2. Electronics & Telecommunication Engineering

10.3.2019 AN 2-4 PM

1. Which of the following is obtained by drawing a single crystal from a melt of germanium whose type is changed during the drawing process by adding first p-type and then n- type impurities?

     1.   Alloy junction

     2.   Diffused junction

     3.   Grow junction

    (a)   1 only

    (b)   2 only

    (c)   3 only

    (d)   1, 2 and 3

2. Circuits that are used to eliminate portions of a signal that are above or below a specified level are called:

    (a)   Clampers

    (b)   Clippers

    (c)   Voltage doublers

    (d)   Detectors

3. The circuit consisting of an op-amp connected in a non-inverting configuration and two RC networks connected as the frequency-selecting feedback circuit is called:

    (a)   Phase shift oscillator

    (b)   Colpitts oscillator

    (c)   Hartley oscillator

    (d)   Wien-bridge oscillator

4. Consider an inverting amplifier with a feedback resistor $R_2 = 10\ k\Omega$ and an op-amp with parameters; $A_{OL} = 10^5$ and $R_i = 10\ k\Omega$. Assuming the output resistance R_o of the op-amp as negligible, the closed-loop input resistance at the inverting terminal of an inverting amplifier will be nearly:

(a) $0.4\ \Omega$

(b) $0.2\ \Omega$

(c) $0.1\ \Omega$

(d) $0.05\ \Omega$

5. Consider the following data for common-emitter hybrid equivalent circuit of BJT transistor, $I_E = 2.5\ mA$, $h_{fe} = 140$, $h_{oe} = 20\ \mu S$ and $h_{ob} = 0.5\ \mu S$

The values of h_{ie} and r_o will be nearly:

(a) $1.46\ k\Omega$ and $30\ k\Omega$

(b) $1.46\ k\Omega$ and $50\ k\Omega$

(c) $1.64\ k\Omega$ and $50\ k\Omega$

(d) $1.64\ k\Omega$ and $30\ k\Omega$

6. Since the ideal op-amp responds only to the difference between the two input voltage signals v_1 and v_2. It maintains a zero output signal for $v_1 = v_2$. When $v_1 = v_2 \neq 0$, the characteristic is called:

(a) Common mode rejection

(b) Common mode input signal

(c) Negative supply voltage

(d) Positive supply voltage

7. The output voltage is the sum of the input voltages, with different weighting factors. This circuit is called:

(a) Non inverting summing amplifier

(b) Ideal op-amp

(c) Inverting summing amplifier

(d) Non inverting amplifier

8. For a non inverting op-amp when $R_i = \infty$, in an open circuit, the closed-loop gain becomes $A_v = \frac{v_0}{v_i} = 1$, then output voltage follows the input; this op-amp circuit is called:

(a) Basic amplifier

(b) Voltage follower

(c) Summing amplifier

(d) Non inverting amplifier

9. What is the output voltage of an op-amp for input voltages of $V_{i1} = 150\ \mu V$, $V_{i2} = 140\ \mu V$ with amplifier differential gain of $A_d = 4000$ and the value of $CMRR = 100$?

(a) $72.2\ mV$

(b) $63.4\ mV$

(c) $54.6\ mV$

(d) $45.8\ mV$

10. The $\left(\frac{S}{N}\right)_q$ of a delta modulation, at a bit rate of $64\,kbps$ and (baseband signal) BW of $4\,kHz$ will be:

(a) $26\,dB$

(b) $22\,dB$

(c) $18\,dB$

(d) $12\,dB$

11. A resistance R is connected in series with a parallel combination of two resistances $12\,\Omega$ and $8\,\Omega$. If the power dissipated in the circuit is $70\,W$ when the applied voltage is $20\,V$ across the circuit. The resistance R will be nearly:

(a) $1.07\,\Omega$

(b) $0.91\,\Omega$

(c) $0.83\,\Omega$

(d) $0.75\,\Omega$

12. A $120\,V$ ac circuit contains $10\,\Omega$ resistance and $30\,\Omega$ reactance in series. The average power in the circuit will be nearly:

(a) $134\,W$

(b) $144\,W$

(c) $158\,W$

(d) $168\,W$

13. A 25 hp, 250 V dc series motor has armature resistance of 0.1 Ω, field resistance of 0.05 Ω and brush contact drop 3 V. When the line current is 80 A, the speed is 600 rpm and when the line current is 100 A, the speed will be nearly:

    (a)   394 rpm

    (b)   474 rpm

    (c)   556 rpm

    (d)   636 rpm

14. A 200/400-V, 10-kVA, 50 Hz single-phase transformer has at full-load a copper loss of 120 W. If it has an efficiency of 98 % at full-load unity power factor, the efficiency of the transformer at half load 0.8 power factor lagging will be:

    (a)   82 %

    (b)   87 %

    (c)   92 %

    (d)   97 %

15. A 3- phase, 6- pole 50 Hz induction motor delivers 3.73 kW at 950 rpm. If the stator loss is 250 W, the stator input will be:

    (a)   4420 W

    (b)   4340 W

    (c)   4260 W

    (d)   4180 W

16.   In a 25 kVA, 3300/230 V, 1-phase transformer, the iron and full-load copper losses are respectively 350 W and 400 W. The efficiency at half load 0.8 power factor will be nearly:

(a)   83 %

(b)   88 %

(c)   94 %

(d)   99 %

17.   A 3-phase induction motor is wound for 4-poles and is supplied from a 50 Hz system. When speed of the rotor is 600 rpm, the rotor frequency will be:

(a)   30 Hz

(b)   35 Hz

(c)   40 Hz

(d)   45 Hz

18.   If a 6-pole induction motor running from a 50 Hz supply has an emf in the rotor of frequency 2.5 Hz. The speed of motor will be:

(a)   910 rpm

(b)   930 rpm

(c)   950 rpm

(d)   970 rpm

19. Which of the following are the engineering materials?

      1. Metals and alloys

      2. Ceramics and glasses

      3. Organic polymers

(a) 1 and 2 only

(b) 1 and 3 only

(c) 2 and 3 only

(d) 1, 2 and 3

20. The volume of a Face-Centered Cubic (FCC) unit cell in terms of the atomic radius R will be:

(a) $16\,R^3\sqrt{2}$

(b) $12\,R^3\sqrt{2}$

(c) $8\,R^3\sqrt{2}$

(d) $4\,R^3\sqrt{2}$

21. Which one of the following ceramic composite has high melting temperature?

(a) Fibre glass

(b) Borosilicate

(c) Glass-ceramic

(d) Fused silica

22. Consider the following data regarding saturation magnetization and flux density for Nickel:

    Nickel density $= 8.90 \times 10^6 \; g/m^3$
    Bohr magnetons /atom $= 0.60$
    Atomic weight $A_{Ni} = 58.71 \; g/mol$
    Avogadro's number $N_A = 6.023 \times 10^{23} \; atoms/mol$
    Magnitude of Bohr magneton $\mu_B = 9.27 \times 10^{-24} \; A.m^2$

    The saturation magnetization for nickel will be:

    (a) $3.7 \times 10^5 \; A/m$

    (b) $4.5 \times 10^5 \; A/m$

    (c) $5.1 \times 10^5 \; A/m$

    (d) $6.3 \times 10^5 \; A/m$

23. Which one of the following ferromagnetic material has the high critical temperature?

    (a)   Lead

    (b)   Tungsten

    (c)   Titanium

    (d)   Tin

24. Which one of the following is *not* a hard magnetic material?

    (a)   Tungsten steel

    (b)   Cobalt steel

    (c)   Barium ferrite

    (d)   Commercial iron

25. Consider the following properties for high temperature structural material:

    1. Superior Oxidation Resistance

    2. Superior Creep Resistance

    3. High Hardness

    4. Good Mechanical Strength

    Which one of the following materials is having the potential to satisfy the above properties?

    (a) Silicon carbide

    (b) Ceramic

    (c) Zirconia

    (d) Alumina

26. In order to make optimum method for certain set of nano-structure patterns, materials and volume requirements which of the following steps of processes are involved?

    1. Interference Lithography

    2. Electron-Beam Lithography

    3. Nano-Patterned Replication

    (a) 1, 2 and 3

    (b) 1 and 2 only

    (c) 1 and 3 only

    (d) 2 and 3 only

27. If a low pass filter has an input $\frac{S}{N}$ of 20 and the input voltage is 3 mV then the noise voltage will be:

   (a)   0.77 mV

   (b)   0.67 mV

   (c)   0.57 mV

   (d)   0.47 mV

28. Consider the following set of independent current measurements:

$$10.03A, \quad 10.10\ A,\ 10.11\ A,\ \text{and}\ 10.08\ A$$

The average range of error will be:

   (a) $\pm\ 0.04\ A$

   (b) $\pm\ 0.03\ A$

   (c) $\pm\ 0.02\ A$

   (d) $\pm\ 0.05\ A$

29. Electromagnetic damping is because of:

       1.   Friction produced owing to motion of coil in the air surrounding it

       2.   The induced effects when the coil moves in the magnetic field and closed path is provided for current to flow

       3.   Dissipation of energy of rotation

   (a)   1 only

   (b)   2 only

   (c)   3 only

   (d)   1, 2 and 3

30. A mild steel torsion bar of $30\ mm$ diameter is used for measurement of a torque of $100\ Nm$. If the shear modulus of mild steel is $80\ GN/m^2$, the angle of twist will be nearly:

   (a) $0.36 \times 10^{-3}\ rad$

   (b) $0.32 \times 10^{-3}\ rad$

   (c) $0.28 \times 10^{-3}\ rad$

   (d) $0.24 \times 10^{-3}\ rad$

31. A linear second order with single degree of freedom system has a mass of $8 \times 10^{-3}\ kg$ and stiffness of $1000\ N/m$. The natural frequency of the system will be:

   (a) $398.6\ rad/sec$

   (b) $373.2\ rad/sec$

   (c) $353.6\ rad/sec$

   (d) $318.2\ rad/sec$

32. In a measurement system a quantity whose magnitude has a definite repeating time cycle is called:

   (a) Transient periodic

   (b) Steady state periodic

   (c) Dynamic state periodic

   (d) Transient state periodic

33. The wide band noise in an electronic measurement system is sometimes called:

    (a) Johonson noise

    (b) Conducted noise

    (c) White noise

    (d) Radiated noise

34. A certain resistor has a voltage drop of $110.2\,V$ and a current of $5.3\,A$. If the uncertainties in the measurements are $\pm\,0.2\,V$ and $\pm\,0.06\,A$ respectively, then the uncertainty in power will be:

    (a) $\pm\,3.7\,W$

    (b) $\pm\,4.7\,W$

    (c) $\pm\,5.7\,W$

    (d) $\pm\,6.7\,W$

35. The *FM* techniques in telemetry is usually employed at:

    (a) $100\,MHz$ and above with much larger bandwidth than *AM*

    (b) $100\,MHz$ and above with much lesser bandwidth than *AM*

    (c) Less than $100\,MHz$ with much larger bandwidth than *AM*

    (d) Less than $100\,MHz$ with much lesser bandwidth than *AM*

36. Which one of the following provides constant bandwidth and proportional bandwidth channels in a radio telemetry system?

    (a) *FM/FM* system

    (b) *PCM/FM* system

    (c) Spread Spectrum system

    (d) *AM/FM* system

37. Which one of the following strain gauges has excellent Hysteresis characteristics?

   (a)   Bonded wire

   (b)   Unbonded metal

   (c)   Bonded metal foil

   (d)   Semi conductor

38. A resistance wire strain gauge with a gauge factor of 2 is bonded to a steel structural member subjected to a stress of $100\ MN/m^2$. The modulus of elasticity of steel is $200\ GN/m^2$. The percentage change in gauge resistance due to applied stress will be:

   (a)   0.05 %

   (b)   0.1 %

   (c)   0.2 %

   (d)   0.4 %

39. Isomorphism in circuit theory is the property between two graphs so that both have got same:

   (a)   Sub-graph

   (b)   Connected graph

   (c)   Path

   (d)   Incidence matrix

40.   The real parts of all poles and zeros in a driving point function must be:

(a)   Zero

(b)   Negative

(c)   Zero or negative

(d)   Positive

41.   Consider the following function:

$$z(s) = \frac{3(s+1)}{s\,(s+2)\,(s+3)}$$

The final value of $z(t)$ will be:

(a) $\dfrac{1}{2}$

(b) $\dfrac{3}{2}$

(c) $\dfrac{1}{3}$

(d) $\dfrac{2}{3}$

42.   The current through a circuit element is $\dfrac{4\,s^2}{s+7}$.

The current in t domain at $t \to \infty$ and $t \to 0$ will be respectively:

(a)   Zero and One

(b)   Zero and Infinity

(c)   Infinity and Zero

(d)   Infinity and One

43. Which one of the following networks is called a ladder network?

    (a) Non-recurrent network

    (b) Distributed network

    (c) Recurrent network

    (d) Passive network

44. In hybrid parameter representation, the voltage of the input port and the current of the output port are expressed in terms of the:

    (a) Voltage of input port and current of output port

    (b) Current of input port and voltage of output port

    (c) Voltage of input port and current of input port

    (d) Current of output port and voltage of output port

45. A series circuit has $R = 4\ \Omega$ and $L = 0.01\ H$. Its impedance at $100\ Hz$ will be nearly:

    (a) $7.45 \angle 37.5° \ \Omega$

    (b) $7.45 \angle 57.5° \ \Omega$

    (c) $8.25 \angle 37.5° \ \Omega$

    (d) $8.25 \angle 57.5° \ \Omega$

46. In a series RLC circuit $R = 3\ \Omega$, $X_L = j\ 6\Omega$, $X_C = -j\ 2\Omega$. If the current is $10 \angle -143°\ A$, the voltage applied across the combination will be:

    (a) $50 \angle -90°\ V$

    (b) $50 \angle 90°\ V$

    (c) $25 \angle -90°\ V$

    (d) $25 \angle 90°\ V$

47. In a series R-L circuit, $R = 20\,\Omega$, while $L = 60\,mH$. The input current lags the supply voltage by $60°$. The value of applied frequency will be nearly:

    (a) $91.9\,Hz$

    (b) $87.7\,Hz$

    (c) $82.7\,Hz$

    (d) $78.9\,Hz$

48. The charge carrier transit time is $70\,ns$ for a silicon diode of $10\,mA$ forward current. The diffusion capacitance will be:

    (a) $1\,nF$

    (b) $3\,nF$

    (c) $5\,nF$

    (d) $7\,nF$

49. A 6-bit DAC has a step size of $50\,mV$. The percentage resolution will be nearly:

    (a)   2.8 %

    (b)   2.4 %

    (c)   1.6 %

    (d)   1.2 %

50. A $500\ mV$ level is to be converted into a 7 bit digital code, the analog levels represented by the MSB will be:

    (a) $250\ mV$

    (b) $300\ mV$

    (c) $400\ mV$

    (d) $500\ mV$

51. In a 8 bit counter type Analog to Digital converter which is driven by $500\ kHz$ clock. The maximum conversion time will be:

    (a) $542\ \mu s$

    (b) $524\ \mu s$

    (c) $512\ \mu s$

    (d) $484\ \mu s$

52. The number of input gates required to realize the following expression,

    $$f = ABC + A\bar{B}CD + E\bar{F} + AD$$

    will be:

    (a) 13

    (b) 14

    (c) 15

    (d) 16

53.   The simplified expression of:

$$\bar{X}\,\bar{Y}\,\bar{Z} + \overline{X}\,\overline{Y}\,\bar{Z} + \bar{Y}\,\bar{Z} + X\bar{Z}$$

will be:

(a) $\bar{Z}$

(b) $\overline{Y}$

(c) $\bar{X}$

(d) $\overline{X}\,\overline{Y}$

54.   A computer has a $2\ Mb$ memory. The decimal equivalent of $2\ Mb$ will be:

(a) $2,000\,000$

(b) $2,048,546$

(c) $2,097,152$

(d) $2,194,304$

55.   If, p_k is the probability of occurrence of kth message and r is the base of the logarithm used, then the self-information content of a message I_k will be:

(a) $\log_r \dfrac{1}{p_k}\ units$

(b) $\log_r p_k\ units$

(c) $-\log_r \dfrac{1}{p_k}\ units$

(d) $p_k \log_r \dfrac{1}{p_k}\ units$

56. A receiver connected to an antenna whose resistance is $50\ \Omega$ has equivalent noise resistance of $30\ \Omega$. The receiver's noise figure in decibels will be:

   (a)   1.6

   (b)   2.6

   (c)   3.2

   (d)   4.2

57. A broadcast radio transmitter radiates $10\ kW$ when modulation is $60\ \%$. The carrier power will be nearly:

   (a) $32.5\ kW$

   (b) $24.5\ kW$

   (c) $16.5\ kW$

   (d) $8.5\ kW$

58. When the carrier and one of the sidebands are suppressed in an *AM* wave modulated to a depth of $100\ \%$, the power saving will be nearly:

   (a)   73 %

   (b)   78 %

   (c)   81 %

   (d)   83 %

59. Which one of the following demodulators is widely used in high quality *FM* radio receivers?

    (a) *FM* Feedback

    (b) Phase-locked loop

    (c) Foster-Seeley discriminator

    (d) Extension

60. In an automatic frequency control of a receiver the feedback for *AFC* is taken from:

    (a) Detector stage

    (b) Mixer stage

    (c) Local oscillator

    (d) *LF IF* amplifier

61. The quantization noise power N_q (Mean squared value) of the quantization error, with usual notation will be:

    (a) $\dfrac{V_p{}^2}{2}$

    (b) $\dfrac{V_p{}^2}{3\,M^2}$

    (c) $\dfrac{3}{2}M^2$

    (d) $\dfrac{S^2}{12}$

62. In order to produce '100 *percent white*' result, the sensitivity of human eye towards Red, Green and Blue must be:

    (a) $Y = 0.30\,R + 0.59\,G + 0.11\,B$

    (b) $Y = 0.60\,R + 0.28\,G + 0.12\,B$

    (c) $Y = 0.50\,R + 0.25\,G + 0.25\,B$

    (d) $Y = 0.30\,R + 0.60\,G + 0.1\,B$

63. Which one of the following methods will be used to transmit teletype on-off keying?

    (a) *ASK*

    (b) *PSK*

    (c) *PCM*

    (d) *FSK*

64. For a *BPSK* modulator with a carrier frequency of $70\ MHz$ and an input bit rate of $10\ Mbps$, the minimum Nyquist bandwidth will be:

    (a) $05\ MHz$

    (b) $10\ MHz$

    (c) $30\ MHz$

    (d) $60\ MHz$

65. The impulse $\delta(t)$ and unit step function $u(t)$ are related to each other as:

(a) $\delta(t) = \dfrac{d}{dt} u(t)$

(b) $\delta(t) = u(t) + u(2t - 1)$

(c) $\delta(t) = \int u(t) dt$

(d) $\delta(t) = 2.u(t)$

66.   Signal flow graphs can be used to represent:

(a)   Linear systems only

(b)   Non-linear systems only

(c)   Both linear and non-linear systems

(d)   Time-invariant as well as time varying systems

67. Consider the second-order feedback system with transfer function:

$$L(s) = \frac{K}{s(1+s)}$$

The breakaway point of root locus of the system at s will be:

(a)   1

(b) -1

(c) $\dfrac{1}{2}$

(d) $-\dfrac{1}{2}$

68.   Consider the third-order feedback system whose loop transfer function $L(s) = G(s)H(s)$ is defined as:

$$L(s) = \frac{K}{(s+1)^3}$$

The value of K for which the system is on the verge of instability will be:

(a)   8

(b)   12

(c)   14

(d)   16

69.   A unity feedback system has:

$$G(s) = \frac{K}{s\,(s+1)\,(0.1s+1)} \quad \text{and} \quad r(t) = 10\,t$$

For $e_{ss}(t) < 0.1$, for a unit-ramp input, the minimum value of K will be:

(a)   05

(b)   10

(c)   15

(d)   20

70.   The compensator required improving the transient response and margin of stability of a system is:

(a)   Lag

(b)   Lead

(c)   Lag-lead

(d)   All of these

71. Frequency response test is **not** recommended for system with:

   (a)   Very low time constants

   (b)   Small time constants

   (c)   Large time constants

   (d)   Any time constants

72. For a lag-lead compensator having transfer function:

$$G_C(s) = \left(\frac{s+\frac{1}{\tau_1}}{s+\frac{1}{\beta\tau_1}}\right)\left(\frac{s+\frac{1}{\tau_2}}{s+\frac{1}{\alpha\tau_2}}\right);$$

   1. $\beta > 1$
   2. $\beta < 1$
   3. $\alpha > 1$
   4. $\alpha < 1$

   Which of the above are correct?

   (a)   1 and 4 only

   (b)   1 and 3 only

   (c)   2 and 4 only

   (d)   2 and 3 only

73. In computer system the event that causes the interruption of program execution is called:

   (a)   Interrupt

   (b)   Recovery

   (c)   Debugging

   (d)   Exception

74. In a computer system the data transfer between the main memory and the CPU registers takes place through:

   (a) GPR and Memory Data register MDR

   (b) Accumulator and program controller

   (c) Memory Address Register (MAR) and Memory Data register MDR

   (d) Memory Address Register (MAR) and accumulator

75. The address of the next instruction to be executed by the current process is provided by the:

   (a) Process stack

   (b) CPU registers

   (c) Program counter

   (d) Pipe

76. To access the services of an operating system, the interface is provided by:

   (a) System calls

   (b) API

   (c) Library

   (d) Assembly instructions

77. A linked allocation solves the external-fragmentation and size-declaration problems of:

   (a) Indexed allocation

   (b) Contiguous allocation

   (c) Linked allocation

   (d) File allocation

78. The code segment that misuses its environment is called:

 (a) Internal thief

 (b) Trojan horse

 (c) Code stacker

 (d) Interrupt

79. Peripherals are normally *not* connected to the system bus because:

 1. Peripherals work with a wide variety of theories of operation

 2. Peripherals are slower than memory or CPU

 3. Peripherals may have different data formats and word lengths than that of the computer to which they are connected

 (a) 1 and 2 only

 (b) 1 and 3 only

 (c) 2 and 3 only

 (d) 1, 2 and 3

80. For an effective assembly language programming, programmer should be aware of:

 1. Programming model of the processor

 2. Complete instruction set details of the processor

 3. Memory map and I/O map of the computer system

 4. Details of the assembler including rules of the language

 (a) 1, 2 and 3 only

 (b) 1, 2 and 4 only

 (c) 1, 3 and 4 only

 (d) 1, 2, 3 and 4

81.	For vectors,	$A = -4a_x + 2a_y + 3a_z$ and $B = 3a_x + 4a_y - a_z$;

The magnitude of $5A - 2B$ will be:

(a)	$\sqrt{969}$

(b)	$\sqrt{699}$

(c)	$\sqrt{696}$

(d)	$\sqrt{669}$

82.	A zero operand computer always keeps operands in:

1.	Stack

2.	General Purpose Register (GPR)

3.	Program counter

(a)	1 only

(b)	2 only

(c)	3 only

(d)	1, 2 and 3

83.	In a 8051 microprocessor, PCON register controls the baud rate in:

1.	Synchronous transmission

2.	Asynchronous transmission

(a)	1 only

(b)	2 only

(c)	Both 1 and 2

(d)	Neither 1 nor 2

84. Which of the following specifications are to be mentioned in *VLSI* design?

    1.   The algorithm to be implemented with mathematical representation

    2.   Number of inputs and outputs in the design and number of bits used in internal arithmetic operation

    3.   Number of clock signals and maximum clock frequency

    4.   Area and power dissipation in the chip

(a)   1, 2 and 3 only

(b)   1, 2 and 4 only

(c)   1, 3 and 4 only

(d)   1, 2, 3 and 4

85. Which of the following properties are correct for Region of Convergence (*ROC*)?

    1.   It is a ring or disk in the z-plane centered at the origin

    2.   It cannot contain any poles

    3.   It is of a LTI stable system contains the unit circle

    4.   It must be a connected region

(a)   1, 2 and 3 only

(b)   1, 2 and 4 only

(c)   1, 3 and 4 only

(d)   1, 2, 3 and 4

86. The total number of complex additions for evaluating a *DFT* using *DIT-FFT* is:

    (a) $\frac{N}{2}\log_2 N$

    (b) $N\log_2 N$

    (c) $\frac{N}{2}\log_{10} N$

    (d) $N\log_{10} N$

87. A signal $m(t)$ band-limited to $3\ kHz$ is sampled at a rate $33\frac{1}{3}$ % higher than the Nyquist rate. The maximum acceptable error in the sample amplitude is 0.5 % of the peak amplitude m_p. The quantized samples are binary coded, then the minimum bandwidth of a channel required to transmit the encoded binary signal will be:

    (a) $20\ kHz$

    (b) $24\ kHz$

    (c) $28\ kHz$

    (d) $32\ kHz$

88. A reserved area in *RAM* used for temporary storage of data, return addresses and content of registers during subroutine calls and interrupts is called:

    (a) Accumulator

    (b) Flags

    (c) Index register

    (d) Stack

89. An 8-bit microprocessor has the typical two way connected buffered lines which are called:

    (a) Address bus

    (b) Data bus

    (c) Control bus

    (d) Power lines

90. The advance microprocessor architecture's term 'Superscalar Architecture' means:

    (a) Scaling of application can be done with software

    (b) The processor design enables the user to monitor the scaling performance of processor

    (c) It includes more than one execution unit

    (d) More perirerals can be added to the architecture

91. In communication network security issues 'Authentication' deals with:

    (a) Keeping information out of hands of unauthorized user

    (b) Determining whom we are talking to before revealing sensitive information

    (c) With the signatures

    (d) To ensure the message received was really one sent and not something malicious

92. A channel of 3000 Hz bandwidth with a signal to thermal noise ratio of 30 dB. The maximum number of bits per second the channel can transmit without error will be:

    (a)   30,000 bps

    (b)   25,000 bps

    (c)   20,000 bps

    (d)   15,000 bps

93. In an Ethernet LAN of 10 $Mbps$ for the maximum length of 2500 m and 4 repeaters, the smallest frame that can guarantee to work consists of:

    (a)   500 $bits$

    (b)   1000 $bits$

    (c)   200 $bits$

    (d)   2500 $bits$

94. In a PDH system, the output of the first level multiplexer DSI will be:

    (a)   1.048 $Mbps$

    (b)   1.544 $Mbps$

    (c)   2.048 $Mbps$

    (d)   2.544 $Mbps$

95. In a *GSM* cellular network, the 148 *data* frame starts and ends with *three* 0 *bits*. The purpose of these three bits is for:

    (a) Adding the zero padding to make frame of perfect size

    (b) Balancing of 1 and 0 in the data frame

    (c) Frame delineation

    (d) Guarding the frame

96. Which of the following functional architecture of a *GSM* system are correct?

    1. Radio Sub System (*RSS*)
    2. Networking and Switching Sub-system (*NSS*)
    3. Operation Sub System (*OSS*)
    4. Global Network Sub System (*GNSS*)

    (a) 1, 2 and 4 only

    (b) 1, 3 and 4 only

    (c) 2, 3 and 4 only

    (d) 1, 2 and 3 only

97. When the microprocessor receives an interrupt request, it finishes the instruction it is executing and then jumps to:

    (a) *IR*

    (b) *ACC*

    (c) *SP*

    (d) *ISR*

98. Which input notifies MPU that another device (DMA) wants to use the address and data buses for data transfer?

    (a) $HLDA$

    (b) $HOLD$

    (c) $\overline{INTA}$

    (d) ALE

99. In a step index fibre the refractive index of core $n_1 = 1.48$ and that of cladding $n_2 = 1.45$. The numerical apparture of the fibre will be nearly:

    (a) 0.3

    (b) 0.5

    (c) 0.7

    (d) 0.9

100. DMA Module can communicate with CPU through:

    (a) Interrupt

    (b) Cycle stealing

    (c) Branch instruction

    (d) None of these