

## PART-I: GENERAL ABILITY TEST

Max. Marks : 20

1. The present Chairman and Managing Director of Bharat Sanchar Nigam Limited is :  
 (a) Rajesh Kumar Upadhyay (b) Rakesh Kumar Upadhyay  
 (c) Kuldeep Goel (d) Gopal Das
2. \_\_\_\_\_ is the father of Indian telecommunication revolution.  
 (a) Sam Pitroda (b) Kapil Sibal (c) Rajesh Pilot (d) Mukesh Ambani
3. 2G Licenses of the following telecom operators were cancelled by Supreme Court except \_\_\_\_\_  
 (a) MTS (b) Telenor (c) Videocon (d) Reliance
4. 160 year old telegram service will be discontinued from :  
 (a) 1-Jul-13 (b) 15-Dec-13 (c) 15-Jul-13 (d) 1-Aug-13
5. In the 2012 London Olympics, \_\_\_\_\_ and \_\_\_\_\_ won Silver Medals for India.  
 (a) Vijay Kumar and Sushil Kumar  
 (b) Vinay Kumar and Sunil Kumar  
 (c) Saina Nehwal and Sushil Kumar  
 (d) Gagan Narang and Saina Nehwal
6. As per Forbes list of highest paid athletes, Indian Cricket team Captain Shri. MS Dhoni stands at \_\_\_\_\_ position.  
 (a) 1 (b) 15 (c) 17 (d) 16
7. At present, the youngest Chief Minister of a state in India is :  
 (a) Omar Abdullah (b) Kiran Kumar Reddy  
 (c) Akhilesh Yadav (d) Prakash Singh Badal
8. The winner of 2013 US National Spelling Bee contest is :  
 (a) Arvind Mahankali (b) Arvind Jothi  
 (c) Nupur Lala (d) Vismaya Kharkar
9. The Prime Minister of Pakistan is :  
 (a) Imran Khan (b) Musharaff (c) Benazir Bhutto (d) Nawaz Sharif
10. Synonym of word "ASTONISH" is :  
 (a) Happy (b) Surprise (c) Sad (d) Traditional

11. The most similar meaning of the word **COMPREHENSION** is :  
 (a) ☒ Knowledge (b) Fight (c) Rivalry (d) Challenge
12. Antonym of word "**OVERLAP**" is :  
 (a) Override (b) Protrude (c) Imbricate (d) ☒ Separate
13. Antonym of word **REJUVENATED** is :  
 (a) Refresh (b) ☒ Tired (c) Revive (d) Energize
14. Fill in the blank with appropriate word to complete the sentence  
*"We tempted him with many promises, \_\_\_\_\_ nothing would work on him".*  
 (a) and (b) or (c) ☒ but (d) so
15. University is \_\_\_\_\_ to announce results of Degree examination.  
 (a) still (b) ☒ yet (c) up (d) ready
16. Acid rain occurs when the atmosphere is heavily polluted with :  
 (a) Carbon dioxide and argon  
 (b) Smoke particles  
 (c) ☒ Sulphur dioxide and nitrogen oxide  
 (d) Sulphuric Acid
17. World Consumers Rights day is observed on :  
 (a) 3<sup>rd</sup> January (b) 5<sup>th</sup> June (c) 2<sup>nd</sup> August (d) ☒ 15<sup>th</sup> March
18. The Dandi March was led by \_\_\_\_\_  
 (a) ☒ Mahatma Gandhi (b) Jawaharlal Nehru  
 (c) Vallabhbhai Patel (d) Subash Chandra Bose
19. "One Vision, One Identity, One Community" is the motto of \_\_\_\_\_ International Organization.  
 (a) SAARC (b) OPEC (c) ☒ ASEAN (d) NATO
20. Playing/Singing time of Indian National Anthem "Jana Gana Mana" is :  
 (a) ☒ 52 Seconds (b) 62 Seconds (c) 37 Seconds (d) 30 Seconds

## PART - II: BASIC ENGINEERING

Max. Marks : 90

1. A circle in the coordinate plane has the equation  $(x-2)^2 + (y+3)^2 = 25$  and its circumference is:
- (a)  $5\pi r$  (b)  $8\pi r$  (c)  $12\pi r$  (d)  $10\pi r$

2. Evaluate Matrix :

$$\begin{bmatrix} 2 & 3 & 4 \\ 1 & 2 & 3 \\ 4 & 3 & 2 \end{bmatrix}$$

(a)  $0_2$

(b)  $-60$

(c)  $-10$

(d)  $-20$

3. If  $A = \begin{bmatrix} 3 & -1 \\ -1 & 2 \end{bmatrix}$  then  $A^2$  :

(a)  $\begin{bmatrix} 8 & -5 \\ -5 & 3 \end{bmatrix}$

(b)  $\begin{bmatrix} 8 & -5 \\ 5 & 3 \end{bmatrix}$

(c)  $\begin{bmatrix} 8 & -5 \\ -5 & -3 \end{bmatrix}$

(d)  $\begin{bmatrix} 8 & 5 \\ -5 & 3 \end{bmatrix}$

4. A Vector having the same initial and terminal points is called :

(a) Unit Vector

(b) Zero Vector

(c) Localized Vector

(d) None of these

5. Constant Vector is one in which :

(a) Its direction is fixed

(b) Its magnitude is constant

(c) Its magnitude and direction are both fixed

(d) None of the above

6. A particle moves according to the law  $S = t^3 - 6t^2 + 9t + 8$ , find the initial velocity :

(a) 3

(b) 6

(c) 9

(d) 12

7. A Square plate expands uniformly, the side increasing at the rate of  $0.2\text{m/sec}$ . Find the rate of the area of the plate when  $x = 10\text{ cm}$ .

(a)  $1\text{ sq cm/sec}$

(b)  $2\text{ sq cm/sec}$

(c)  $3\text{ sq cm/sec}$

(d)  $4\text{ sq cm/sec}$

8.  $\int (x^2 - x + 1)(2x - 3) dx =$

(a)  $\frac{x^4}{2} - \frac{5x^3}{3} + \frac{5x^2}{2} - 3x + c$

(b)  $\frac{x^3}{2} - \frac{3x^2}{3} + \frac{2x^2}{2} - 2x + c$

(c)  $\frac{x^2}{2} - \frac{5x^3}{3} + \frac{3x^2}{2} - 3x + c$

(d)  $\frac{x^4}{3} - \frac{4x^3}{2} + \frac{3x^2}{3} + 2x + c$



9.  $\int 5 \sec^5 x \tan x \, dx$  is equal to:  
 (a)  $\sec^6 x + c$  (b)  $\sec^5 x + c$   
 (c)  $5 \sec^4 x + \tan x$  (d) None of these
10. The order and degree of the differential equation  $\left(1 + \frac{3dy}{dx}\right) \frac{1}{3} = 4 \frac{d^3y}{dx^3}$  are:  
 (a)  $\left(1, \frac{2}{3}\right)$  (b) (3, 4) (c) (3, 3) (d) (1, 2)
11. Arithmetic of complex number addition of  $(a, b) + (c, d)$  is:  
 (a)  $(a+b, c+d)$  (b)  $(a+d, b+c)$  (c)  $(a+cd, b+cd)$  (d)  $(a+c, b+d)$
12. The \_\_\_\_\_ is an integral transform which allows a differential equation to be converted into a simpler algebraic equation.  
 (a) Laplace Transform (b) Replace Transform  
 (c) Space Transform (d) Easy Transform
13. A Fourier series is a specific type of \_\_\_\_\_ mathematical series involving trigonometric functions.  
 (a) Definite (b) Finite  
 (c) Infinite (d) None of the above
14. If the law of motion is  $S = 5 \sin 2t$ , find the acceleration when  $t = \pi/4$ :  
 (a) 10 (b) -20 (c) 20 (d) -10
15. Water flows into a cylindrical tank of radius 3 meters at the rate of  $27000 \pi \text{ cc/min}$ . The water level is raising at the rate of:  
 (a) 0.3 cm/min (b) 06 cm/min  
 (c) 1 cm/sec (d) None of these
16. Which of the following is not a unit in FPS system?  
 (a) Second (b) Foot (c) Pound (d) Pascal
17. The unit of Power is:  
 (a) Kilowatt hour (b) Kilowatt (c) Dyne (d) Joule
18. Which of the following is dimensionless quantity?  
 (a) Stress (b) Amount of heat (c) Strain (d) Specific heat

19. Which of the following equations is dimensionally correct ?  
 (a) Pressure = force  $\times$  area (b) Volume  $\times$  pressure = energy  
 (c) Momentum  $\times$  time = force (d) Acceleration  $\times$  force = time
20. The total reading of a screw gauge is 1.98 mm and zero error is +.07 mm, then actual reading is equal to :  
 (a) 1.91 mm (b) 0.191 cm (c) 1.91 cm (d) 0.191 mm
21. Lower jaws of the vernier calipers are use to measure :  
 (a) Internal dimension (b) Volumetric dimension  
 (c) External dimension (d) Both (a) and (c)
22. A girl is swinging on a swing in her sitting position. If she suddenly stands up and continue to swing, the period of swing :  
 (a) Becomes zero (b) Increases  
 (c) Remains constant (d) Decreases
23. The originator of acoustics of building was :  
 (a) Newton (b) WC Sabine (c) Heisen Berg (d) Laplace
24. How far does sound travel in air when tuning fork of frequency 480 Hz completes 50 vibrations ? Velocity of sound in air is  $340 \text{ ms}^{-1}$ .  
 (a) 25.4 m (b) 35.4 m (c) 0.254 cm (d) 0.354 cm
25. Maxwell's electromagnetic theory of light suggests that the light consists of oscillation of :  
 (a) Magnetic vector alone  
 (b) Electronic vector alone  
 (c) Magnetic and Electronic Vector perpendicular to each other  
 (d) Magnetic and Electronic Vector parallel to each other
26. Atomic theory was put forth by :  
 (a) Dalton (b) Faraday (c) Thomson (d) Rutherford
27. Important characteristic of laser beam is :  
 (a) Interface (b) Diffraction (c) Dispersion (d) Coherence
28. Raman effect was discovered by CV Raman while studying the scattering of light by :  
 (a) Solids (b) Liquids (c) Gases (d) Air

29. Decibel is a :  
 (a) Musical note (b) Musical instrument  
 (c) Measure of sound level (d) All the above
30. Velocity of sound is largest in :  
 (a) Vacuum (b) Air (c) Water (d) Glass
31. If two similar charges of 1 coulomb each are placed 1 meter apart in air the force of repulsion between them would be nearly \_\_\_\_\_ Newton.  
 (a) 1 (b)  $9 \times 10^9$  (c)  $4\mu$  (d)  $8.854 \times 10^{-12}$
32. \_\_\_\_\_ is lines of force passing through a unit cross section at a point.  
 (a) Magnetic flux (b) Potential difference  
 (c) Electronic intensity (d) Magneto motive force
33. The capacitance of a capacitor is **not** influenced by :  
 (a) Nature of the dielectric (b) Plate separation  
 (c) Plate area (d) Plate thickness
34. For which of the following the ohms law does **not** holds good ?  
 (a) Semiconductors (b) Vacuum tubes  
 (c) Only at constant temperature (d) All the above
35. Four resistors of  $10\Omega$  each are connected in parallel across  $25V$  supply. Current in each branch is :  
 (a) 5 Amperes (b) 2.5 Amperes (c) 0.4 Amperes (d) 250 Amperes
36. Three resistors  $R_1=5\Omega$ ,  $R_2=3\Omega$  and  $R_3=2\Omega$  are connected in series across 20 volts supply. The voltage across each resistor will be :  
 (a) 10V, 6V and 4V (b) 6V, 10V and 4V  
 (c) 4V, 6V and 10V (d) Cannot be calculated from the given data
37. Whenever the flux linking with the conductor changes \_\_\_\_\_ is induced in the conductor.  
 (a) Mmf (b) Torque (c) Emf (d) Magnetic flux
38. The capacity of a battery depends upon :  
 (a) Charging current (b) Specific gravity of electrolyte used  
 (c) Area of the plates (d) Both (b) and (c)



39. If more current is required, the cells may be joined in :  
 (a) Series (b) ☒ Parallel (c) Series-parallel (d) None of these
40. 100 batteries of 9V are connected in parallel. The voltage across the combination is :  
 (a) 900V (b) ☒ 9V (c) 0.09V (d) 0.9V
41. An ideal voltage source is one which must :  
 (a) Have zero internal resistance  
 (b) Internal voltage drop in the source must be zero  
 (c) Voltage provided by the source must be constant irrespective of the amount of current drawn from it.  
 (d) ☒ All the above
42. While analyzing a network containing more than one generator, each generator is considered separately while applying :  
 (a) Norton's theorem (b) Maximum power transfer theorem  
 (c) Thevenin's theorem (d) ☒ Superposition theorem
43. Maximum power is transferred from source when the load impedance is :  
 (a) ☒ Equal to source impedance  
 (b) Equal to zero  
 (c) Equal to half of the source impedance  
 (d) None of the above
44. Superposition theorem applies to :  
 (a) dc circuits only (b) ac circuits only  
 (c) ac and dc with voltage sources (d) ☒ ac and dc with voltage and current sources
45. If two resistances  $R_1$  and  $R_2$  are connected in parallel and placed in the path of a current  $I$ , the current in  $R_1$  is given as :  
 (a)  $\frac{IR_1}{R_1 + R_2}$  (b) ☒  $\frac{IR_2}{R_1 + R_2}$  (c)  $\frac{IR_1 R_2}{R_1 + R_2}$  (d)  $I \frac{(R_1 + R_2)}{R_1}$
46. According to Gauss's theorem the surface integral of the normal component of electric flux density  $D$  over a closed surface containing charge  $Q$  is :  
 (a) ☒  $Q$  (b)  $\frac{Q}{\epsilon_0}$  (c)  $\epsilon_0 Q$  (d)  $\frac{Q^2}{\epsilon_0}$
47. A 100 watt bulb is used for 5 hours a day. What is the monthly electricity bill at the rate of Rs. 3.50 assuming 30 days in a month ?  
 (a) Rs. 350 (b) Rs. 17.50  
 (c) ☒ Rs. 52.5 (d) Cannot be calculated from the given data

48. Crest factor of an alternating current is the ratio of \_\_\_\_\_
- (a)  $\frac{\text{RMS value}}{\text{Average value}}$  (b)  $\frac{\text{RMS value}}{\text{Maximum value}}$
- (c)  $\frac{\text{Maximum value}}{\text{RMS value}}$  (d)  $\frac{\text{Average value}}{\text{RMS value}}$
49. The alternating current is represented by the equation  $i = 100 \sin 314t$  amperes. The maximum value that the alternating current can attain at 300 is \_\_\_\_\_ amperes.
- (a) 200 (b) 50 (c) 100 (d) 157
50. When ac flows through a pure resistance, then :
- (a) Current leads emf (b) Current lags emf
- (c) Current and emf are inphase (d) None of these
51. Which of the following elements does **not** have three valance electron ?
- (a) Boron (b) Aluminum (c) Gallium (d) Phosphorous
52. When the temperature of an intrinsic semiconductor is increased :
- (a) Its resistance falls (b) Its resistance increases
- (c) Atomic radius decreases (d) Energy of the atoms decreases
53. In conductor :
- (a) Forbidden energy gap is 1eV
- (b) Forbidden energy gap is 15eV
- (c) There is a huge energy gap between conduction band and valance band
- (d) Conduction band and valance band overlaps
54. \_\_\_\_\_ is an electromagnetic switching device/s which is/are used to control high power circuit by means of low power input.
- (a) Remote (b) Solid state SCR (c) Relay (d) Photo Transistor
55. Reverse saturation current of a silicon PN junction diode nearly doubles for every :
- (a)  $2^{\circ}\text{C}$  rise in temperature (b)  $5^{\circ}\text{C}$  rise in temperature
- (c)  $6^{\circ}\text{C}$  rise in temperature (d)  $10^{\circ}\text{C}$  rise in temperature
56. Arrow head on a transistor symbol indicates :
- (a) Direction of electron current in emitter
- (b) Direction of hole current in emitter
- (c) Diffusion current in emitter
- (d) Drift current in emitter



57. For an NPN transistor to operate it must be biased in such a way that :
- With the emitter negative with respect to the base
  - With the base negative with respect to the emitter
  - With base negative with respect to collector
  - ☒ Both (a) and (c)
58. CE Amplifier is characterized by :
- Low voltage gain
  - Moderate power gain
  - Both (a) and (b)
  - ☒ Signal phase reversal
59. Drain characteristics of a JFET are obtained by plotting :
- ☒  $I_D$  versus  $V_{DS}$  at constant  $V_{GS}$
  - $I_D$  versus  $V_{GS}$  at constant  $V_{DS}$
  - $V_{DS}$  versus  $V_{GS}$  at constant  $I_D$
  - None of the above
60. Negative feedback in an amplifier :
- Lowers its lower 3dB frequency
  - Rises its upper 3dB frequency
  - Increases its bandwidth
  - ☒ All the above
61. In IC 555 a stable multi-vibrator the timing capacitor charges and discharges between :
- 0 and  $\frac{V_{CC}}{3}$
  - 0 and  $\frac{2V_{CC}}{3}$
  - ☒  $\frac{V_{CC}}{3}$  and  $\frac{2V_{CC}}{3}$
  - 0 and  $V_{CC}$
62. Which of the following time base circuit is suitable to display widely separated narrow width pulses ?
- Voltage time base generator
  - Current time base generator
  - Free running time base generator
  - ☒ Triggered time base generator
63. A voltage regulator is a circuit which :
- Converts ac to dc voltage
  - Smoothens the ac variation in dc output voltage
  - ☒ Maintains a constant dc output voltage inspite of the fluctuations in ac input voltage or load current.
  - None of the above
64. The percentage regulation of voltage supply providing 100 V unloaded and 95V at full load is :
- ☒ 5.3%
  - 5%
  - 0.53%
  - None of the above

65. For sustained oscillations to occur in an oscillator :  
 (a) Feedback factor must be unity (b) Phase shift must be  $0^\circ$  or  $n\pi$   
 (c) Feedback should be negative (d) Both (a) and (b)
66. For a UJT if,  $R_1$  = resistance from emitter to the base 1  
 $R_2$  = resistance from emitter to the base 2  
 and  $R_{BB} = R_1 + R_2$ , then the intrinsic stand-off ratio ( $\eta$ ) is :  
 (a)  $R_1/R_2$  (b)  $R_1/R_{BB}$  (c)  $R_2/R_1$  (d)  $R_2/R_{BB}$
67. The magnetic material in which permanent magnetic dipole is already aligned due to bonding force is known as :  
 (a) Ferromagnetic material (b) Ferrimagnetic material  
 (c) Paramagnetic material (d) Diamagnetic material
68. If  $\alpha = 0.98$ ,  $I_{co} = 6\mu A$  and  $I_B = 100\mu A$  for a transistor, then value of  $I_C$  will be :  
 (a) 2.3 mA (b) 3.1 mA (c) 4.6 mA (d) 5.2 mA
69. The power gain of an amplifier is 60dB. At half power frequencies, the gain has fallen to :  
 (a) 30dB (b) 57dB (c)  $60\sqrt{2}$  dB (d) 20dB
70. Semiconductor A has a higher band gap than the semiconductor B. If both A and B have the same dimension, the same number of electrons at a given temperature and the same electron and hole mobilities, then :  
 (a) A has same number of holes as B (b) A has larger number of holes than B  
 (c) A has lesser number of holes than B (d) All of these
71. Dual slope integration type Analog to Digital convertor provide :  
 (a) Higher speed (b) Better resolution  
 (c) Poor rejection (d) Very good accuracy
72. Hamming codes are used for error detection and correction. If the minimum Hamming code is  $x$ , then the number of errors correctable is :  
 (a) Equal to  $x$  (b) Equal to  $2x$  (c) Less than  $x/2$  (d) Greater than  $x$

73. NOR gate is logically equivalent to :  
 (a) ☒ An OR gate followed by an inverter  
 (b) An OR gate followed by a NAND gate  
 (c) An AND gate followed by an OR gate  
 (d) An OR gate followed by an AND gate
74. The digital multiplexer is basically combination logic circuit to perform the operation :  
 (a) AND-AND (b) OR-OR (c) ☒ AND-OR (d) OR-AND
75. Sinusoidal oscillators are :  
 (a) Stable (b) ☒ Unstable  
 (c) Marginally stable (d) Conditionally stable
76. A Full Adder requires :  
 (a) Two Inputs and Two Outputs (b) Two Inputs and Three Outputs  
 (c) Three Inputs and One Outputs (d) ☒ Three Inputs and Two Outputs
77. The DAC converts :  
 (a) an analog signal into digital data (b) ☒ a digital data into an analog signal  
 (c) digital data into an amplified signal (d) none of the above
78. Which of the following is not type of ADC ?  
 (a) Parallel (b) ☒ Successive (c) ☒ Voltage (d) Counting
79. Shift registers can hold \_\_\_\_\_ memory.  
 (a) Static (b) Dynamic  
 (c) Static and Dynamic (d) ☒ Static or Dynamic
80. A flip-flop has :  
 (a) No stable state (b) One stable state (c) ☒ Two stable state (d) Four stable state
81. Decimal value of binary number <sup>6 5 4 3 2 1 0</sup> 1100110 is :  
 (a) ☒ 102 (b) 72 (c) 84 (d) 96



82. A type of digital circuit technology that uses bipolar junction transistors is:
- (a) CMOS (b) TTL (c) LSI (d) NMOS

83. Value of Hexadecimal value "ACD" is:

- (a) 2520 (b) 10120 (c) 2572 (d) 3476

84. Which of the following is a universal gate?

- (a) AND (b) OR (c) XOR (d) NAND

85. An R-S Latch is a:

- (a) Combinational circuit (b) One bit memory element  
(c) One clock delay element (d) Synchronous circuit

86. One MB (Mega byte) is equivalent to:

- (a)  $2^{10}$  (b)  $2^{32}$  (c)  $2^{20}$  (d)  $2^{16}$

87. A de-multiplexer has:

- (a) One input and One output (b) Single input and distributes over many outputs  
(c) Many inputs and One output (d) Many inputs and Many outputs

88. A storage medium which can support both direct access and sequential access application is:

- (a) CD ROM (b) Hard disk (c) Floppy disk (d) Magnetic tape

89. Output of which of the following gate is one when if at least one of its input is 1:

- (a) NAND (b) NOR (c) AND (d) EXOR

90. A dynamic RAM consists of:

- (a) 6 transistors (b) 2 transistors and 2 capacitors  
(c) 1 transistor and 1 capacitor (d) 2 capacitors

## PART - III: SPECIALIZATION

Max. Marks : 90

- In a star connected 2 phase system line current is equal to \_\_\_\_\_.  
 (a) Phase voltage (b)  $\sqrt{2}$  phase current  
 (c)  $\sqrt{3}$  phase current (d) ☒ Phase current
- Among all polyphase system \_\_\_\_\_ system is most useful and economical.  
 (a) single phase (b) two phase (c) ☒ three phase (d) four phase
- Power consumed or supplied by a three phase delta system is \_\_\_\_\_.  
 (a) ☒  $\sqrt{3} E_L I_L \cos \phi$  (b)  $E_L I_L \cos \phi$  (c)  $E_L I_L$  (d)  $I^2 R_L$
- Direction of rotation of a dc motor is given by :  
 (a) Flemmings right hand rule (b) ☒ Flemmings left hand rule  
 (c) Lenz law (d) None of the above
- For a 4 phase, 6 pole stepper motor the step angle will be :  
 (a)  $24^\circ$  (b)  $1.5^\circ$  (c) ☒  $15^\circ$  (d)  $45^\circ$
- In a step down transformer.  
 (a) Primary voltage is smaller than secondary voltage  
 (b) ☒ Secondary current is smaller than primary current  
 (c) Secondary current is larger than primary current  
 (d) None of the above
- IFT is a \_\_\_\_\_ frequency transformer  
 (a) ☒ narrow band (b) wide band (c) microwave (d) power
- The number of SCRs used in single phase half controlled bridge rectifier is :  
 (a) One (b) ☒ Two (c) Three (d) Four
- A freewheeling diode is used in a controlled rectifier circuit in case of :  
 (a) Resistive load (b) Capacitive (c) ☒ Inductive (d) Transformer
- A device which converts ac of one frequency into ac of some other frequency is called :  
 (a) Amplifier (b) Controlled Rectifier (c) ☒ Cycloconverter (d) Chopper

11. Step-up chopper operates in \_\_\_\_\_ quadrant.  
 (a) first (b) ☒ second (c) third (d) fourth
12. The heart of the inverter circuit is \_\_\_\_\_.  
 (a) rectifier (b) amplifier (c) ☒ oscillator (d) supply
13. A dual converter is generally used where :  
 (a) ☒ Reversible dc is needed (b) ac of higher frequency is needed  
 (c) ac of lower frequency is needed (d) Ripple free dc is needed
14. Having an information signal change some characteristic of a carrier signal is called :  
 (a) Multiplexing (b) ☒ Modulation (c) Duplexing (d) Linear mixing
15. If the modulating frequency is 1 kHz and carrier swing is 2 kHz in frequency modulated wave the bandwidth of FM signal is :  
 (a) 3 kHz (b) 2 kHz (c) ☒ 6 kHz (d) 5 kHz
16. Which one of the following can be used as FM detector ?  
 (a) Foster seely discriminator (b) Ratio detector  
 (c) ☒ Both (a) and (b) (d) Envelope detector
17. Convolution codes are best suited for :  
 (a) Reverse error correction (b) ☒ Forward error correction  
 (c) Reverse error detection (d) Reverse error detection and correction
18. \_\_\_\_\_ modems are used to send and receive telephone calls.  
 (a) Audio (b) Cable (c) ☒ Voice (d) Digital
19. Multiplexing is the process of :  
 (a) Several signal sources transmitting simultaneously to a receiver on a common frequency  
 (b) Sending the same signal over multiple channels to multiple destinations  
 (c) Transmitting multiple signals over multiple channels  
 (d) ☒ Transmitting multiple signals simultaneously over a single channel
20. The fundamental concept in ISDN is :  
 (a) ATM (b) ☒ Digital bit pipe (c) Voice (d) Packet switching
21. Microwave are the radio signals in the frequency range :  
 (a) 20 Hz to 20 kHz (b) 300 Hz to 3 kHz  
 (c) ☒ 1 GHz to 300 GHz (d) Above 300 GHz



22. \_\_\_\_\_ is a hollow metal tube designed to carry microwave energy from one place to another.  
 (a) Antenna (b) STP cable ☒ (c) Waveguide (d) Duplexer
23. The effect of pre emphasis is corrected at the FM receiver by passing the signal through RC \_\_\_\_\_ filter.  
 (a) high pass ☒ (b) low pass (c) band pass (d) band stop
24. Intermediate frequency of AM super heterodyne receiver is :  
 (a) 155 kHz (b) 100 kHz (c) 500 kHz ☒ (d) 455 kHz
25. The data transmission rate of a modem is measured in :  
 (a) Bytes per sec (b) Baud rate ☒ (c) Bits per sec (d) Mega hertz
26. The main disadvantages of PCM system is :  
☒ (a) Large bandwidth is required (b) High noise immunity  
 (c) High signal to noise ratio (d) None of the above
27. \_\_\_\_\_ is a device used to reduce the strength of a signal by a known amount.  
 (a) Amplifier (b) Rectifier ☒ (c) Attenuator (d) Loud speaker
28. Attenuation in Db = \_\_\_\_\_  $\times$  Attention in Nepers  
 (a) 0.48 (b) 0.8686 ☒ (c) 8.686 (d) 1.21
29. In symmetrical  $\pi$  type attenuator which of the relationship is correct with respect to series and shunt elements.  
☒ (a)  $R_1 = \frac{(N-1)}{(N+1)} R_0$  and  $R_2 = \frac{2N}{N^2-1} R_0$  (b)  $R_1 = \frac{(N+1)}{(N-1)} R_0$  and  $R_2 = \frac{2N}{N^2+1} R_0$   
 (c)  $R_1 = \frac{(N^2+1)}{(N-1)} R_0$  and  $R_2 = \frac{2N}{N^2+1} R_0$  (d)  $R_1 = \frac{(N^2+1)}{(N-1)} R_0$  and  $R_2 = \frac{2N}{N^2-1} R_0$
30. The filter which passes all the frequencies below 1 kHz but block above 1 kHz is called :  
 (a) High pass filter (b) Notch filter  
 (c) Band stop filter ☒ (d) Low pass filter
31. In an ideal filter attenuation is \_\_\_\_\_ in pass band.  
 (a) unity (b) infinity ☒ (c) zero (d) 100
32. A low pass and a high pass filter connected in series can be a \_\_\_\_\_.  
☒ (a) Notch filter (b) Butterworth filter  
 (c) Multistage band pass filter (d) Multistage band stop filter

33. Which of the following is correct formula for cutoff frequency for a pro type high pass filter ?  
 (a)  $f_c = \frac{1}{4\pi\sqrt{LC}}$  (b)  $f_c = \frac{\pi}{4\sqrt{LC}}$  (c)  $f_c = \frac{1}{4\pi\sqrt{LC}}$  (d)  $f_c = \frac{1}{L\pi\sqrt{4C}}$
34. In a lossless transmission line the characteristics impedance is given by :  
 (a)  $Z_0 = \sqrt{\frac{L}{C}}$  (b)  $Z_0 = \sqrt{\frac{C}{L}}$  (c)  $Z_0 = \frac{1}{2\pi} \sqrt{\frac{C}{L}}$  (d)  $Z_0 = \frac{1}{2\pi} \sqrt{\frac{L}{C}}$
35. When standing wave ratio is \_\_\_\_\_ all the power is delivered to load  
 (a) Infinity (b) Zero (c) One (d) 0.5
36. A Shorted  $\frac{\lambda}{4}$  and open  $\frac{\lambda}{2}$  transmission lines acts as :  
 (a) Parallel resonant circuits (b) Series resonant circuits  
 (c) Band pass filter circuits (d) Band stop filter circuits
37. Impedance matching over wide frequency range can be obtained by the use of \_\_\_\_\_ device.  
 (a) Single stub (b) Double stub  
 (c) Impedance transformer (d) Balloons
38. Distortion less condition of a transmission line is :  
 (a)  $\frac{R}{L} = \frac{G}{C}$  (b)  $\frac{C}{L} = \frac{G}{R}$  (c)  $\frac{R}{C} = \frac{L}{G}$  (d)  $\frac{L}{R} = \frac{C}{G}$
39. Microwave antenna which is suitable for both transmission and reception is :  
 (a) Log periodic (b) Helical (c) Dish antenna (d) Spiral antenna
40. Human errors in making measurement are called as :  
 (a) Self (b) Gross (c) Systematic (d) Parallax
41. Smallest observable change in input that an instrument can respond is called :  
 (a) Accuracy (b) Precision (c) Resolution (d) Timing
42. Sensitivity of an instrument is \_\_\_\_\_ to its full scale deflection.  
 (a) equal (b) directly proportional  
 (c) inversely proportional (d) less
43. An ammeter can be converted into a voltmeter using :  
 (a) Multimeter (b) Shunt resistor (c) Series resistor (d) PMMC meter

Pass

44. An example for integrating instrument is \_\_\_\_\_ meter.  
 (a) PMMC (b) ☒ Energy (c) Voltmeter (d) Ammeter
45. CRO uses \_\_\_\_\_ method of focusing.  
 (a) Electronic (b) Electromagnetic  
 (c) ☒ Electrostatic (d) Electromechanical
46. In a CRT the highest potential is given to :  
 (a) Focusing electrodes  
 (b) Vertical deflection plates  
 (c) ☒ Post deflecting accelerating anode  
 (d) Pre accelerating anode
47. When an oscilloscope is used to measure the phase difference or frequency relationship between two unknown signals it is used in :  
 (a) ☒ X - Y mode (b) CHOP mode (c) ALT mode (d) INV mode
48. In \_\_\_\_\_ section of CRO circuitry delay line is used :  
 (a) Horizontal (b) ☒ Vertical (c) CRT (d) Timer base
49. Maxwell's bridge is used for the measurement of :  
 (a) ☒ Inductance (b) Capacitance (c) Resistance (d) Frequency
50. \_\_\_\_\_ is an electromechanical sensor used to measure static and dynamic forces.  
 (a) Spectrometer (b) ☒ Load cell (c) Photometer (d) Pyrometer
51. Quality factor of the coil is given by the expression :  
 (a) ☒  $\frac{X_L}{R}$  (b)  $\frac{2X_L}{R}$  (c)  $\frac{X_L}{2R}$  (d)  $\frac{1}{2X_LR}$
52. Elastic element used to measure pressure is \_\_\_\_\_.  
 (a) Resistor (b) ☒ Capacitor (c) ☒ Burdon tube (d) Inductor
53. If the open loop transfer function of the system is :  

$$G(s)H(s) = \frac{K(s+10)}{s(s+8)(s+16)(s+72)}$$
 Then closed loop pole will be, located at  $s = -12$ , when the value of K is :  
 (a) 4355 (b) ☒ 5760 (c) 9600 (d) 9862
54. Which of the following is a closed loop system :  
 (a) Electric switch (b) Car starter (c) DC generator (d) ☒ Auto-pilot



55. Intersection of root locus branches with imaginary axis may be determined by the use of  
 (a) Nyquist criterion (b) ☒ Routh criterion  
 (c) Polar plot (d) None of the above
56. Polar plots for positive and negative frequencies :  
 (a) ☒ Are always symmetrical (b) Can never be symmetrical  
 (c) May or may not be symmetrical (d) None of these
57. Presence of nonlinearities in a control system tends to introduce :  
 (a) Transient error (b) Instability (c) ☒ Steady state error (d) All of these
58. Phase margin of a system is used to specify :  
 (a) ☒ Relative stability (b) Absolute stability  
 (c) Time response (d) Frequency response
59. Consider the following statements :  
 (i) Nyquist criterion is in frequency domain  
 (ii) Bode plot is in frequency domain  
 (iii) Root locus plot is in time domain  
 (iv) Routh Hermitz criterion is in time domain  
 Of these statements the correct statements are :  
 (a) ☒ (i), (ii) and (iii) (b) (ii), (iii) and (iv)  
 (c) (i) and (ii) (d) (i), (ii), (iii) and (iv)
60. The main drawback of feedback system is :  
 (a) Inaccuracy (b) Inefficiency (c) Insensitivity (d) ☒ Instability
61. Transfer function is defined for :  
 (a) Linear and time variant system (b) ☒ Linear and time invariant system  
 (c) Nonlinear and time variant system (d) Nonlinear and time invariant system
62. The input to a controller is :  
 (a) A servo signal (b) ☒ An error signal (c) A sensed signal (d) None of these
63. The gain margin of the given transfer function  

$$G(s) = \frac{0.75}{(s+1)(s+2)}$$
 will be :  
 (a) 4 dB (b) 8 dB (c) ☒ 12 dB (d) 16 dB

64. The effect of adding poles and zeros can be determined quickly by :  
 (a) Nicholas chart (b) ☒ Nyquist plot  
 (c) Bode plot (d) Root locus
65. The industrial controller having the best steady state accuracy is :  
 (a) A derivative controller (b) ☒ An integral controller  
 (c) A rate feedback controller (d) A proportional controller
66. Instruction cycle is made up of :  
 (a) ☒ One or more execute cycles (b) One or more fetch cycles  
 (c) One opcode and one execute cycle (d) None of the above
67. The address bus of 8085 is 16 bit wide and hence the memory which can be accessed by this address bus is :  
 (a) 112 (b) 4 kB (c) 16 kB (d) ☒ 64 kB
68. The register which holds address of the location to or from which data are to be transferred is known as :  
 (a) Index register (b) Instruction register  
 (c) ☒ Memory address register (d) Memory data register
69. A microprocessor on arrival of RESET signal returns from HALT state to :  
 (a) Interrupt (b) ☒ Fetch  
 (c) Execute (d) None of the above
70. An instruction used to set the carry flag in a computer can be classified as :  
 (a) Data transfer (b) ☒ Arithmetic (c) Logical (d) Program control
71. The interface chip used for data transmission between 8086 and a 16-bit ADC is :  
 (a) ☒ 8255 (b) 8259 (c) 8253 (d) 8251
72. Consider the following assembly language program.  
 MVI A, 30H  
 ACI 30H  
 XRA, A  
 POP H  
 After execution of the above program contents of the accumulator will be :  
 (a) 30 H (b) 60 H (c) ☒ 00 H (d) Contents of stack

73. The highest priority in 8085 microprocessor system is :  
 (a) RST 7.5 (b) TRAP (c) INTR (d) RST 6.5 82.
74. Each instruction in an assembly program has the following fields  
 (i) Label field (ii) Mnemonic field (iii) Operand field (iv) Comment field 83.  
 The correct sequence/order of these fields is :  
 (a) (i), (ii), (iii), (iv) (b) (i), (ii), (iv), (iii)  
 (c) (ii), (i), (iii), (iv) (d) (ii), (i), (iv), (iii) 84.
75. Mnemonic symbols are used to :  
 (a) Denote address (b) Employ hamming code 85.  
 (c) Denote error (d) Assist human memory 86.
76. The process of causing an unplanned branching operation to occur, usually initiated by external system is called :  
 (a) Debugging (b) Masking (c) Interrupt (d) Iteration 87.
77. Stack pointer is a register which come into use :  
 (a) Whenever a data is read from the memory 88.  
 (b) Whenever a data is written into the memory  
 (c) Whenever the output variable is sent out of the CPU  
 (d) Whenever an interrupt or high priority call comes from external devices 89.
78. \_\_\_\_\_ is called as the Father of Computer.  
 (a) Charles Babbage (b) Blaise Pascal 90.  
 (c) Steve Jobs (d) Bill Gates
79. In basic computer, Data Register and Instruction Register consists of :  
 (a) 8 Bits (b) 12 Bits (c) 32 Bits (d) 16 Bits
80. Which of the following is **not** a Computer Operating System ?  
 (a) Linux (b) HP (c) Vista (d) Mac
81. Windows Operating System widely uses \_\_\_\_\_ File System method to organize data storage.  
 (a) M (b) U (c) NT (d) WIN



82. Tiny dots on the computer screen; many of them put together form an image is :  
☒ (a) Pixels (b) Picture (c) Printer (d) Monitor
83. A \_\_\_\_\_ helps a group of interconnected computers to share, send and receive information.  
 (a) Internet ☒ (b) Network (c) System (d) Cable
84. Nibble consists of \_\_\_\_\_ number of bits.  
 (a) 1 (b) 2 ☒ (c) 4 (d) 8
85. Slowest Sorting procedure is :  
 (a) Quick (b) Heap (c) Shell ☒ (d) Bubble
86. In RDBMS, R stands for :  
☒ (a) Relational (b) Rapid (c) Restore (d) Ring
87. Which of the following is not a valid statement which are used while writing SQL statements in DBMS.  
 (a) DCL ☒ (b) DTL (c) DDL (d) DML
88. In OSI Model, Layer which controls the establishment, managing and terminating of the connection between the computers is :  
 (a) Transport (b) Network ☒ (c) Session (d) Physical
89. \_\_\_\_\_ computer program converts a program written in Assembly language into machine language format.  
 (a) Compiler ☒ (b) Assembler (c) Plumber (d) Convertor
90. In what order the elements of a pushdown stack are accessed ?  
 (a) FIFO (b) FILO ☒ (c) LIFO (d) LILO

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$$\boxed{111} \rightarrow 30 - 8 = \boxed{22}$$

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 32  
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