

PART III — 1. ELECTRICAL AND ELECTRONICS ENGINEERING

56. Magnetic flux has the unit of
1. Weber
 2. Weber – m²
 3. Ampere-tun
 4. Newton
57. If a current of 10 A flows for 4 minutes, find the quantity of electricity transferred
1. 2.5 C
 2. 40 C
 3. 0.4 C
 4. 2400 C
58. The voltage across a $1\mu F$ capacitor is 10 V for $t < 0$. At $t = 0$, a $1\text{ M}\Omega$ resistor is connected across the capacitor terminals. Find the time constant, the voltage $v(t)$ at $t = 1\text{ s}$.
1. 1 s, 3.67 V
 2. 10 s, 0.367 V
 3. 10 s, 2.71 V
 4. 1 s, 2.71 V
59. A network has 12 branches and 8 independent loops. How many nodes are there in the network?
1. 19
 2. 17
 3. 5
 4. 4
60. When a uniform line charge of $-6\mu\text{C/m}$ lies along the y axis, what is the net electrical flux crossing the surface of a cube side 2 m, centered at the origin?
1. $-2\mu\text{C}$
 2. $-4\mu\text{C}$
 3. $-12\mu\text{C}$
 4. $-24\mu\text{C}$
61. Two identical coaxial circular coils carry the same current I but in opposite directions. The magnitude of the magnetic field B at a point on the axis midway between the coils is
1. Zero
 2. The same as that produced by one coil
 3. Twice that produced by one coil
 4. Half that produced by one coil
62. When port 1 of a two port circuit is short circuited, $I_1 = 4I_2$ and $V_2 = 0.25I_2$, which of the following is true?
1. $Y_{11} = 4$
 2. $Y_{12} = 16$
 3. $Y_{21} = 16$
 4. $Y_{22} = 0.25$
63. Hysteresis loss (P_h) is computed using the equation
1. $P_h = K_h^{1.6} B f$
 2. $P_h = K_h B_m^{1.6} f$
 3. $P_h = K_h B f^{1.6}$
 4. $P_h = K_h B^{1.6} f^{1.6}$
64. A star winding supplied from a three phase 60 Hz system is required to produce a magnetic flux rotating at 900 rev/min. Determine no. of poles
1. 8
 2. 16
 3. 4
 4. 2

Test

Prime

By Adda247

ALL EXAMS, ONE SUBSCRIPTION



Test. Analyze. Improve. Repeat.



Don't just *prepare*. *Perform*.

Test Prime — built only for mock tests.



1,50,000+

Mock Tests



25,000+

Previous Year Papers



800+

Exam Covered



500% Refund

on Selection



5 lakh+

Free Quizzes



Daily

Free PDFs



Job Alerts

Stay Updated

- Multilingual
- Detailed Solution
- Strong and Weak Areas



**All India
Rankings**

Compete with lakhs.
Rank. Improve. Repeat.



Adda247 test prime

Rating ▾

Editors' choice

New



Adda247 Test Prime

Adda Education • Education

📄 Installed



DOWNLOAD THE APP



65. The speed of rotor field flux with respect to the stator in a 50 Hz, 4 pole induction machine running at 1% slip is
1. 1500 rpm
 2. 15 rpm
 3. 1485 rpm
 4. 3000 rpm
66. A synchronous machine is connected to an infinite bus. The armature current change with field current for constant real power is
1. a V curve
 2. an inverted V curve
 3. constant curve
 4. dependent on the power factor
67. An induction machine is operated with two values of frequencies with the ratio of 1:2 without changing the voltage. Then the starting torque of the machine for two cases will be in the ratio of
1. 1 : 2
 2. 1 : 4
 3. 2 : 1
 4. 4 : 1
68. In a stand alone synchronous generator, impact of increase in a real power load with governor valve control is
1. increase in frequency
 2. decrease in frequency
 3. maintain frequency
 4. oscillation in frequency
69. A differentially compound DC generator has its series and shunt field providing 20% and 80% flux respectively. The series field is suddenly short circuited without changing the load. Then the terminal voltage ignoring all the resistances
1. Remains same
 2. Reduces by 20%
 3. Increases by 20%
 4. Reduces by 80%
70. A 200/100 V 50 Hz transformer is to be excited at 60 Hz from the primary side without increase in excitation current. Then the voltage to be applied at primary is
1. 160 V
 2. 200 V
 3. 240 V
 4. 280 V
71. In which type of fault the negative and zero sequence currents are equal to zero
1. LG fault
 2. LL fault
 3. LLG fault
 4. 3 phase symmetrical fault
72. An 800 kV transmission line has a maximum power transfer capacity of P. When operated at 400 kV with the series reactance unchanged, the new maximum power transfer capacity is approximately
1. P
 2. 2 P
 3. P/2
 4. P/4
73. A reactance relay is
1. Voltage restrained directional relay
 2. Directional restrained over current relay
 3. Voltage restrained over-current relay
 4. Directional restrained over voltage relay
74. Steady state stability of a power system is improved by
1. reducing fault clearing time
 2. using double circuit line instead of single circuit line
 3. single pole switching
 4. decreasing generator inertia

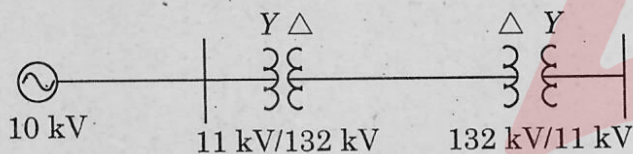
75. Which one of the following relays has the capability of anticipating the possible major fault in a transformer?

1. Over current relay
2. Differential relay
3. Buchholz relay
4. Over fluxing relay

76. Coron loss does not depend on

1. Atmosphere
2. Conductor size
3. Line voltage
4. Height of the conductor

77. Consider the single line diagram shown in figure below. If the base voltage is selected on the generator terminal as 10 kV, what will be the base voltage on transmission line?



1. 10 kV
2. 11 kV
3. 120 kV
4. 132 kV

78. The value of A matrix in $\dot{X} = AX$ for the system described by $\ddot{y} + 2\dot{y} + 3y = 0$

1. $\begin{bmatrix} 1 & 0 \\ -2 & -1 \end{bmatrix}$
2. $\begin{bmatrix} 1 & 0 \\ -1 & -2 \end{bmatrix}$
3. $\begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$
4. $\begin{bmatrix} 0 & 1 \\ -3 & -2 \end{bmatrix}$

79. The open loop transfer function of a unity feedback system is $G(S) = \frac{50}{S^2(S+2)}$. The

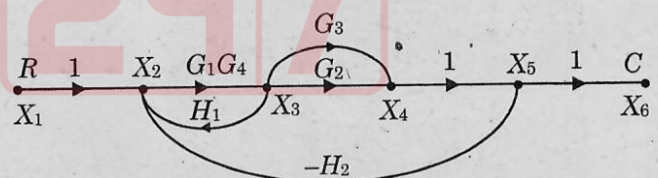
steady state error for unit acceleration input is

1. 0.02
2. 0.04
3. 0.06
4. 0.08

80. Negative feedback reduces

1. system stability
2. system gain
3. system stability and gain
4. bandwidth

81. Transfer function of the signal flow graph shown in Fig. is



1. $\frac{G_1G_2G_4 + G_1G_3G_4}{1 + G_1G_4H_1 + G_1G_2G_4H_2 + G_1G_3G_4H_2}$
2. $\frac{G_1G_2G_4 + G_1G_3G_4}{1 - G_1G_4H_1 + G_1G_2G_4H_2 + G_1G_3G_4H_2}$
3. $\frac{G_1G_2G_4 + G_1G_3G_4}{1 - G_1G_4H_1 - G_1G_2G_4H_2 + G_1G_3G_4H_2}$
4. $\frac{G_1G_2G_4 + G_1G_3G_4}{1 - G_1G_4H_1 - G_1G_2G_4H_2 - G_1G_3G_4H_2}$

82. The characteristic equation of a feedback control system is given by

$$2s^4 + s^3 + 2s^2 + 5s + 10 = 0.$$

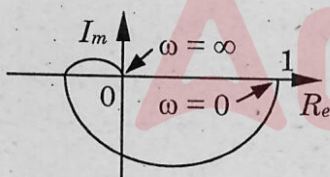
The number of roots in the right half of s-plane are

1. zero
2. one
3. two
4. three

83. Peak overshoot of step-input response of an underdamped second-order system is explicitly indicative of

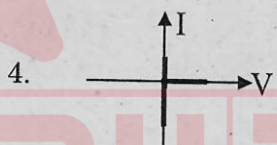
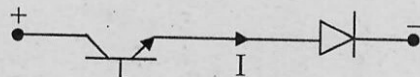
1. settling time
2. rise time
3. natural frequency
4. damping ratio

84. The transfer function of the following polar plot is



1. $G(s) = \frac{1}{(1 + sT_1)(1 + sT_2)}$
2. $G(s) = \frac{1}{s(1 + sT_1)(1 + sT_2)}$
3. $G(s) = \frac{1}{(1 + sT_1)(1 + sT_2)(1 + sT_3)}$
4. $G(s) = \frac{1}{s^2(1 + sT_1)(1 + sT_2)}$

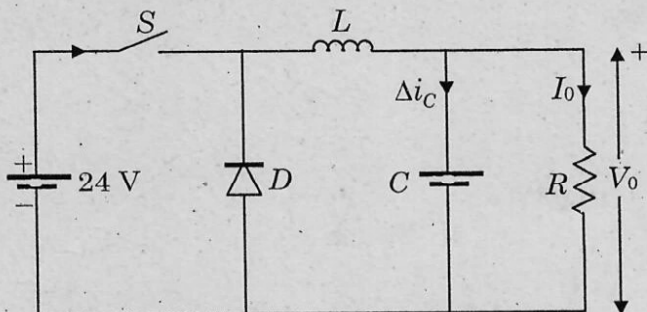
85. The following figure shows a composite switch consisting of a power transistor (BJT) in series with a diode. Assuming that the transistor switch and the diode are ideal, the I-V characteristic of the composite switch is



86. A three phase fully controlled bridge converter is feeding a load drawing a constant and ripple free load current of 10 A at a firing angle of 30° . The approximate percentage Total Harmonic Distortion (%THD) and the rms value of fundamental component of input current will respectively be

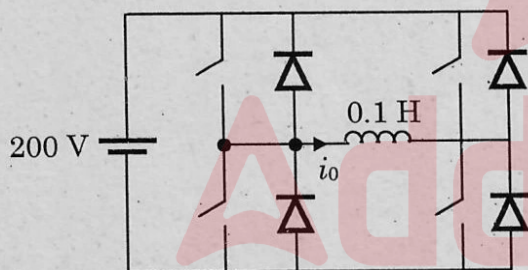
1. 31% and 6.8 A
2. 31% and 7.8 A
3. 66% and 6.8 A
4. 66% and 7.8 A

87. In the circuit shown, an ideal switch S is operated at 100 kHz with a duty ratio of 50%. Given that Δi_c is 1.6 A peak-to-peak and I_0 is 5 A dc, the peak current in S , is



1. 6.6 A
2. 5.0 A
3. 5.8 A
4. 4.2 A

88. A single phase source inverter is feeding a purely inductive load as shown in the figure. The inverter is operated at 50 Hz in 180° square wave mode. Assume that the load current does not have any dc component. The peak value of the inductor current i_0 will be



1. 6.37 A
2. 10 A
3. 20 A
4. 40 A

89. A single phase fully controlled bridge converter supplies a load drawing constant and ripple free load current, if the triggering angle is 30° , the input power factor will be

1. 0.65
2. 0.78
3. 0.85
4. 0.866

90. A variable speed three-phase induction motor drive obtained by varying the applied voltage is suitable for

1. driving constant torque loads
2. driving fan type loads where torque proportional to square of speed
3. driving loads where torque inversely proportional to square of speed
4. driving all types of loads

91. The operation of ac motors fed from current source inverters is characterized by

1. sinusoidal line voltage
2. peaky armature voltage
3. good harmonic torques
4. sinusoidal armature voltage with spikes

92. A mod-3 counter is already available. To design a 'divide by 6' counter, further how many more flip-flops are required?

1. 6
2. 3
3. 2
4. 1

93. Given two half adders, what extra 2-input gate is required to build a full adder?

1. NOR gate
2. XOR gate
3. OR gate
4. AND gate

94. The 8085 instruction that doubles the value in accumulator is
1. XRA A
 2. ADD A
 3. SUB A
 4. ORA A
95. The status flag that is available in micro-processor 8085, but not available in micro-controller 8051 is
1. Carry flag
 2. Overflow flag
 3. Auxiliary carry flag
 4. Zero flag
96. The Hexadecimal equivalent of the octal number 567.43_8 is
1. $187.7C$
 2. $1C7.87$
 3. $187.C7$
 4. $177.8C$
97. The number of T-states taken for fetching and execution of the 8085 instruction : INR M is
1. 4 T-states
 2. 7 T-states
 3. 10 T-states
 4. 6 T-states
98. The micro controller 8051 has all of the following, except
1. built-in Timer
 2. built-in Serial Communication
 3. built-in Analog-to-Digital Converter
 4. built-in Read Only Memory
99. The discrete-time signal $x(n) = (-1)^n$ is periodic with fundamental period
1. 6
 2. 4
 3. 2
 4. 0
100. In Gibb's phenomenon, the ringing effect is predominantly present near the
1. bandgap
 2. bandedge
 3. bandwidth
 4. bandshall
101. The IIR filter designing involves
1. Designing of analog filter in analog domain and transforming into digital domain
 2. Designing of digital filter in analog domain and transforming into digital domain
 3. Designing of analog filter in digital domain and transforming into analog domain
 4. Designing of digital filter in digital domain and transforming into analog domain
102. For designing a multirate LPF with passband 0 to 50 Hz, stopband 60 to 280 Hz, stopband deviation 0.001, passband deviation 0.01 and sampling frequency $(f_s) = 400$ Hz, what would be the value of normalized transition width?
1. 0.025 Hz
 2. 1.25 Hz
 3. 1.50 Hz
 4. 2.6 Hz

103. In IIR filter design by Bilinear transformation, the Bilinear transformation is a mapping from,
1. Z-plane to S-plane
 2. S-plane to Z-plane
 3. S-plane to J-plane
 4. J-plane to Z-plane
104. What is the convolution of the sequences of $x_1(n) = x_2(n) = \{1, 1, 1\}$?
1. $\{1, 2, 3, 2, 1\}$
 2. $\{2, 1, 2, 3, 1\}$
 3. $\{1, 2, 3, 1, 2\}$
 4. $\{3, 1, 2, 3, 1\}$
105. When the frequency band is selected, we can specify the sampling rate and the characteristics of the pre-filter, which is also called as
1. analog filter
 2. digital filter
 3. aliasing filter
 4. anti-aliasing filter
106. Which mechanism in control Engineering implies an ability to measure the state by taking measurements at output?
1. controllability
 2. observability
 3. differentiability
 4. adaptability
107. The layer that extends host to host delivery, to process to process delivery is
1. network layer
 2. transport layer
 3. session layer
 4. data link layer
108. UDP is a _____ protocol.
1. Session layer connectionless
 2. Transport layer connectionless
 3. Session layer connection oriented
 4. Transport layer connection oriented
109. Modified z-transform is used
1. for systems having zero dead-time
 2. for systems having dead-time which is an integer multiple of sampling time
 3. for systems having dead-time which is not an integer multiple of sampling time
 4. for systems having large time constant
110. Increasing the order of data hold will
1. improve the stability of the system
 2. decrease the time delay
 3. increase the time delay
 4. increase the time constant
111. A linear time invariant single input single output system has the state space model given by $\frac{dx}{dt} = Fx + Gu, y = Hx$, where $F = \begin{bmatrix} 0 & 1 \\ -4 & -2 \end{bmatrix}$; $G = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$ and $H = [1 \ 0]$. Here, x is the state vector, u is the input, and y is the output. The damping ratio of the system is
1. 0.25
 2. 0.5
 3. 1
 4. 2

Test

Prime

By Adda247

Previous Year Papers PDF

PRACTICE MORE, SCORE HIGHER!



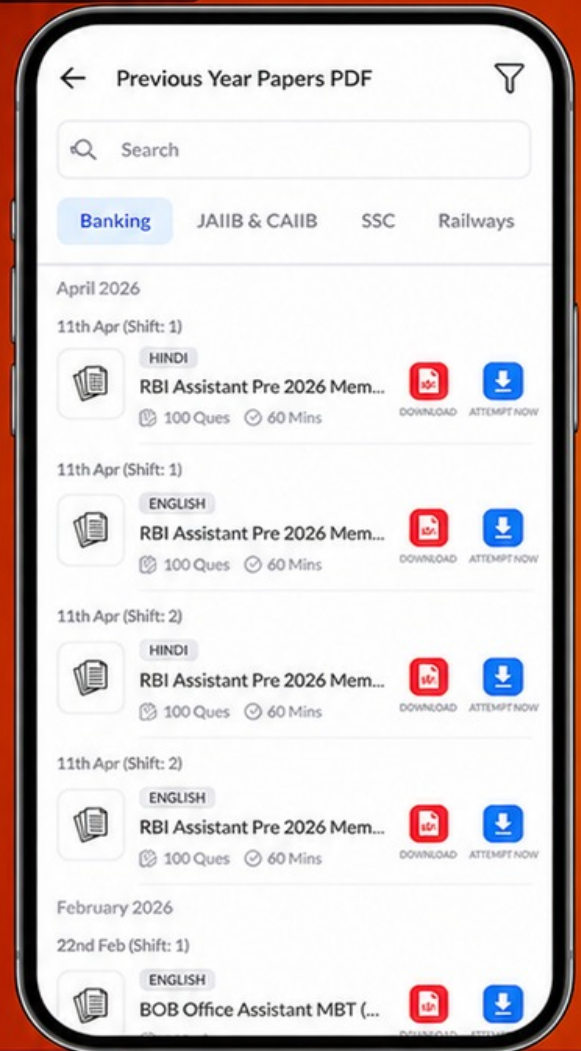
Free
25,000+
PDF's

High-Quality | Exam-Wise | Updated Regularly

ATTEMPT AS
MOCK



Turn PDFs into real exam experience.
Analyze. Improve. Succeed.



Topic-wise &
Exam-wise PDFs



Download &
Study Offline



Attempt as Mock
& Track Score



Smart Analysis
& Performance

AVAILABLE IN



Banking



SSC



Railway



Teaching



UGC



Agriculture



Nursing



Bihar



UP



Punjab



WB



Odisha



TN



AP & Telangana



Haryana



DOWNLOAD THE APP



112. The z -transform corresponding to the Laplace transform $G(s) = 10/s(s+5)$ is
1. $\frac{2ze^{-5T}}{(z-1)(z-e^{-T})}$
 2. $\frac{2z(1-e^{-5T})}{(z-1)(z-e^{-5T})}$
 3. $\frac{e^{-5T}}{(z-1)^2}$
 4. $\frac{e^{-T}}{(z-1)(z-e^{-5T})}$
113. If modulation index of an AM wave is changed from 0 to 1, the transmitted power is
1. increased by 50%
 2. increased by 75%
 3. increased by 100%
 4. remains unaffected
114. If the number bits per sample in a PCM system is increased from n to $(n+1)$, the improvement in signal to quantization noise ratio will be
1. 3 dB
 2. 6 dB
 3. $2n$ dB
 4. n dB
115. In delta modulation, the slope overload distortion can be reduced by
1. decreasing the step size
 2. decreasing the granular size
 3. decreasing the sampling rate
 4. increasing the step size
116. Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?
1. VSB
 2. SSB
 3. DSB-SC
 4. AM
117. An AM Scheme is working with a modulation index of 0.8. Power efficiency of this modulation scheme is
1. 24%
 2. 48%
 3. 12%
 4. 18%
118. Bandwidth of a N -bit binary coded PCM signal for modulating a signal having bandwidth of 'f' Hz is
1. f/N Hz
 2. f/N^2 Hz
 3. Nf Hz
 4. N^2f Hz
119. Capture effect occurs in
1. AM
 2. FM
 3. PCM
 4. QAM
120. If there are M messages and each message has probability $p = 1/M$, the entropy is
1. 0
 2. 1
 3. $\log_2 M$
 4. $M \log_2 M$