

## PART 05 - ELECTRICAL, ELECTRONICS, COMMUNICATION AND INSTRUMENTATION

## ENGINEERING

(Answer ALL questions)

76. How much energy is stored by a 100 mH inductance with a current of 1 A?
1. 100 J
  2. 1 J
  3. 0.05 J
  4. 0.01 J
77. If a network contains B branches and N nodes then the number of mesh current equations would be
1.  $B - (N - 1)$
  2.  $N - (B - 1)$
  3.  $B - N - 1$
  4.  $(B + N) - 1$
78. the current
1. leads the applied voltage
  2. lags behind the applied voltage
  3. is in phase with the voltage
  4. is in quadrature with the voltage
79. In a certain series RC circuit, the true power is 2 W and the reactive power is 3.5 VAR. What is the apparent power?
1. 3.5 VA
  2. 2 VA
  3. 4.03 VA
  4. 3 VA
80. A sine wave voltage is applied across an inductor when the frequency of voltage is increased, the current
1. increases
  2. decreases
  3. remains the same
  4. is zero
81. A shunt generator running at 1000 r.p.m. has generated e.m.f. as 200 V. If the speed increases to 1200 rpm, the generated emf will be nearly
1. 150 V
  2. 175 V
  3. 240 V
  4. 290 V
82. In a d.c. generator in case the resistance of the field winding is increased then output voltage will
1. increase
  2. decrease
  3. remain unaffected
  4. fluctuate heavily
83. D.C. motors are widely used in
1. Pump sets
  2. Air compressors
  3. Electric traction
  4. Machine shops
84. The starting winding of a single-phase motor is placed in
1. armature
  2. field
  3. rotor
85. An over-excited synchronous motor takes
1. leading current
  2. lagging current
  3. both (1) and (2)
  4. in phase current

86. In open loop system the control action
1. depends on the size of the system
  2. depends on system variables
  3. depends on the input signal
  4. is independent of the output
87. A controller is essentially a
1. Sensor
  2. Clipper
  3. Comparator
  4. Amplifier
88. A signal flow graph is a
1. topological representation of a set of differential equations
  2. polar graph
  3. log log graph
  4. special type of graph to analyse modern control systems
89. When the gain margin is positive and the phase margin is negative, the system is
1. stable
  2. unstable
  3. stable or unstable depending on the system
  4. undeterministic
90. The effect of adding poles and zeros can be determined quickly by which of the following?
1. Root locus
  2. Nyquist plot
  3. Bode plot
  4. Nicholar chart
91. A Norton's equivalent is
1. parallel circuit
  2. series circuit
  3. series-parallel circuit
  4. none of the above
92. A resistor of 5 ohms is connected in one branch of a complex network. The current in this branch is 5 A. If this 5  $\Omega$  resistor is replaced by 10  $\Omega$  resistor the current in this branch will be
1. 10 A
  2. 2.5 A
  3. 5 A
  4. less than 5 A
93. To determine the polarity of the voltage drop across a resistor, it is necessary to know the
1. value of the resistor
  2. value of current through the resistor
  3. direction of current through the resistor
  4. power consumed by the resistor
- In a network the number of tree branches following? 1. is equal to the number of links
2. cannot be equal to number of links
  3. is twice the number of links
  4. has no relation with the number of link branches

95. For a voltage source
1. the source emf and terminal voltage are equal
  2. terminal voltage is always lower than source emf
  3. terminal voltage cannot be higher than source emf
  4. terminal voltage is zero
96. Kirchoff's voltage law states that the
1. total voltage drop in a series circuit is always finite
  2. sum of emf and voltage drops in a closed mesh is zero
  3. sum of emfs in a series circuit is zero
  4. sum of emf and voltage drops in a closed mesh is not zero
97. In a thyristor, the magnitude of anode current will
1. increase if gate current is increased
  2. decrease if gate current is decreased
  3. increase if gate current is decreased
  4. not change with variation in gate current
98. For an SCR,  $dI/dt$  protection is achieved through the use of
1. R in series with SCR
  2. L in series with SCR
  3. RL in series with SCR
  4. RLC in series with SCR
99. Inverter gain is given by the ratio
1. dc output voltage/ac input voltage
  2. ac output voltage/ac input voltage
  3. dc output voltage/dc input voltage
  4. ac output voltage/dc input voltage
100. A zener diode works on the principle of
1. tunnelling of charge carriers across the junction
  2. thermionic emission
  3. diffusion of charge carriers across the junction
  4. hopping of charge carriers across the junction
101. The major application of chopper drive is in
1. traction
  2. computers
  3. heating furnishes
  4. miniature motors
102. When a thyristor gets turned on, the gate drive
1. should not be removed or it will turn off the SCR
  2. may or may not be removed
  3. should be removed
  4. should be removed in order to avoid increased losses and higher function
103. Computer cannot do anything without a
1. chip
  2. memory
  3. output device
  4. program

104. The first computer made available for commercial use was
1. Mark-I
  2. ENIAC
  3. EDSAC
  4. UNIVAC
105. When did Intel announce its 16-bit 80286 chip?
1. 1980
  2. 1982
  3. 1984
  4. 1986
106. How many bits can be stored in the RAM? 8 K
1. 8000
  2. 8192
  3. 4000
  4. 4096
107. The larger the RAM of a computer, the faster its processing speed is since it eliminates the
1. need of ROM
  2. need for external memory
  3. frequent disk I/Os
  4. need for wider data path
108. Which of the following types of transducers can be used for measuring the angular position?
- (a) Circular potentiometer
  - (b) LVDT
  - (c) E-Pick off
  - (d) Synchro
- Select the correct answer using the codes given below (a), (b), (c) (d)
1. (c) and
  2. (a) and (d)
  3. (a) and
  4. and
109. The most suitable thermocouple to be used for measuring temperature in the range of 1300° C to 1500° C is
1. Chromel–Constantan
  2. Iron-Constantan
  - 3.
  4. Platinum-Rhodium
110. LVDT is a
1. displacement transducer
  2. velocity transducer
  3. acceleration transducer
  4. pressure transducer
111. In a strain measuring equipment using a resistance strain gauge the output quantity is
1. resistance
  2. voltage
  3. current
  4. impedance
112. If the temperature increases by 100° C, the resistivity of a thermistor is likely to become
1. one half of initial value
  2. one fiftieth of initial value
  3. twice the initial value
  4. no change
1. to convert TDM to FDM
  2. to provide same antenna both for transmission and reception CW
  3. to convert pulsed transmission to transmission (3)
  4. both (1)and

114. In FM transmission, amplitude of the modulating signal determines
1. rate of frequency variations
  2. amount of frequency shift
  3. total balance of transmission
  4. distance of broadcast
115. The highest harmonic generated in human voice is
1. 1 kHz
  2. 5 kHz
  3. 3 kHz
  4. 10 kHz
116. If the reflection coefficient of a line is zero, the line is
1. Infinite line
  2. Open-circuited
  3. Short-circuited
  4. Very short line
117. The receiving antenna most commonly used for TV broadcasting in the UHF band is
1. turnstile antenna
  2. dipole antenna
  3. yagi antenna
  4. rhombic antenna
118. Generally the aircraft electrical system supply frequency of
1. 50 Hz
  2. 60 Hz
  3. 400 Hz
  4. 115 Hz
119. In GPS Navigation, there can be integration between
1. GPS and INS
  2. GPS and LORAN C
  3. GPS and ILS
  4. GPS and DME
120. Mach Number is defined as the ratio between True air speed and speed of the sound at
1. sea level
  2. any altitude
  3. a particular altitude
  4. all altitudes