيار من متعدد، الإجابة عنها إجبارية. ظلل بقلم الرصاص بشكل
غامق الدائرة التي تشير إلى الإجابة الصحيحة في المكان المخصص لذلك في نموذج الإجابة المرفق.

Digital Communication and Modulation Technique

1. **The signal which takes unlimited number of values during limited range of time:**

   a- digital   b- analogue

   c- discrete   d- sampling

2. **The signal which takes unlimited number of values during only separately points of time:**

   a- digital   b- analogue

   c- discrete   d- continuous

3. **According to Fourier series analysis, any composite signal is a combination of simple sine waves and:**

   a- Different frequencies

   b- Different amplitude

   c- Different phase

   d- Different , amplitude , frequencies and phases

4. **Wideband transmission by using modulation means:**

   a- change digital to analogue

   b- change digital to digital ,bit rate is lower

   c- change analogue to digital

   d- change analogue to analogue , the frequency is lowest

5. **Discrete signal is analogue signal that is:**

   a- defined at only separate points of time.

   b- sharing with analogue signal in limited values.

   c- sharing with analogue signal in unlimited values.

   d- defined at different points of voltages.

6. **The most common technique used to change analogue signal to digital data:**

   a- ASK   b- PPM

   c- PCM   d- Sampling theorem

7. **Modulation is used to :**

   a- Send the signal at the same time.

   b- Reduce the antenna length to be 1/4 of the wavelength.

   c- Send the signal to the limit distance.

   d- Reduce the antenna length to be 1/8 of the wavelength

8. **For a given equation x(t)=4sin(600Πt), which of the following frequencies satisfy sampling theorem:**

   a- 580Hz   b- 550Hz

   c- 1200Hz   d- 200Hz

9. **From previous question (8), which of the following frequencies equals Niquest rate:**

   a- 580 Hz

   b- 600Hz

   c- 1200Hz

   d- 550Hz

10. **From previous question (8), which following frequencies causes aliasing error:**

    a- 580 Hz

    b- 1200Hz

    c- 600Hz

    d- 1000Hz

11. **First step to get PWM is:**

    a- PPM

    b- PAM

    c- PCM

    d- ASK

12. **Encoding system (NRZ-1) to transfer data of 10 Mbps, the average sampling rate will be:**

    a- 500 Baude

    b- 500 KBaude

    c- 100 Baude

    d- 100 KBaude

13. **From previous question (12) ,the minimum bandwidth is:**

    a- 500 Hz

    b- 1000KHz

    c- 100Hz

    d- 500KHz

14. **One of following pulse modulation techniques is less immune to noise:**

    a- PPM

    b- PAM

    c- PWM

    d- all pulse modulation has constant noise

15. **For an equation X(t)=8sin(628t); the band width is 200Hz and the number of bits used in the quantizer is 3. Then, the new wideband is:**

    a- 800Hz

    b- 600Hz

    c- 1200Hz

    d- 400Hz

16. **From previous question (15), SNR is for signal after quantization:**

    a- 19.82dB

    b- 14.32 dB

    c- 35.66 dB

    d- 18.92 dB

17. **From question (15), the number of quantization levels:**

    a- 4

    b- 2

    c- 16

    d- 8

18. **From question (15) the dynamic range for the signal is:**

    a- 8

    b- 4

    c- 16

    d- 24

19. **which of the following multiplexing techniques used for digital signals:**

    a- FDM

    b- TDM

    c- WDM

    d- PPM

20. **In digital modulation, the modulation scheme which has minimum (BER) for SNR:**

    a- incoherent and synchronized

    b- coherent and synchronized

    c- coherent and a synchronized

    d- Incoherent and not synchronized

Network Transmission media

21. **The antenna radiation of energy is more efficient when**

   a-   the time intervals between +Ve and – Ve half cycles is short.

   b-   the time intervals between +Ve and – Ve half cycles is long .

   c-   the mid- point impedance is more capacitive.

   d-   the mid- point impedance is more inductive

22. **Which of the following statements is correct?**

   a-   The attenuation is the decreasing dramatically in the wave inversely proportional to the distance

   b-   The attenuation is the decreasing dramatically in the wave proportional to the distance

   c-   The attenuation is the suddenly decrease in the wave and does not depend on the distance

   d-   The attenuation is the increasing dramatically in the wave

23. **The wavelength for the Amman-broadcasting wave (8001 KHz) is**

a-	374.53 Km	b-	3740.53 Km
c-	374.53 m	d-	3740.53 m

24. **The free space impedance equals to**

a-	3770 Ω	b-	37.7 Ω
c-	3.77 Ω	d-	377 Ω

25. **The incident angle for a beam passing from air to water is 60 degree, if the refractive index for water is 1.33, then the refraction angle is**

a-	40.62 degree	b-	60 degree
c-	21.5 degree	d-	55.7 degree

26. **When the two components of electric field are equal in magnitude, the electromagnetic wave polarization is:**

a-	elliptical	b-	spherical
c-	circular	d-	horizontal

27. **An incident beam of frequency less than 30 MHz arrive the sky layers which have the refractive indexes as follows :n1>n2>n3>n4 . The beam will be**

   a-   Reflected back to the earth

   b-   Pass-through and does not come back

   c-   Reflected back to the earth at the same incident angle

   d-   Reflected only by E layer

28. **Which of the following terms does not apply to the Yagi-array:**

a-	parabolic antenna	b-	Bi- directional radiation.
c-	balance load.	d-	folded dipole.

29. **The polarization of the surface waves is:**

   a-   Vertical to prevent short circuits on the magnetic component of the wave

   b-   Vertical to prevent short circuits on the electric component of the wave

   c-   Horizontal to prevent short circuits on the magnetic component of the wave

   d-   Horizontal to prevent open circuits on the electric component of the wave

30. The spectrum band (30 – 300) MHz is called:

a- HF

b- SHF

c- VHF

d- EHF

31. The ionosphere layer at the night is composed from:

a- F3.F2,F1.D

b- F

c- F.D,E,E1

d- F2,F1,D,E

32. The optical source that is used with single mode fiber optic is:

a- phototransistor

b- LASER

c- LED

d- photodiode

33. The voltage reflection index in the transmission line in the case of (ZL=0) is:

a- 1

b- -1

c- 0

d- ∞

34. To build $\lambda/2$ dipole to receive a 100MHz broadcast, the actual optimum physical length of the antenna must be :

a- 1.43 meter

b- 5 meter

c- 2.57 meter

d- 5.7 meter

35. The optical power of 50 Km from a 0.1 mW source on a single mode fiber that has 0.25 dB/Km loss, is :

a- P = 5.62 w

b- P = 10 w

c- P = 15 w

d- P = 15.62 w

36. The matching impedance for the antenna with equipment occurs when:

a- Increasing the capacitance

b- Canceling the effect of capacitance and impedance

c- Increasing the inductance

d- Canceling the ohmic resistance

37. A parabolic reflector is commonly used as:

a- a primary antenna

b- a secondary antenna

c- a wide beam antenna

d- less antenna intensity.

38. Horn feed is used with a parabolic reflector to :

a- increase the gain of the system .

b- increase the beam width of the system.

c- reduce the size of the reflector.

d- reduce the size of the director.

39. The velocity factor of a transmission line.

a- is higher for a solid dielectric than for air.

b- depends on the dielectric constant of the material used.

c- increases the velocity along the transmission line.

d- is zero if Zo=ZL.

40. **The lowest attenuation of the following fiber types is :**

a- Single mode step index

b- Multimode graded index

c- Multimode step index

d- Single mode graded index

Routing and Switching

41. **The valid configuration of the router is stored in:**

a- EEPROM

b- NVRAM

c- DRAM

d- Flash

42. **Which router's password must be configured for long-distance configuration:**

a- Telnet

b- Enable secret

c- Enable

d- console

43. **The router mode that is used to erase the startup-config is:**

a- Global mode

b- Privileged mode

c- User mode

d- Interface mode

44. **The command that shows whether a DTE or a DCE cable is connected into serial 1 is:**

a- Sh int s1

b- Show controllers serial 1

c- Sh in serial 1

d- Show serial 1 controllers

45. **Which of the following commands will show the current configuration of the RAM:**

a- Show backup-config

b- Show version

c- Show running-config

d- Show startup-config

46. **The command :[Gateway(config)# ip route 0.0.0.0.0.0.0.0 217.124.6.1] refers to:**

a- Static routing

b- Default routing

c- Dynamic routing (RIP)

d- Dynamic routing (IGRP)

47. **If your routing table has a static, a RIP and an IGRP route to the same network, which route will be used to route packets by default?**

a- Any available route

b- Static route

c- RIP rout

d- IGRP route

48. **What does RIPv2 use to prevent routing loops?**

a- CIDR

b- Authentication

c- Classless masking

d- Split horizon

49. **The command that is used to stop RIP routing updated from exiting out an interface but still receive RIP route updates is:**

a- Router(config-if)#no routing

b- Router(config-if)#passive interface

c- Router(config-router)#passive-interface s0

d- Router(config-router)#no routing updates

50. The best CIDR for a point-to-point WAN connection in the VLSM network in order to save the waste in IP addresses is:

a- /29
b- /30

c- /31
d- /32

51. Which of the following is a link-state routing protocol?

a- IGRP
b- RIPv2

c- RIPv1
d- OSPF

52. Which routing protocol has an administrative distance of 100?

a- RIPv1
b- EIGRP

c- RIPv2
d- IGRP

53. The routing protocol that can not support VLSM is

a- RIPv1
b- OSPF

c- EIGRP
d- IGRP

54. In classification of dynamic protocols, the classful protocol is:

a- IGRP
b- RIPv1

c- EIGRP
d- RIPv2

55. In route discovery and maintenance, the table that stores the route advertisements about every route in the internetwork received form each neighbor is:

a- Topology table
b- Route table

c- Neighborship table
d- RTP table

56. The RIP protocol uses a maximum hop counts of:

a- 255
b- 15

c- 0
d- 120

57. A switch has been configured for three different VLANs: VLAN2, VLAN3 and VLAN4 . A router has been added to provide communication between the VLANs. What type of interface is necessary on the router if only one connection is to be made between the router and the switch?

a- 10Mbps ethernet
b- 56Kbps serial

c- 100Mbps ethernet
d- 1Gbps ethernet

58. Which of the following commands sets a trunk port an a 2950 switch?

a- Trunk on
b- Switch port trunk on

c- Trunk all
d- Switch mode trunk

59. The switching topology that reduces the size of a broadcast domain is:

a- LSL
b- 802.1Q

c- VLANs
d- STP

60. Which protocol reduces administrative overhead in a switched network by allowing the configuration of a new VLAN to be distributed to all the switches in a domain?

a- STP
b- DHCP

c- VTP
d- ISL

Principles of Telecommunications

61. يبلغ تردد الإشارة $S(t) = 4 \cos (10000\pi)t$:

    ب-   20 KHz   ا-   5 KHz

    د-   10000 KHz   ج-   10 KHz

62. يكون معامل التعديل الترددي (m_f) في تعديل ال WBFM له قيم على النحو:

    ب- $m_f >> 1$ ا- $m_f > 0$

    د- $m_f << 1$ ج- $1 > m_f > 0$

63. إذا علمت أن الموجة المعدلة تعديل تردد FM معطاة بالعلاقة:

$$V(t) = 15 \cos (10^8 t + 2 \sin 628 t)$$

فإن انحراف التردد Δf يساوي:

    ب-   100Hz   ا-   50Hz

    د-   200Hz   ج-   150Hz

64. التردد الحامل للصور في قناة تلفزيونية تشغل الحيز الترددي (76MHz – 70) مقداره :

    ب-   47.5 MHz   ا-   75.75 MHz

    د-   75.25 MHz   ج-   71.25 MHz

65. تبلغ القيمة الفعالة (RMS) للفولتية في الإشارة $S(t) = 5 \sin 1000t$ قيمة مقدارها:

    ب-   3.535 V   ا-   5V

    د-   7.07 V   ج-   10V

66. إذا كان الجهد الداخل لمكبر يساوي (1 V) والخارج منه يساوي (10 V)، ما مقدار الكسب لهذا المكبر إذا كانت المقاومة والداخلية والخارجية له متساوية؟

    ب-   20 dB   ا-   10 dB

    د-   -20 dB   ج-   -10 dB

67. يرمز لمستوى القدرة النسبي بالرمز:

    ب-   dBm   ا-   dB

    د-   dBmo   ج-   dBr

68. من الأمثلة على التعديل النبضي القياسي:

    ب-   FM   ا-   PAM

    د-   AM – (DSB-TC)   ج-   FSK

69. يسمى نوع التعديل الذي يتغير فيه تردد الإشارة الحاملة تبعاً للتغير اللحظي لإشارة المعلومات المرسلة بالتعديل:

    ب-   الإتساع ذو الحاملة المحذوفة   ا-   الطوري

    د-   الترددي   ج-   الإتساع مع إرسال الحاملة

70. عدلت الموجة الحاملة $Vc(t) = 4\cos (2\pi * 10^6)t$ بموجة صوتية ذات $Vm(t) = 3 \sin (2\pi * 10^4)t$ تعديلا سعوياً ذو الجانبين بدون الحامل، فإن تردد الحزمة الجانبية العليا للإشارة المعدلة يكون مساوياً لـ:

    ب-   990 KHz   ا-   1000 KHz

    د-   10 KHz   ج-   1010 KHz

71. الدائرة المسؤولة عن التخلص من التذبذبات في مستقبلة FM:

اـ المحدد   بـ المميز

جـ مكبر متوسط   دـ وصلة الفراكتور

72. إذا كان الانحراف الأقصى في التردد **10KHz** وتردد إشارة التعديل **15KHz** فإن عرض النطاق باستعمال كارسون:

اـ 10 KHz   بـ 25 KHz

جـ 15 KHz   دـ 50 KHz

73. في تعديل الإتساع، إذا كان أقصى اتساع للإشارة الحاملة يساوي **6V**، وأقصى اتساع للإشارة المحمولة يساوي **4V**، فإن معامل التعديل يساوي :

اـ 1.5   بـ 2

جـ 0.67   دـ 1

74. عدلت موجة حاملة ذات العلاقة $Vc(t)=10 \sin(2\pi * 10^6)t$ بموجة صوتية ذات العلاقة $Vm(t) = 5 \cos (2\pi * 2000)t$ على نظام (**DSB-TC**) ، فإذا كان معامل التعديل = **0.9** ومقاومة الدائرة = **500Ω** ، فإن القدرة الكلية لهذا التعديل:

اـ 140 mW   بـ 40 mW

جـ 100 mW   دـ 4 mW

75. اذا كانت الموجة المعدلة **FM** معطاة بالعلاقة التردد الحامل هو (التردد بالناقل):

$$VFM(t) = 20 \cos (2\pi*100*10^6t + \cos (2\pi*1000t))$$

اـ 1KHz   بـ 100 KHz

جـ 101 MHz   دـ 100 MHz

76. من الطرق المباشرة للكشف في مستقبلة **FM**:

اـ PLL   بـ Foster Sealy

جـ VCO   دـ Varactor

77. الاشارة السالبة في جداول بيسل تعني فرق صفحة بمقدار:

اـ 90°   بـ 360°

جـ 180°   دـ 45°

78. التعديل النبضي الذي يحتاج إلى أكبر عرض حزمة هو :

اـ PCM   بـ DM

جـ PPM   دـ PAM

79. أدخلت الإشارة الجيبية المرسلة **S(t)** على نظام **PCM** يعمل على مشفر (**4 bits**)، إذا كان **Sp=4V** هي قمة الإشارة الجيبية المراد أخذ عينات منها و **Sp=-4V-** هي قاع تلك الإشارة، عندها يكون أقصى خطأ كمي لهذا النظام يساوي:

اـ 0.125 V   بـ 0.5 V

جـ 0.25 V   دـ 1 V

80. في إحدى التقنيات المستخدمة لتقليل الحزمة (**Bandwidth**) المستغلة في التحويل من إشارة خطية إلى رقمية (**Bandwidth reduction techniques in ADC**) ، تسمى مشكلة عدم استطاعة الدرج (**Stair Case**) تتبع الإشارة الأصلية المرسلة بـ :

اـ خطأ التكميم   بـ ميل الحمل الزائد (Slope over load)

جـ الخطأ الحبيبي (Granular noise)   دـ التشويش الأبيض

Network Essentials

81. One of the following is considered ad an application program:

a- Linux   b- 3D MAX

c- Unix   d- Windows XP

82. **The hybrid topology of the following is:**

a- Star   b- Bus

c- Ring   d- Bus - Star

83. **The equivalent binary for the decimal number $(350)_{10}$ is:**

a- 0111101010   b- 0101010111

c- 1111100000   d- 0101011110

84. **The Ethernet algorithm which senses the lines carrying-data to prevent collision domain among nodes is abbreviated as (stands for):**

a- CSMA/CD   b- MSCA/CD

c- SCMA/CD   d- CSAM/CD

85. **What is subnet ID for the host having the IP address (200.10.5.68/28):**

a- 200.10.5.56   b- 200.10.5.64

c- 200.10.5.32   d- 200.10.5.0

86. **The peer layer in the TCP/IP model to the network layer in the OSI model is:**

a- Internet   b- Application

c- Transport   d- Network access

87. **In the VLSM network, the mask that must be used for the point-to-point connection over WAN to reduce the waste of IP addresses is:**

a- /28   b- /30

c- /29   d- /31

88. **Which layer changes the packets to frames:**

a- Network   b- Data link

c- Transport   d- Physical

89. **Which of the following is a Valid host IP address that belongs to the network (192.168.10.0/28):**

a- 192.168.10.16   b- 192.168.99.99

c- 172.99.99.99   d- 172.20.20.20

90. **One of the following is a private IP address:**

a- 10.99.99.99   b- 172.99.99.99

c- 192.168.99.99   d- 172.20.20.20

91. **The physical address (MAC) consists of:**

a- 16 bit   b- 48 bit

c- 32 bit   d- 64 bit

92. **The layer that performs the translation of data in the OSI model is:**

   a- Application

   b- Presentation

   c- Session

   d- Network

93. **The sharing-file protocol is:**

   a- TFTP

   b- TCP

   c- NFS

   d- FTP

94. **The active HUB operates in:**

   a- Physical layer

   b- Network layer

   c- Data link layer

   d- Transport layer

95. **Which network device has one collision domain:**

   a- HUB

   b- Switch

   c- Router

   d- Modem

96. **When a switch is directly connected to the hub, the proper cable will be:**

   a- Straight-through

   b- Cross-over

   c- Roll-over

   d- Console

97. **As network services are centered in a node to serve others , this is called:**

   a- Peer-to-peer

   b- Workgroup

   c- Server / peer

   d- Client / server

98. **The network card for Labtop is:**

   a- ISA

   b- EISA

   c- PCI

   d- PCMCIA

99. **What is the protocol that converts the IP addresses into MAC addresses:**

   a- ARP

   b- PARP

   c- DNS

   d- Telnet

100. **The data capacity for CAT5e cable is:**

   a- 20Mbps

   b- 1000 Mbps

   c- 100 Mbps

   d- 10000 Mbps

انتهت الأسئلة