

ENGINEERING STREAM - I

1. **The dipole moment per unit volume is called**
A. polarization C. permeability
B. dielectric constant D. susceptibility
2. **Varistors are**
A. carbon resistors
B. insulators
C. non-linear resistors
D. resistors with zero temperature co-efficient
3. **Cadmium is added to copper primarily to**
A. increase its electrical resistivity
B. decrease its electrical resistivity
C. decrease its thermal conductivity
D. increase its mechanical strength
4. **Which resistor is most noisy?**
A. Carbon composition C. Tin oxide
B. Carbon film D. Metal film
5. **Materials used for solders should have**
A. high thermal and electrical conductivity
B. low thermal and electrical conductivity
C. a high thermal conductivity and low electrical conductivity
D. a low thermal conductivity and high electrical conductivity
6. **Which of the following does not contain copper?**
A. Manganin C. Nichrome
B. Constantan D. Brass
7. **Match the following :**

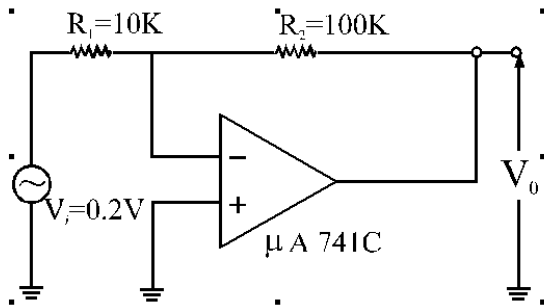
<i>Column I (Material)</i>	<i>Column II (Susceptibility)</i>
a. Diamagnetic	i. negative
b. Ferromagnetic	ii. very large positive
c. Antiferromagnetic	iii. small and positive
d. Ferrimagnetic	iv. large and positive

A. a-(iv), b-(iii), c-(ii), d(i)
B. a-(iii), b-(i), c-(iv), d-(ii)
C. a-(i), b-(ii), c-(iii), d-(iv)
D. a-(ii), b-(iv), c-(i), d(iii)
8. **Which dielectric has the least co-efficient of linear expansion?**
A. Polyethylene C. Quartz glass
B. PVC D. Polystyrene
9. **In solar cells, maximum efficiency is of the order of**
A. 14% C. 74%
B. 44% D. 94%
10. **Ferrites have**
A. extremely low dielectric loss
B. high resistivity
C. permeability of several lense
D. all of the above
11. **Secondary emission results**
A. When temperature of metals is raised to a level above the crystalization temperature
B. When metals are subjected to strong magnetic field
C. When light rays fall on the metal surface
D. When a high velocity beam of electrons strikes as metal surface
12. **Power diodes are generally**
A. Silicon diodes C. Either of the above
B. Germanium diodes D. None of the above
13. **Maximum rectification efficiency for a half wave rectifier is**
A. 100% C. 50%
B. 88% D. 40.6%
14. **A PN junction offers**
A. High resistance in forward as well as reverse direction
B. Low resistance in forward as well as reverse direction
C. Conducts in forward direction only
D. Conducts in reverse direction only
15. **When a semiconductor is doped, its electrical conductivity**
A. Increases
B. Decreases in the direct ratio of the doped material
C. Decreases in the inverse ratio of the doped material
D. Remains unaltered.
16. **E_g for silicon is 1.12 eV and that for germanium is 0.72 eV. Therefore it can be concluded that**
A. More number of electron-hole pairs will be generated in silicon than in germanium at room temperature
B. Less number of electron hole pairs will be generated in silicon than in germanium at room temperature
C. Equal number of electron-hole pairs will be generated in both at lower temperatures
D. Equal number of electron-hole pairs will be generated in both at higher temperatures
17. **An insulator will conduct when the**
A. Voltage applied is more than the breakdown voltage
B. Temperature is raised to very high level
C. Either of (A) or (B) above
D. None of the above

18. The forbidden energy gap between the valance band and conduction band will be wide in case of
 A. semiconductors
 B. all metals
 C. good conductors of electricity
 D. insulators
19. The total energy of an electron in an atom will be maximum when it is
 A. closest to the nucleus
 B. in the even numbered orbit
 C. odd numbered orbit
 D. in an orbit farthest from the nucleus
20. Valance electrons are the
 A. loosely packed electrons
 B. mobile electrons
 C. electrons present in the outermost orbit
 D. electrons that do not carry any charge
21. In an RC coupled amplifier, low-frequency response is improved with
 A. lower R_L
 B. more bias
 C. less gain
 D. higher C_C .
22. In a parallel R-L-C circuit, at resonant frequency
 A. inductive branch current is minimum
 B. total impedance is minimum
 C. line current is maximum
 D. total impedance is maximum
23. Which of the following statements is correct?
 A. R-C is a dual pair
 B. L-C form a dual pair
 C. A Thevenin equivalent a parallel circuit
 D. A Norton is a series circuit
24. An inductor at $t=\infty$ with zero initial current acts as
 A. open-circuit
 B. short-circuit
 C. voltage source
 D. current source
25. The shunt element in a band pass filter is
 A. inductive
 B. capacitive
 C. shunt combination of L and C
 D. series combination of L and C
26. The capacitance of a prototype high pass filter is given by
 A. $4\pi f_c R_o$
 B. $f_c/4\pi R_o$
 C. $1/4\pi f_c R_o$
 D. $4\pi f_c/R_o$
27. A four terminal network constitutes a port network
 A. one
 B. two
 C. three
 D. four
28. The m.k.s. unit for μ is
 A. Farads per square metre
 B. Farads per metre
 C. Henrys per metre
 D. Henrys per square metre
29. Which of the following pair of quantities has the same dimensions?
 A. Potential and work
 B. Electric field per unit charge and current
 C. Work per unit charge and potential
 D. Force per unit charge and workdone
30. The intrinsic impedance of free space is
 A. 50 ohms
 B. 137 ohms
 C. 277 ohms
 D. 377 ohms
31. The m.k.s. unit of electric displacement density is
 A. Gauss
 B. Weber
 C. Webers/sq.m.
 D. Coulombs/sq.m.
32. The m.k.s. unit of magnetic flux density is
 A. Webers
 B. Webers/metre²
 C. Amperes/metre
 D. Tesla
33. Flux/current could be the dimension of
 A. Inductance
 B. Charge
 C. Capacitance
 D. None of the above
34. Which of the following relation is incorrect?
 A. Permeability = 1/reluctivity
 B. Resistance \times Conductance = 1
 C. Reluctance \times mmf = flux
 D. None of the above
35. Diffraction of electromagnetic waves
 A. Is caused by reflections from the ground
 B. Arises only with spherical wave fronts
 C. Will occur when the waves pass through a large slot
 D. May occur around the edge of a sharp obtacle
36. When the distance between two charges is doubled, the force between them will be
 A. Four times
 B. Double
 C. Half
 D. One fourth
37. If the conductivity of copper is 5.8×10^7 mho/m and its relative permeability and permittivity is unity, then its refractive index at 10 MHz will be
 A. 2.27
 B. 22.7
 C. 227
 D. 2270
38. 1 Watt is the same as
 A. 10^3 ergs/sec
 B. 10^5 ergs/sec
 C. 10^7 ergs/sec
 D. 10^9 ergs/sec
39. 1 Joule is equal to
 A. 10^{12} ergs
 B. 10^{10} ergs
 C. 10^7 ergs
 D. 10^5 ergs
40. Major application of constantan is in
 A. precision resistances
 B. thermocouples
 C. transistors
 D. heater elements for valves
41. LEDs are available in which of the following colours?
 A. Green
 B. Yellow
 C. Red
 D. All of the above

ENGINEERING STREAM - II

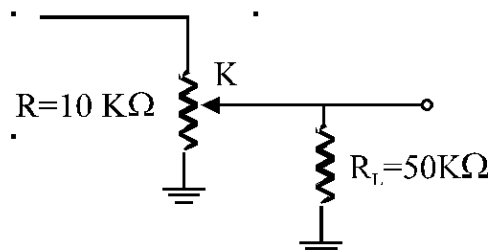
42. **Semi-conductor strain gauges have**
 A. low fatigue life
 B. high gauge factor
 C. complete linearity
 D. poor hysteresis characteristics
43. **A μ A741C op. amp. is used in the circuit of Picture. The output voltage for the ideal op. amp. will be**



- A. -5 V
 B. -3 V
 C. -2.5 V
 D. -2 V
44. **Atom of any element is**
 A. positively charged
 B. negatively charged
 C. positively or negatively charged
 D. not charged
45. **One eV of energy is equivalent to**
 A. 2.0 ers
 B. 1.6×10^{-19} joule
 C. 0.16×10^{-19} joule
 D. 3.14×10^{-9} joule
46. **At higher forward voltages, a junction diode is likely to**
 A. become noisy
 B. burn out
 C. get saturated
 D. suffer breakdown
47. **Regarding MOSFET which of the following statements is incorrect?**
 A. It can operate in depletion mode
 B. It can operate in enhancement mode
 C. It can operate in depletion and enhancement modes
 D. It can operate in depletion-only mode
48. **Which of the following methods used for protecting MOSFET against damage from stray voltage developing at the gate is incorrect?**
 A. Only source terminal is earthed during transit
 B. Back-to-back zener diodes are formed into the monolithic structure of MOSFET
 C. Grounding rings are used which are removed only when it is wired securely into the circuit
 D. It is inserted into conducting sponge during visit
49. **Which semiconductor device behaves like two SCRs?**
 A. MOSFET
 B. JFET
 C. UJT
 D. Triac
50. **..... is the best electronic device for fast switching**
 A. MOSFET
 B. JFET
 C. BJT
 D. Triode

51. **An ideal op amp. should have**
 A. Zero input and output impedance
 B. Infinite input and output impedance
 C. Infinite input impedance and zero output impedance
 D. Zero input impedance and infinite output impedance

52. **The product AB for amplifier is known as**
 A. feedback ratio
 B. feedback factor
 C. gain factor
 D. loop gain
53. **Under electrical and pneumatic system analogy, pressure is considered analogous to**
 A. charge
 B. current
 C. voltage
 D. resistance
54. **Repetitive operation in analog computers is most useful**
 A. in freezing a solution
 B. in setting initial condition voltage
 C. in repeating solutions to obtain the correct solution
 D. in adjusting parameters to obtain an optimal solution
55. **A potentiometer of 10 K is to be used for dividing the input voltage by 2. What should be corrected dial setting if the equivalent resistance of load is 50 K Ω**



- A. 0.05
 B. 0.525
 C. 0.999
 D. 1.0
56. **Which binary addition is incorrect?**
 A. $1001.1 + 1011.01 = 10100.11$
 B. $1000101 + 1000101 = 1001010$
 C. $0.1011 + 0.1101 = 1.1$
 D. $1011.01 + 1001.11 = 10111$
57. **The binary number 101101 is equal to octal number**
 A. 65
 B. 55
 C. 51
 D. 45
58. **In decimal system the base or radix is the**
 A. 0
 B. 1
 C. 10
 D. e
59. **A binary system has radix of**
 A. 0
 B. 1
 C. 2
 D. None of the above

60. One's complement of a binary number can be found out by
 A. changing all one's to zero's
 B. changing all zero's to one's
 C. changing all one's to zero's and all zero's to one's
 D. (A) in case of even numbers and (B) in case of odd numbers
61. $A(A+B)$ is the same as
 A. A
 B. B
 C. AB
 D. $A + AB$
62. In Boolean algebra $A+A+A+A+\dots+A$ is the same as
 A. $5A$
 B. nA
 C. A
 D. Infinity
63. Which of the following is an inverter?
 A. Common base amplifier
 B. Common collector amplifier
 C. Common emitter amplifier
 D. All of the above
64. A half adder includes
 A. a NAND gate with OR gate
 B. a NAND gate with XOR gate
 C. only AND gate
 D. neither OR nor XOR nor AND gate
65. The variables in Boolean algebra can take
 A. any number of values
 B. and one of the ten values 0 through 9
 C. one of the two possible values
 D. none of the above
66. Microprogram is
 A. the name of the source program in micro computers
 B. the set of instructions indicating the primitive operation in a system
 C. the general name of "MACRO's" in assembly language programming
 D. the name of programs of very small size
67. A semi-conductor Read-Only-Memory basically is
 A. A combinational logic circuit
 B. A set of flip-flop memory elements
 C. A sequential circuit with flip flops and gates
 D. None of the above
68. If one wants to design a binary counter, preferred type of flip flop is
 A. D-type
 B. SR-type
 C. Latch
 D. JK type
69. Access in magnetic drum memory is
 A. Completely random
 B. Sequential and cyclic
 C. Partly random and partly cyclic sequential
 D. A cyclic sequential
70. The assignment operator $x \leftarrow 3.5$ means
 A. x is less than 3.5
 B. value of x cannot exceed 3.5
 C. x is more than 3.5
 D. x is given the value 3.5
71. The number of roots with positive real parts for the polynomial $s^3 + s^2 - 2$ is
 A. none
 B. one
 C. two
 D. three
72. Human eye can be considered as
 A. an open loop system
 B. a closed loop system with single feedback
 C. a closed system with multivariable feedback
 D. none of the above
73. Which system has tendency to oscillate?
 A. Open loop system
 B. Closed loop system
 C. Both open loop as well as closed loop systems
 D. Neither open loop nor closed loop system
74. The transfer function is applicable to
 A. linear system only
 B. non-linear system only
 C. time-invariant system
 D. linear and time-invariant systems
75. Damping is proportional to
 A. gain
 B. $\frac{1}{\text{gain}}$
 C. $\sqrt{\text{gain}}$
 D. $\frac{1}{\sqrt{\text{gain}}}$
76. A passive satellite
 A. only reflects back signals
 B. only generates signals
 C. only absorbs signals
 D. receives, modulates and then reflects signals
77. When r is the radius of circular orbit of a satellite, then orbital period of the satellite is proportional to
 A. r
 B. $r^{3/2}$
 C. r^2
 D. r^3
78. Insat 1A was launched in
 A. 1981
 B. 1982
 C. 1983
 D. 1984
79. Satellites operate in the frequency range
 A. MF
 B. HF
 C. VHF
 D. VHF and UHF
80. India's main satellite tracking station is located at
 A. Pune
 B. Ahmedabad
 C. Dehradun
 D. New Delhi
81. The biggest disadvantage of the IMPATT diode is its
 A. low efficiency than the other microwave diodes
 B. low power handling ability
 C. high noise
 D. inability to provide pulsed operation
82. Microstrip is similar to the
 A. rectangular waveguide
 B. circular waveguide
 C. microwave cavity resonator
 D. flat coaxial transmission line

100. What is the direction of address bus?
 A. Unidirectional into μp
 B. Unidirectional out of μp
 C. Bidirectional
 D. Mixed direction is when lines into μp and some other out of μp

GENERAL ABILITY TEST

101. The First Indian President to meet men of the 102 Infantry Brigade at the Siachen Glacier above 22,000 feet is
 A. K.R.Narayan
 B. V.V.Giri
 C. A.P.J.Abdul Kalam
 D. R.Venkataraman
102. The disaccharide present in milk is
 A. Sucrose
 B. Maltose
 C. Lactose
 D. Cellotriose
103. The density of pure water will be
 A. maximum at 4°C
 B. minimum at 4°C
 C. maximum at 0°C
 D. minimum at 0°C
104. "Mutation" theory was proposed by
 A. Darwin
 B. Morgan
 C. Lamarck
 D. Hugo de Vries
105. Pollination by birds is known as
 A. Ornithophily
 B. Anemophily
 C. Hydrophily
 D. Entomophily
106. Thymidine is
 A. a nitrogenous base found in DNA
 B. a nitrogenous base found in RNA
 C. a nucleotide
 D. none of these
107. The ABO bloodgroups were discovered by
 A. Charles Darwin
 B. Gregor Mendel
 C. Karl Landsteiner
 D. Watson
108. Bandipur Sanctuary is located in the State of
 A. Tamil Nadu
 B. Uttar Pradesh
 C. Orissa
 D. Karnataka
109. The Gateway of India in ancient times was
 A. Gaya
 B. Bombay
 C. Dwarka
 D. Khyber
110. Which one of the following is correctly matched?
 A. The Mauryas - Monolithic pillars
 B. The Kushanas - Cave architecture
 C. The Guptas - Gandhara Art
 D. The Nayaks - Rathas

111. The first jute spinning mill was started at
 A. Baranagore
 B. Rishra
 C. Chittagong
 D. Kolkata
112. The chief architect of Indian Secularism was
 A. Indira Gandhi
 B. Gandhiji
 C. Jawaharlal Nehru
 D. Tagore
113. The leader of "Red Shirts" was
 A. Mahatma Gandhi
 B. Frontier Gandhi
 C. Subhas Chandra Bose
 D. Bhagat Singh
114. Steel was first produced in India in
 A. 1907 A.D.
 B. 1911 A.D.
 C. 1913 A.D.
 D. 1915 A.D.
115. Jammu and Kashmir was acceded to India in the year
 A. 1942 A.D.
 B. 1948 A.D.
 C. 1950 A.D.
 D. 1956 A.D.
116. Choose the correct 'Synonyms' for the underlined word from the options given.
In spite of his best efforts the officer could not redeem his prestige.
 A. raise
 B. extend
 C. fulfil
 D. recover
117. Choose the correct 'Antonyms' for the underlined word from the options given.
Adversity is the source of numerous vices.
 A. Money
 B. Luxury
 C. Prosperity
 D. Wealth.
118. Select the prefix for the given words.
healthy
 A. ill
 B. not
 C. mis
 D. un
119. Select the Suffix for the given word.
quarrel
 A. some
 B. un
 C. ill
 D. mis
120. Fill in the blanks with suitable Articles
He is not honourable man.
 A. an
 B. a
 C. the
 D. none of these.