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COMBINED COMPETITIVE (PRELIMINARY) EXAMINATION, 2010

Serial No. ____ **ELECTRICAL ENGINEERING**

Code No. 08

A

Time Allowed : Two Hours ***Maximum Marks : 300***

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC, IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C OR D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE RESPONSE SHEET.
3. You, have to enter your Roll Number on this Test Booklet in the Box provided alongside. *Do NOT* write *anything* else on the Test Booklet.

   Your Roll No. _____
4. This Booklet contains 120 items (questions). Each item comprises *four* responses (answers). You will select *one* response which you want to mark on the Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each item.
5. In case you find any discrepancy in this test booklet in any question(s) or the Responses, a written representation explaining the details of such alleged discrepancy, be submitted within three days, indicating the Question No(s) and the Test Booklet Series, in which the discrepancy is alleged. Representation not received within time shall not be entertained at all.
6. You have to mark all your responses ONLY on the separate Response Sheet provided. *See directions in the Response Sheet.*
7. All items carry equal marks. Attempt ALL items. Your total marks will depend only on the number of correct responses marked by you in the Response Sheet.
8. Before you proceed to mark in the Response Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Response Sheet as per instructions sent to you with your Admit Card and Instructions.
9. While writing Centre, Subject and Roll No. on the top of the Response Sheet in appropriate boxes use **"ONLY BALL POINT PEN".**
10. After you have completed filling in all your responses on the Response Sheet and the examination has concluded, you should hand over to the Invigilator only the Response Sheet. You are permitted to take away with you the Test Booklet.

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ROUGH WORK

1. Current I in the circuit shown below is :

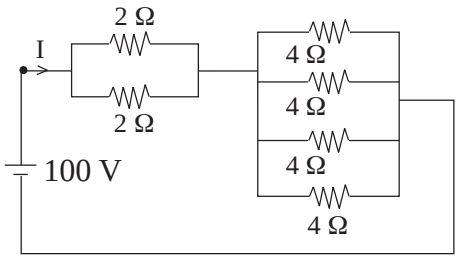

Fig. 1

(A) 5 A (B) 10 A

(C) 25 A (D) 50 A

2. Ohm's Law for A.C. is :

(A) $I = \frac{V}{R + X}$ (B) $I = \frac{V}{R^2 + X^2}$

(C) $I = \frac{V}{\sqrt{R^2 - X^2}}$ (D) $I = \frac{V}{Z}$

3. To generate one unit of electricity in a thermal plant will consume the amount of coal—approximately :

(A) Less than 1 kg (B) 1000 kg

(C) 1 ton (D) 10 kg

4. In purely resistive circuits :

(A) Power consumed is zero (B) Power factor is zero

(C) Power factor is one (D) Only reactive power flows

5. In given RC circuit voltage across R is 100 V and voltage across C is 100 V, supply voltage should be :

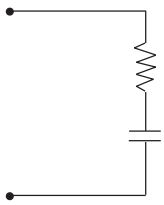

Fig. 5

(A) 100 V (B) 200 V

(C) $\sqrt{100 + 100}$ (D) $\sqrt{(100)^2 + (100)^2}$

6. In a battery when maximum power is delivered. Efficiency of the battery is :

(A) 100% (B) 50%

(C) 75% (D) 25%

7. Power in a three-phase circuit is given by $\sqrt{3}\, V_L I_L \cos\phi$, where ϕ is :

(A) angle between line voltage, line current

(B) angle between line voltage, phase current

(C) angle between phase voltage, phase current

(D) angle between phase voltage, line current

8. Which of the following is 4-wire system ?

(A) Delta (B) Star

(C) Both Delta and Star (D) Neither Delta, nor Star

9. In a three-phase supply, floating neutral is undesirable because it may result in :

(A) unequal line voltages (B) high voltage

(C) low voltage (D) none of the above

10. Time constant of an RC circuit is given by :

(A) $\frac{R}{C}$ (B) RC

(C) $\sqrt{RC}$ (D) $\frac{C}{R}$

11. If $y(s) = \frac{s+3}{(s+1)(s+2)}$ then y(t) is :

(A) $2e^{-t} + 1e^{-2t}$ (B) $1e^{-2t} - 2e^{-t}$

(C) $2e^{-t} - 1e^{-2t}$ (D) $1e^{-2t} + 2e^{-t}$

12. Final Value theorem is given by :

(A) $\lim_{t\to 0} y(t) = \lim_{s\to 0} sy(s)$ (B) $\lim_{t\to \infty} y(t) = \lim_{s\to \infty} sy(s)$

(C) $\lim_{t\to \infty} y(t) = \lim_{s\to 0} sy(s)$ (D) $\lim_{t\to 0} y(t) = \lim_{s\to \infty} sy(s)$

13. For the circuit shown in fig. $\frac{V_2(s)}{V_1(s)}$ is given by :

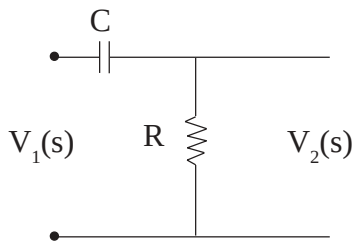

Fig. 13

(A) $\frac{RCs}{RC+1}$ (B) $\frac{RCs}{RCs+1}$

(C) $\frac{1}{RCs+1}$ (D) $\frac{s}{RCs+1}$

14. T.F. of the system is given by :

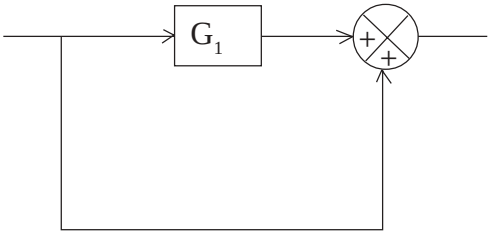

Fig. 14

(A) G_1 (B) $\frac{G_1}{1+G_1}$

(C) $G_1 + 1$ (D) $\frac{G_1}{1-G_1}$

15. $\frac{V_2(s)}{V_1(s)} = \frac{1}{s(s^2+2s+1)}$ is :

(A) type 0 system (B) type 1 system

(C) order 0 system (D) order 1 system

16. Root locus gives the location of the roots on s plane as _____ varies.

(A) time (B) frequency

(C) gain (D) amplitude

17. In Bode plot magnitude is measured as :

(A) $\text{Log}_{10} | G(s) H(s) |$ bels (B) $10 \text{Log}_{10} | G(s) H(s) |$ decibels

(C) $20 \text{Log}_{10} | G(s) H(s) |$ decibels (D) $\text{Log}_{10} | G(s) H(s) |$ decibels

18. If R = 1 ohm, C = 1 Farad and 100 V D.C. is switched across the circuit. Voltage across the capacitor will reach 63.2 volts in _____ seconds.

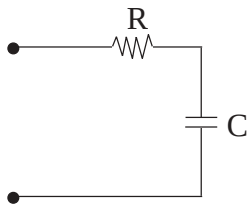

Fig. 18

(A) 1 second (B) 2 seconds

(C) 3 seconds (D) 5 seconds

19. For $G(s) = \dfrac{K}{sT + 1}$:

(A) system is stable, gain margin = 0 (B) system unstable, gain margin = 0

(C) system stable, gain margin = ∞ (D) None of the above

20. Phase margin is measured when :

(A) Phase cuts -180^{o} (B) Phase cuts $+180^{o}$

(C) Gain crosses 0 db (D) Gain crosses 20 db

21. Characteristic equation is given by :

$F(s) = s^3 + 2s^2 + 4s + K$

system will be stable if K is :

(A) $0 < K < 8$ (B) $0 < K < 16$

(C) $K = 8$ (D) $K = 0$

22. A power capacitor has a capacitance of 26.5 μF and voltage rating of 100 kV. It is charged to a d.c. potential of 100 kV. How much energy is stored in the device ?

(A) 132,500 J (B) 132 J

(C) 1 kJ (D) 26.5 Watts

23. Thermal time constant of a transmission line is of :

(A) few seconds (B) few minutes

(C) few hours (D) few days

24. A secondary cell having 20 hr charge rate of 10 A and delivering 5 A for 36 hr on discharge with a mean terminal voltage of 1.96 V. The terminal voltage on charge has a mean value of 2.35. Watt-hour efficiency is :

(A) 25% (B) 50%

(C) 75% (D) 90%

25. Find trickle current to be sent through an idle accumulator battery having a capacity of 50 Ah rating in order to keep it full charged, when the discharge rate due to local action is 2% of the normal discharge rate.

(A) 5 mA (B) 50 mA

(C) 500 mA (D) 450 mA

26. Two underground cables having conductor resistances 0.7 ohm and 0.5 ohm and insulation resistances of 300 MΩ and 600 MΩ respectively are joined in series. Resultant conductor and insulation resistances are :

(A) 1.2 Ω, 900 MΩ (B) 0.3 Ω, 200 MΩ

(C) 1.2 Ω, 200 MΩ (D) 1.2 Ω, 900 Ω

27. A resistance R is connected in series with a parallel circuit comprising two resistances of 12 Ω and 8 Ω respectively. The total power dissipated in the circuit is 70 W, when applied voltage is 20. R is :

(A) 91 Ω (B) 9.1 Ω

(C) .91 Ω (D) 910 Ω

28. For the circuit shown, difference of potential between X and Y is :

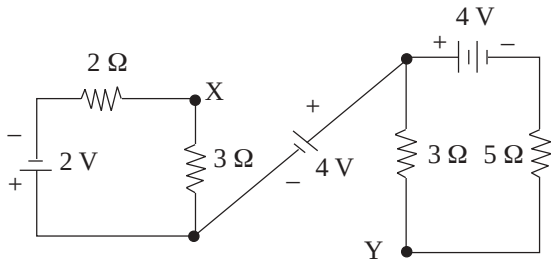

Fig. 28

(A) Y is 3.7 V below X

(B) Y and X are at the same potential

(C) Y is 3.7 V above X

(D) X is 4 V below Y

29. A battery consists of 10 cells each with an e.m.f. of 2 V and internal resistance of 0.2 Ω are connected in parallel. Power lost in a resistance of .25 Ω across the circuit is :

(A) 493 W

(B) 15.7 W

(C) 49.3 W

(D) 157 W

30. Calculate Impedance, Current power, Power factor.

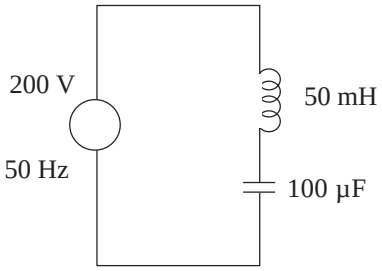

Fig. 30

(A) 16.1 Ω, 12.4 A, 0, 0 lead

(B) 16.1 Ω, 12.4 A, 0, 1 lead

(C) 8.55 Ω, 24.8 A, 0, 0 lead

(D) 8.55 Ω, 24.8 A, 0, 1 lead

31. A 12 kV, 50 Hz, 1 phase alternator is connected to an unloaded cable having a capacitance of 2.03 µF. If the total circuit inductance is 0.2 H, what harmonic in the supply voltage would produce resonance in the circuit :

(A) First

(B) Third

(C) Fifth

(D) Seventh

32. 100 V D.C. is applied across a coil having R = 2 Ω and L = 10 H. Value of the current after 7.5 sec is :

(A) 50 A (B) 38.8 A

(C) 19.4 A (D) 58.2 A

33. When switch is closed at that instant current increases at the rate of 4 A/sec. applied voltage is :

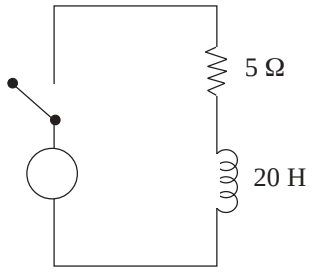

Fig. 33

(A) 20 V (B) 40 V

(C) 60 V (D) 80 V

34. A resistor is connected across the terminals of a 20 μF capacitor which has been previously charged to a p.d. of 500 V. If the p.d. falls to 300 V in 0.5 minutes then R is :

(A) 294 Ω (B) 2940 Ω

(C) 2.94 kΩ (D) 2.94 MΩ

35. In an RLC circuit voltage across R, L and C is each 10 V. Supply voltage is :

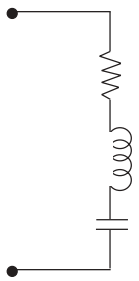

Fig. 35

(A) 10 V (B) 30 V

(C) 20 V (D) 15 V

36. An ideal moving iron voltmeter M will read :

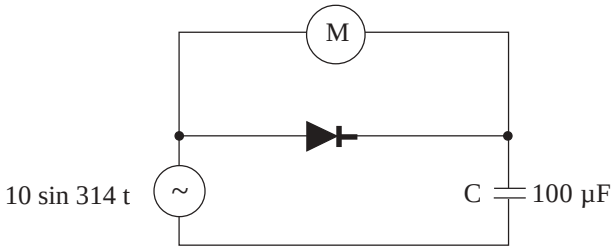

Fig. 36

(A) 7.07 V (B) 14.14 V

(C) 12.25 V (D) 15 V

37. A single phase full-bridge diode rectifier delivers a constant load current of 10 A. Average and R.M.S. values of source current are respectively :

(A) 5 A, 10 A (B) 10 A, 10 A

(C) 5 A, 5 A (D) 0, 10 A

38. Capacitor filter is ideal for currents which are :

(A) small (B) medium

(C) large (D) very large

39. $\frac{di}{dt}$ rating of an SCR is specified for its :

(A) decaying anode current (B) decaying gate current

(C) rising gate current (D) rising anode current

40. In a single phase semi converter, for continuous conduction, each SCR conducts for :

(A) α (B) π

(C) $\alpha + \pi$ (D) $\pi - \alpha$

41. Each diode of a 3 phase half-wave diode rectifier conducts for :

(A) 60^o (B) 120^o

(C) 180^o (D) 90^o

42. Three-phase ac to dc converter which requires neutral point connection is :

(A) Three phase semi converter (B) Three phase full converter

(C) Three phase half wave converter (D) Three phase full converter with diodes

43. For the triangular waveform shown in fig., RMS value of voltage is :

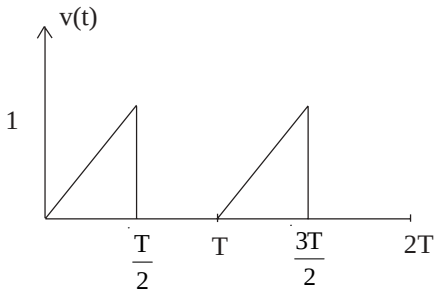

Fig. 43

(A) $\sqrt{\frac{1}{6}}$ (B) $\sqrt{\frac{1}{3}}$

(C) $\frac{1}{3}$ (D) $\sqrt{\frac{2}{3}}$

44. In d.c. choppers, per unit ripple is maximum when duty cycle is :

(A) 0.2 (B) 0.5

(C) 0.7 (D) 0.9

45. A single phase inverter has square wave output voltage. What is the fifth harmonic component in relation to the fundamental component ?

(A) 40% (B) 30%

(C) 20% (D) 10%

46. Bulk power transmission over long HVDC lines are preferred on account of :

(A) Low cost of HVDC terminals (B) No harmonic problems

(C) Minimum line power losses (D) Simple protection

47. The error which is repetitive in nature is :

(A) observational error (B) environmental error

(C) random error (D) systematic error

48. The smallest change in the value of input variable being measured, that will cause a change in the output signal of the instrument is termed as :

(A) hysteresis (B) drift

(C) resolution (D) threshold

49. Repeatability of the instrument with respect to a given fixed input is :

(A) accuracy (B) precision

(C) resolution (D) sensitivity

50. Radius of a sphere was estimated as (50 ± 0.5 mm). Estimated error in its mass is :

(A) 3% (B) 1%

(C) 0·1% (D) 10%

51. A solar cell is :

(A) Photovoltaic transducer (B) Photoemissive transducer

(C) Photoconductive transducer (D) Photoresistive transducer

52. LVDT stands for :

(A) Low voltage digital transducer

(B) Linear voltage differential transducer

(C) Least varying differential transformer

(D) Linear variable differential transformer

53. CRO is _____ instrument.

(A) Low input impedance (B) High input impedance

(C) Zero input impedance (D) None of the above

54. Audio frequency range lies :

(A) Between 20,000 to 30,000 Hz (B) Between 20 and 20,000 Hz

(C) Above 40,000 Hz (D) Around 1000 Hz

55. Function of steel wire in ACSR conductor is to :

(A) compensate for skin effect

(B) take care of surges

(C) provide additional mechanical strength

(D) reduce inductance

56. Resistance of earth should be :

(A) Infinite (B) High

(C) Low (D) Minimum possible

57. Main limitation of the PMMC instrument is :

(A) High power consumption

(B) Absence of effective eddy current damping

(C) Low torque/weight ratio

(D) High cost relative to moving-iron instrument

58. Electrodynamic type instruments can be used to measure :

(A) a.c. input only (B) d.c. input only

(C) Both a.c., d.c. (D) None of these

59. A rectifier type moving coil instrument respond to :

(A) r.m.s. values of all waveforms

(B) Average values of all waveforms

(C) R.M.S. values of only sinusoidal waveforms

(D) Peak values of all waveforms

60. Controlling torque of an electrical measuring instrument is proportional to :

(A) Q (B) Q^2

(C) $\frac{1}{Q}$ (D) $\sqrt{Q}$

61. For measuring currents in the radio frequency range, which of the following instruments is used ?

(A) Moving iron type (B) Moving coil type

(C) Thermocouple type (D) Rectifier type

62. Operating frequency range of a rectifier type instrument is :

(A) Upto 20 Hz (B) Between 20 Hz – 20 kHz

(C) From 20 kHz to 50 kHz (D) D.C. only

63. Tachometer is a special case of :

(A) a.c. motor (B) d.c. generator

(C) induction motor (D) universal motor

64. Linear actuator converts :
(A) Mechanical Energy to Electrical Energy
(B) Electrical Energy to Mechanical Energy
(C) Electrical Energy to Linear Motion
(D) Potential Energy to Kinetic Energy

65. $L\left[\int_0^t f(t)\,dt\right]$ is :
(A) $s^n F(s)$ (B) $\frac{F(s)}{s}$
(C) $F(s)$ (D) $\frac{F(s)}{s^n}$

66. PID controller is represented as :
(A) $e + \frac{1}{T_i}\int_0^t e dt$ (B) $e + T_d \frac{de}{dt}$
(C) $e + \frac{1}{T_i}\int_0^t e dt + T_d \frac{de}{dt}$ (D) None of these

67. In a closed loop control system :
(A) Output is dependent on input (B) Input is dependent on output
(C) Output is independent of input (D) None of these

68. Megger is used for :
(A) open circuit test (B) short circuit test
(C) continuity test (D) all of the above

69. Current transformers are used to extend the range of :
(A) ammeters (B) current coil of wattmeters
(C) current coil energy meters (D) all of the above

70. Potentiometers are used to measure :
(A) Voltage (B) Current
(C) Resistance (D) All of the above

71. A milliammeter of 3 ohms resistance reads a maximum current of 150 milliamperes. How it can be used as a voltmeter to read upto 15 volts ?
    (A) Connect a resistance of 9.7 ohms in series with the meter
    (B) Connect a resistance of 9.7 ohms in parallel
    (C) Connect of resistance of 97 ohms in series
    (D) Connect of resistance of 97 ohms in parallel

72. Base units in SI system are :
    (A) Meter, kilogram, second, ampere, kelvin
    (B) Meter, kilogram, second
    (C) Meter, kilogram, second, ampere, kelvin, candela
    (D) Meter, kilogram, second, ampere

73. Wattmeters are _____ type while energy meters are _____ type instruments.
    (A) Indicating, Recording
    (B) Indicating, Integrating
    (C) Integrating, Indicating
    (D) Integrating, Recording

74. Laplace transform of a decaying exponential function is :
    (A) $\frac{A}{s+\alpha}$
    (B) $\frac{A}{s-\alpha}$
    (C) $\frac{s}{s+\alpha}$
    (D) $\frac{s}{s-\alpha}$

75. Laplace transform of unit impulse function is :
    (A) $\frac{1}{s}$
    (B) 1
    (C) s
    (D) None of these

76. Acceptor type semiconductor is formed by adding impurity of valency :
    (A) 3
    (B) 4
    (C) 5
    (D) 6

77. Fermi level represents the energy level with probability of its occupation of :
    (A) 0
    (B) 50%
    (C) 75%
    (D) 100%

78. Primary function of a clamper circuit is to :

(A) Suppress variations in signal voltage

(B) Raise positive half cycle of the signal

(C) Lower negative half cycle of the signal

(D) Introduce d.c. level into an a.c. signal

79. Photodiodes belong to _____ category.

(A) Photoconductive (B) Photovoltaic

(C) Photoemissives (D) None of the above

80. Thermistor has :

(A) Zero temperature coefficient of resistivity

(B) Positive temperature coefficient of resistivity

(C) Negative temperature coefficient of resistivity

(D) None of the above

81. Input resistance of a transistor is much _____ than its output resistance.

(A) Less (B) Higher

(C) Same (D) None of the above

82. Reading in d.c. milliammeter is :

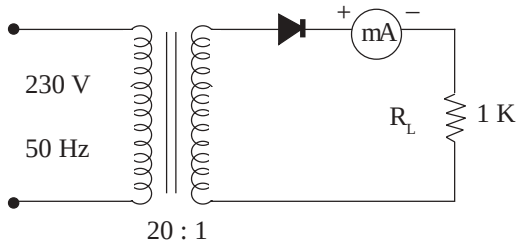

Fig. 82

(A) 5.175 mA (B) 15.175 mA

(C) .5175 mA (D) 7.5 mA

83. R.M.S. current in half wave rectifier is _____ and full wave rectifier is _____.

(A) $I_m/2, I_m/\sqrt{2}$ (B) $I_m/\sqrt{2}, I_m/2$

(C) $I_m/\sqrt{3}, I_m/3$ (D) $I_m/3, I_m/\sqrt{3}$

84. In Y Parameters Y_{11} is :

(A) Short circuit input admittance

(B) Short circuit forward transfer admittance

(C) Short circuit output admittance

(D) None of the above

85. h-parameters h_{11} and h_{21} for the circuit shown in fig.

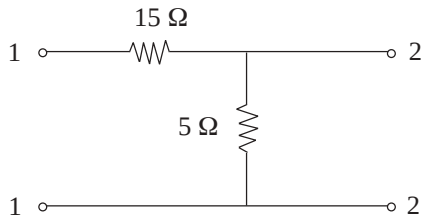

Fig. 85

(A) 15 Ω, 1

(B) 15 Ω, –1

(C) .2 moh, 1

(D) .2 moh, –1

86. Transistor amplifier has lowest input impedance in :

(A) CB configuration

(B) CE configuration

(C) CC configuration

(D) None of these

87. Improper biasing of a transistor circuit leads to :

(A) distortion of output signal

(B) faulty location of load line

(C) excessive heating at collector point

(D) heavy loading of emitter terminal

88. In an amplifier coupling capacitors are used to :

(A) Match the impedances

(B) Control the output

(C) Limit the bandwidth with input or output

(D) To prevent d.c. mixing

89. Multistage amplifiers are used in order to achieve greater :

(A) Voltage amplification

(B) Frequency response

(C) Power gain

(D) All of the above

90. The main component responsible for the fall of gain of an RC-coupled amplifier in low frequency range is :

(A) Coupling capacitor
(B) Resistor Re
(C) Biasing system
(D) The device (Transistor)

91. An amplifier with Z_i = 2 kΩ has a voltage gain A = 2000. If a negative feedback of B = 0.01 is applied to it, what shall be input impedance of feedback amplifier ?

(A) 42 Ω
(B) 420 Ω
(C) 4200 Ω
(D) 42000 Ω

92. Negative feedback in amplifier :

(A) reduces voltage gain
(B) increase voltage gain
(C) does not affect voltage gain
(D) can convert it into oscillator

93. A power transistor working in class A operation has zero signal power dissipation of 10 Watt. If the a.c. output power is 3 Watt, collector efficiency and power rating of transistor are :

(A) 3%, 10 W
(B) 30%, 10 W
(C) 3%, 1 W
(D) 3%, 3 W

94. Tuned voltage amplifiers are not used in :

(A) Public address system
(B) Radio Receivers
(C) TV receivers
(D) None of these

95. A tuned collector oscillator in radio receiver has a fixed inductance of 60 µH and has to be tunable over frequency band of 400 to 1200 kHz range of the variable capacitor to be used is :

(A) 29.2 to 264.0 PF
(B) 292 to 2640 PF
(C) 264 to 2900 PF
(D) 292 to 26400 PF

96. Wein bridge oscillator uses :

(A) Positive feedback
(B) Negative feedback
(C) Both Positive and Negative feedback
(D) No feedback

97. An Op-Amp has offset current of 100 nA and feedback resistance of 200 kΩ. Offset voltage is :

(A) 2 mV (B) 20 mV

(C) 200 mV (D) .2 mV

98. Amplitude modulation is used when :

(A) Bandwidth is small (B) Area of reception is large

(C) Both (A) and (B) (D) None of the above

99. Radio waves have frequency range from :

(A) Few Hertz to 10^3 Hertz (B) Few Hertz to 10^6 Hertz

(C) Few Hertz to 10^9 Hertz (D) Few Hertz to 10^{12} Hertz

100. In superheterodyne receiver converter stage consists of :

(A) Mixer and Detector (B) Mixer and I.F. amplifier

(C) Mixer and Local oscillator (D) None of these

101. Convert binary number 0.101 to decimal number :

(A) 0.6 (B) 0.625

(C) 0.62 (D) 6.0

102. Subtract $(101)_2$ from $(111)_2$:

(A) 001 (B) 010

(C) 100 (D) 101

103. In NOT circuit :

(A) Input is low output is low (B) Input is high output is high

(C) Input is low output is high (D) None of these

104. Exclusive NOR circuit is represented as :

(A) $X = A \cdot B + \overline{A} \cdot \overline{B}$ (B) $X = \overline{A} \cdot B + \overline{A} \cdot \overline{B}$

(C) $X = (\overline{AB})$ (D) $X = \overline{A \ominus B}$

105. Fig. performs logic function of :

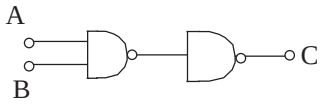

Fig. 105

(A) OR (B) XOR

(C) NAND (D) AND

106. In a C.R.O. of 200 V, 50 Hz signal produces a deflection of 4 c.m. corresponding to a certain setting of vertical gain control. If another voltage produces a deflection of 5 c.m., what is the value of this voltage ?

(A) 50 V (B) 250 V

(C) 200 V (D) 300 V

107. Analog multimeters are :

(A) Very cheap (B) Easy to operate

(C) Very accurate (D) None of these

108. An optical signal has lost 85% of its power after traversing 500 m of fibre. What is the loss in dB/km of this fibre ?

(A) 14.1 db/m (B) 1.41 db/km

(C) 1.41 db/m (D) 141 db/km

109. An ideal d.c. generator is one that has _____ voltage regulation.

(A) low (B) zero

(C) positive (D) negative

110. Which of the following d.c. generator cannot be build up on open circuit ?

(A) shunt (B) series

(C) short shunt (D) long shunt

111. Speed of a d.c. motor can be controlled by varying :

(A) flux per pole (B) resistance of armature

(C) applied voltage (D) all of the above

112. Which of the following is best suited for 3-phase 4 wire service ?

(A) Δ-Δ (B) Y-Y

(C) Δ-Y (D) Y-Δ

113. Main purpose of performing open circuit test on a transformer is to measure its :

(A) copper loss (B) core loss

(C) total loss (D) insulation resistance

114. When a 400 Hz transformer is operated at 50 Hz its kVA is :

(A) reduced to 1/8 (B) increased 8 times

(C) unaffected (D) increased 64 times

115. Efficiency of a 3 phase induction motor is approximately proportional to :

(A) 1-s (B) s

(C) N (D) Ns

116. In a three-phase induction motor rotor field rotates at synchronous speed with respect to :

(A) stator (B) rotor

(C) stator flux (D) none of these

117. A 6 pole, 50 Hz 3-phase induction motor has a full load speed of 950 R.P.M. At half load its speed would be _____ r.p.m.

(A) 475 (B) 500

(C) 975 (D) 1000

118. One of the characteristics of a single phase induction motor is :

(A) Self starting (B) Not self starting

(C) Requires only one winding (D) Can rotate in one direction only

119. For general time varying fields Maxwell's equation $\oiint B.ds = 0$ represents :

(A) Gauss' Law—Magnetic (B) Gauss' Law

(C) Faraday's Law (D) Maxwell-Ampere Law

120. Maxwell's equation of continuity in differential form is given as :

(A) $\nabla \cdot D = \rho$ (B) $\nabla \cdot B = 0$

(C) $\Delta \cdot J = -\frac{\partial S}{\partial t}$ (D) $\Delta \times E = -\frac{\partial B}{\partial t}$

ROUGH WORK

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