MPPSC AE

Previous Year Paper
Paper - II
Electrical Engineering
(2016 Shift 2)

State Engineering (Prelims) Exam – 2016

Second Paper – Second Shift

(Final Model Answer Key)

Electrical Engineering

Q.No: 1	**What will be the Fourier Transform of complex exponential signal $x(t)=e^{j\omega t}$?**
A	**An impulse function**
B	**A rectangular gate function**
C	**A train of impulse functions**
D	**A constant function**
Correct Answer	**A**

Q.No: 2	**Mathematical relation between unit impulse function $\delta(t)$ and step function $u(t)$ can be given by**
A	$u(t) = \int_{-\infty}^{t} u(\tau)d\tau$
B	$u(t) = \int_{-\infty}^{t} \delta(\tau)d\tau$
C	$u(t) = \delta(t)$
D	$u(t) = \frac{d\delta(t)}{dt}$
Correct Answer	**B**

Q.No: 3	**If G(ω) is the Fourier transform of g(t) then according to scaling property of the Fourier transform, the Fourier transform of g(at) is given by :**
A	**(1/|a|)G((ω/a))**
B	**|a| G(ωa)**
C	**a G(ωa)**
D	**G(ω/a)**
Correct Answer	**A**

Q.No: 4	**The convolution operation of two signals in time domain can be represented by the following operation in Z-transform domain**
A	**multiplication**

B	**Addition**
C	**Subtraction**
D	**Division**
Correct Answer	**A**

Q.No: 5	**The Nyquist frequency of the signal x(t)=cos(100 πt) + 100 sin(600πt) + cos(200 πt) is**
A	**100 Hz**
B	**600 Hz**
C	**400 Hz**
D	**200 Hz**
Correct Answer	**B**

Q.No: 6	**The nature of the Fourier Series coefficients are periodic then this means signal in time domain is**
A	**Continuous - time periodic signal**
B	**Continuous - time aperiodic signal**
C	**Discrete - time periodic signal**
D	**Discrete - time aperiodic signal**
Correct Answer	**C**

Q.No: 7	**The Fourier transform of a signal** $x(t) = \cos(\omega_0 t)$ **is given by**
A	$\pi[\delta(\omega - \omega_0) + \delta(\omega + \omega_0)]$
B	$\frac{\pi}{2}[\delta(\omega - \omega_0) + \delta(\omega + \omega_0)]$
C	$2\pi[\delta(\omega - \omega_0) + \delta(\omega + \omega_0)]$
D	$\pi[\delta(\omega - 2\omega_0) + \delta(\omega + 2\omega_0)]$
Correct Answer	**A**

Q.No: 8	**Inverse Fourier transform of a Sinc - function will be a**
A	**Rectangular Function**
B	**Signum Function**
C	**Impulse Function**
D	**Gaussian Function**
Correct Answer	**A**

Q.No: 9	**Which one of the following statement is true?**
A	**Transistor can be modelled as current controlled current source**
B	**Transistor can be modelled as current controlled voltage source**
C	**Transistor can be modelled as voltage controlled voltage source**
D	**Transistor can be modelled as voltage controlled current source**
Correct Answer	**A**

Q.No: 10	**The Poynting Vector ($\vec{P}$) in terms of electric field vector ($\vec{E}$) and magnetic field vector ($\vec{H}$) is given by**
A	$\vec{P} = \vec{E}.\vec{H}$
B	$\vec{P} = \frac{\vec{E}}{\vec{H}}$
C	$\vec{P} = \frac{\vec{H}}{\vec{E}}$
D	$\vec{P} = \vec{E} \times \vec{H}$
Correct Answer	**D**

Q.No: 11	**The transistor which is used for designing the digital circuits generally has to operate in**
A	**Active region**
B	**Breakdown region**
C	**Cutoff & Saturation region**
D	**All are correct**
Correct Answer	**C**

Q.No: 12	**At room temperature, the band gap of a silicon is as follows :**
A	**1.6 eV**
B	**1.1 eV**
C	**0.5 eV**
D	**1.3 eV**
Correct Answer	**B**

Q.No: 13	**The oscillator which uses a tapped coil in the LC circuit is known as**
A	**Colpitts Oscillator**
B	**Hartley Oscillator**

C	**Armstrong Oscillator**
D	**Pierce Oscillator**
Correct Answer	**B**

Q.No: 14	**The relation between electric field vector ($\vec{E}$) and magnetic field vector ($\vec{H}$) is given by**
A	$\frac{\vec{E}}{\vec{H}} = \sqrt{\frac{\mu_0}{\varepsilon_0}}$
B	$\frac{\vec{E}}{\vec{H}} = \sqrt{\mu_0 \varepsilon_0}$
C	$\frac{\vec{H}}{\vec{E}} = \sqrt{\mu_0 \varepsilon_0}$
D	$\frac{\vec{H}}{\vec{E}} = \sqrt{\frac{\mu_0}{\varepsilon_0}}$
Correct Answer	**A**

Q.No: 15	**The ratio of the velocity of a wave in free space with the velocity of the wave in the conduction medium is known as**
A	**Space Function**
B	**Refractive Index**
C	**Attenuation Factor**
D	**Poynting Vector**
Correct Answer	**B**

Q.No: 16	**NAND gate will have low output if two inputs are following**
A	**00**
B	**01**
C	**10**
D	**11**
Correct Answer	**D**

Q.No: 17	**A Schmitt trigger generates one of the following type of output waveform**
A	**Triangular**
B	**Rectangular**
C	**Trapezoidal**
D	**Sinusoidal**

Correct Answer	**B**

Q.No: 18	**For the conversation of parallel to series data, following device can be used:**
A	**Demultiplexer**
B	**Multiplexer**
C	**Decoder**
D	**Counter**
Correct Answer	**B**

Q.No: 19	**EX-OR gate can work as NOT gate for the following condition**
A	**If one input can be made equal to one**
B	**If one input can be made equal to zero**
C	**By connecting both inputs together**
D	**None of these are correct**
Correct Answer	**A**

Q.No: 20	**The length of instruction in 8085 micro processor is**
A	**32 bits**
B	**24 bits**
C	**8 bits**
D	**16 bits**
Question Deleted	

Q.No: 21	**Pirani gauge can be used to measure**
A	**Very high temperature**
B	**Very low pressure**
C	**Low fluid flow**
D	**High fluid flow**
Correct Answer	**B**

Q.No: 22	**Which one of the following statement is true?**
A	**In a capacitor, dielectric material between two plates reduces its capacitance**
B	**In a capacitor, dielectric material between two plates increases its capacitance**
C	**In a capacitor, dielectric material between two plates does not affect its capacitance**
D	**None of these are correct**

Correct Answer	**B**

Q.No: 23	**Varactor can be defined as**
A	**A diode which is used as a variable capacitor**
B	**A diode which is useful for high speed switching**
C	**A diode which is used as a variable inductor**
D	**A diode which is used as a variable resistor**
Correct Answer	**A**

Q.No: 24	**A PMMC based instrument can be used to measure**
A	**DC (Average) value**
B	**Maximum value**
C	**RMS(root mean square) value**
D	**All are correct**
Correct Answer	**A**

Q.No: 25	**The Boolean expression given by** $\bar{X}Y + X\bar{Y} + XY$ **is equivalent to**
A	$X + Y$
B	$\bar{X} + Y$
C	XY
D	$\overline{X + Y}$
Correct Answer	**A**

Q.No: 26	**If in a amplitude modulation (AM) based communication system P_c denotes the power of carrier and P_t denotes the total power of AM wave then for modulation index = 1, the relation between P_c and P_t will be**
A	**$P_c=P_t$**
B	**$P_c=P_t/2$**
C	**$P_t=P_c/4$**
D	**$P_t=3P_c/2$**
Correct Answer	**D**

Q.No: 27	**In communication system, the ergodic process concept for many random signal means**
A	**They have similar ensemble averages**
B	**They have similar time averages**

C	**They have similar time and ensemble averages**
D	**They do not have similar time and ensemble averages**
Correct Answer	**C**

Q.No: 28	**The frequency modulation (FM) based communication system has the following disadvantages over the amplitude modulation (AM) communication system:**
A	**requirement of more output power**
B	**requirement of more bandwidth**
C	**requirement of more modulating power**
D	**presence of noise in high frequency regions**
Correct Answer	**B**

Q.No: 29	**Sampling theorem is useful in following communication system**
A	**Pulse code Modulation (PCM)**
B	**Amplitude Modulation (AM)**
C	**Frequency Modulation (FM)**
D	**Phase Modulation (PM)**
Correct Answer	**A**

Q.No: 30	**Noise generally affects the following part of the communication system**
A	**Transmitter**
B	**Receiver**
C	**channel**
D	**None of these are correct**
Correct Answer	**C**

Q.No: 31	**The inverse Laplace transform of** $\frac{8}{s(s+2)}$ **is**
A	**$4(1 - e^{-2t})$**
B	**$4(1 + e^{-2t})$**
C	**$4(1 - e^{2t})$**
D	**$4(1 + e^{2t})$**
Correct Answer	**A**

Q.No: 32	**In control system, in order to represent multiple input and multiple output systems which technique is more suitable**

A	**Bode plots**
B	**State space models**
C	**Root locus methods**
D	**Nyquist plot**
Correct Answer	**B**

Q.No: 33	**The Laplace transform of a doublet can be given as**
A	**1/s**
B	**s**
C	**s^2**
D	**$1/s^2$**
Correct Answer	**B**

Q.No: 34	**Which one of the following statement is true**
A	**By introducing a negative feedback, both system stability and system gain increases**
B	**By introducing a negative feedback, system stability increases and system gain decreases**
C	**By introducing a negative feedback, system stability decreases and system gain increases**
D	**By introducing a negative feedback, system stability and system gain both decreases**
Correct Answer	**B**

Q.No: 35	**The transfer function of a system is given as** $\frac{3s+1}{s^2+s+1}$ **this system is**
A	**Unstable system**
B	**Stable system**
C	**Marginally stable system**
D	**None of these are correct**
Correct Answer	**B**

Q.No: 36	**Suppose a communication channel in the presence of additive white Gaussian noise has bandwidth 8KHz, and signal to noise ratio (SNR) = 7 then the channel capacity will be**
A	**32 Kbps**
B	**8 Kbps**
C	**24 Kbps**
D	**64 Kbps**
Correct Answer	**C**

Q.No: 37	**The pulse width Modulation process can be achieved by**
A	**Using free-running multivibrator**
B	**Performing integration on the signal**
C	**Using a mono-stable multivibrator**
D	**Performing a differentiation on pulse position modulation**
Correct Answer	**C**

Q.No: 38	**In frequency division multiplexing (FDM) receiver, in order to separate the channels, following is used.**
A	**Integrator**
B	**Differentiator**
C	**Band pass filters**
D	**AND gates**
Correct Answer	**C**

Q.No: 39	**A communication circuit resonates at frequency of 1 KHz and this circuit has Q factor Q = 10. What will be the bandwidth corresponding to half power points**
A	**100 Hz**
B	**10 Hz**
C	**1000 Hz**
D	**1 Hz**
Correct Answer	**A**

Q.No: 40	**Thermal noise power P in a resistor R is related as follows:**
A	**$P \propto R$**
B	**$P \propto 1/R$**
C	**$P \propto R^2$**
D	**P is independent of R**
Correct Answer	**D**

Q.No: 41	**The resistance for a conductor will be least for the following**
A	**DC**
B	**60 Hz**
C	**10 KHz**
D	**10 MHz**

Correct Answer	**A**

Q.No: 42	**The angle modulated signal given as $x(t) = 20 \cos(\omega_c t - 0.5 \cos(100t))$ has power**
A	**100**
B	**200**
C	**50**
D	**300**
Correct Answer	**B**

Q.No: 43	**Suppose P_K denotes the probability of a message then the amount of information denoted by I_K in bits can be given by**
A	**$I_K = -2 \log_2 P_K$**
B	**$I_K = - \log_2 P_K$**
C	**$I_K = -10 \log_2 P_K$**
D	**$I_K = 10 \log_2 P_K$**
Correct Answer	**B**

Q.No: 44	**The Z-transform of $\delta(n-p)$ is given by**
A	**Z^{-P}**
B	**Z^{P}**
C	**$Z^{-P/2}$**
D	**$Z^{-1/P}$**
Correct Answer	**A**

Q.No: 45	**Power spectral density of a signal x(t) is $S_x(f)$,then the power spectral density of it's Hilbert transformed signal will be**
A	**$-S_x(f)$**
B	**$S_x(f)$**
C	**$\pi S_x(f)/2$**
D	**$2\pi S_x(f)$**
Correct Answer	**B**

Q.No: 46	**Which one of the following statement is true: For modeling of ideal operational amplifier**
A	**Voltage controlled Current source**
B	**Voltage controlled Voltage source**

C	**Current controlled Current source**
D	**Current controlled Voltage source**
Correct Answer	**B**

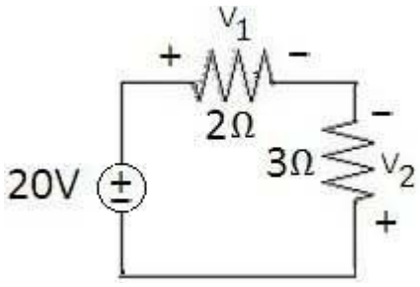
Q.No: 47	**Quantization noise is generated in the following:**
A	**Frequency division multiplexing**
B	**Time division multiplexing**
C	**Pulse code modulation**
D	**Amplitude modulation**
Correct Answer	**C**

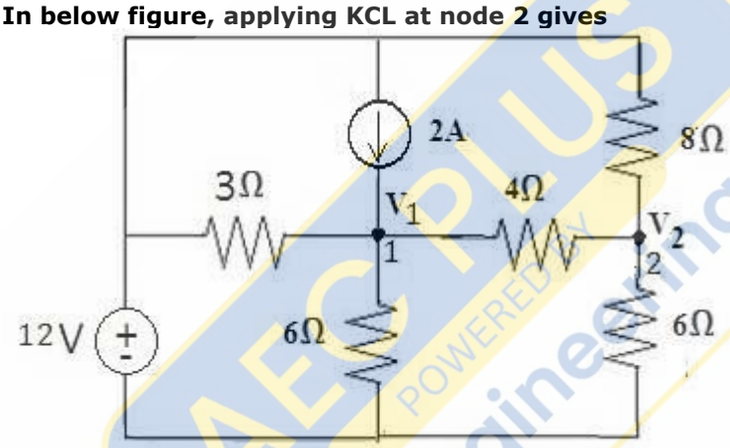
Q.No: 48	**Which is a circular polarized antenna?**
A	**Yagi-Uda**
B	**Parabolic reflector**
C	**Small circular loop**
D	**Helical**
Correct Answer	**D**

Q.No: 49	**In a waveguide, the wavelength of a wave is**
A	**Directly proportional to the group velocity**
B	**Greater than its value in free space**
C	**Dependent on the waveguide dimensions**
D	**Inversely proportional to the phase velocity**
Correct Answer	**B**

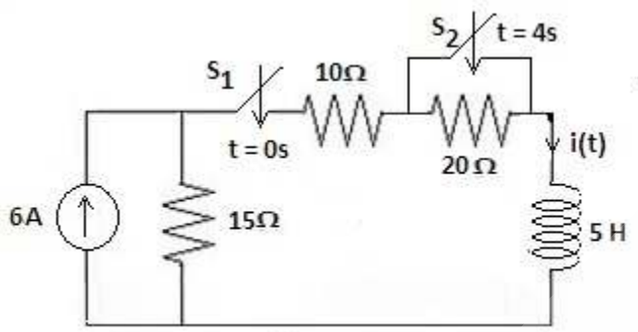
Q.No: 50	**Virtual ground is a ground for**
A	**Current and not for Voltage**
B	**Neither Current nor Voltage**
C	**Voltage and Current both**
D	**Voltage and not for Current**
Correct Answer	**D**

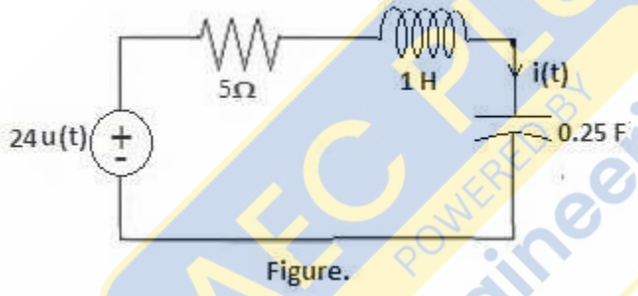
Q.No: 51	**For the circuit of below figure.The voltages V_1 & V_2 are**

	
A	**V_1 = 8V, V_2 = 12V**
B	**V_1 = 8V, V_2 = -12V**
C	**V_1 = -8V, V_2 = -12V**
D	**V_1 = -8V, V_2 = 12V**
Correct Answer	**B**

Q.No: 52	**In below figure, applying KCL at node 2 gives** 
A	$\frac{V_2-V_1}{4}+\frac{V_2}{8}=\frac{V_2}{6}$
B	$\frac{V_1-V_2}{4}+\frac{V_2}{8}=\frac{V_2}{6}$
C	$\frac{V_1-V_2}{4}+\frac{12-V_2}{8}=\frac{V_2}{6}$
D	$\frac{V_2-V_1}{4}+\frac{V_2-12}{8}=\frac{V_2}{6}$
Correct Answer	**C**

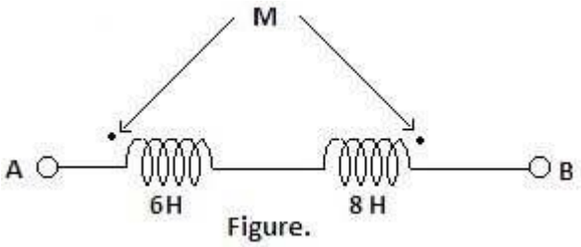
Q.No: 53	**Switch S_1 in figure below is closed at t=0 and switch S_2 is closed at t=4s. The current i(t) at t= ∞ is**

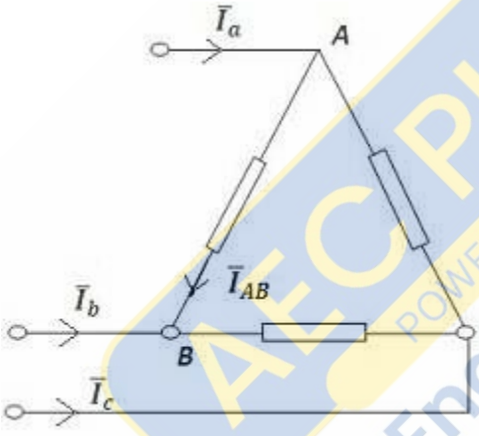
	 Figure.
A	**2.4 A**
B	**3.6 A**
C	**2.4 A**
D	**4.2 A**
Correct Answer	**B**

Q.No: 54	**For the series RLC circuit of below figure, the current i(t) will show**  Figure.
A	**Under damped response**
B	**Critically damped response**
C	**Over damped response**
D	**Un damped response**
Correct Answer	**C**

Q.No: 55	**If in a single phase AC circuit, v(t) = 120 sin(314 t + 45°) V & i(t) = 10 sin (314 t - 10°) A. The average power absorbed in the circuit is**
A	**300.5 W**
B	**491.4 W**
C	**344.2 W**
D	**982.9 W**
Correct Answer	**C**

Q.No: 56	**For the two coupled coils of figure below, the total inductance is 6H.The mutual inductance M between two coils is**

	 Figure.
A	**8 H**
B	**3 H**
C	**6 H**
D	**4 H**
Correct Answer	**D**

Q.No: 57	**For the balanced delta connected load as shown in figure below, the phase current** $\bar{I}_{AB} = 13.2 \angle 36.87^{\circ}$ A. **Then the line current** $\bar{I}_b$ **is** 
A	$\bar{I}_b = 22.86 \angle 6.87$ A
B	$\bar{I}_b = 22.86 \angle 126.87^{\circ}$ A
C	$\bar{I}_b = 22.86 \angle -113.13^{\circ}$ A
D	$\bar{I}_b = 22.86 \angle -83.13^{\circ}$ A
Correct Answer	**C**

Q.No: 58	**Given Y parameter of a two port network as** $[Y] = \begin{bmatrix} 0.3 & -0.2 \\ -0.2 & 0.3 \end{bmatrix}$ **The Z-parameter of the network** Z_{22} **is**
A	**5** Ω
B	**6** Ω
C	**4** Ω

D	**1.5 Ω**
Correct Answer	**B**

Q.No: 59	**Curie temperature is the temperature above which a ferromagnetic material becomes**
A	**Paramagnetic**
B	**Diamagnetic**
C	**Remains ferromagnetic**
D	**None of these are correct**
Correct Answer	**A**

Q.No: 60	**The dielectric losses occur in all solid and liquid dielectric due to**
A	**Conduction current**
B	**Hysteresis**
C	**Both Conduction current & Hysteresis**
D	**None of these are correct**
Correct Answer	**C**

Q.No: 61	**A 230V, 5A energy meter on full load unity power factor test makes 60 revolutions in 360 seconds. If the designed speed of the disc is 520 revolutions per KWh,the energy recorded by the meter is**
A	**115.10^{-3} KWh**
B	**115.185×10^{-3} KWh**
C	**115.385×10^{-3} KWh**
D	**115.68×10^{-3} KWh**
Correct Answer	**C**

Q.No: 62	**Two Watt meters can be used to measure power in a**
A	**Three phase four wire balanced load**
B	**Three phase four wire unbalanced load**
C	**Three phase three wire unbalanced load**
D	**All are correct**
Question Deleted	

Q.No: 63	**Under balanced condition of a bridge for measuring unknown impendence, if the detector is suddenly taken out**
A	**Measured value of impendence will be lower**

B	**Measured value of impendence will be higher**
C	**Measured value of impendence will not change**
D	**The impendence can not be measured**
Correct Answer	**C**

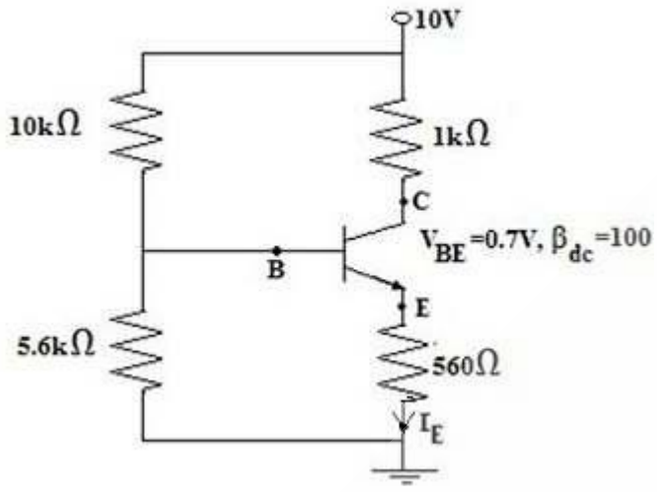
Q.No: 64	**In a spring-controlled moving iron instruments, the scale is**
A	**Uniform**
B	**Cramped at the lower end and expanded at the upper end**
C	**Expanded at the lower end and cramped at the upper end**
D	**Cramped both at the lower and the upper ends**
Correct Answer	**D**

Q.No: 65	**Which A/D converter has highest conversion time?**
A	**Flash type**
B	**Duel Slope integration**
C	**Successive approximation**
D	**Ramp/Counting**
Correct Answer	**B**

Q.No: 66	**The dynamic resistance can be important when a diode is**
A	**Reverse-biased**
B	**Forward-biased**
C	**In reverse breakdown**
D	**Unbiased**
Correct Answer	**B**

Q.No: 67	**A diode that has a negative resistance characteristic is the**
A	**Schottky diode**
B	**Tunnel diode**
C	**Laser diode**
D	**Hot-carrier diode**
Correct Answer	**B**

Q.No: 68	**For the circuit of figure below, which is a stiff voltage divider based transistor circuit, the emitter current I_E is**

	
A	**5.16 mA**
B	**5 mA**
C	**4.9 mA**
D	**4.96 mA**
Correct Answer	**C**

Q.No: 69	**A certain common emitter amplifier has a voltage gain of 100. If the emitter bypass capacitor is removed,**
A	**The circuit will become unstable**
B	**The voltage gain will decrease**
C	**The voltage gain will increase**
D	**The Q point will shift**
Correct Answer	**B**

Q.No: 70	**In the certain common mode operation of the differential amplifier,**
A	**Both inputs are grounded**
B	**The outputs are connected together**
C	**An identical signal appears on both inputs**
D	**The output signals are in phase**
Correct Answer	**C**

Q.No: 71	**A depletion MOSFET operates in**
A	**The depletion mode only**
B	**The enhancement mode only**
C	**The ohmic region only**
D	**Both the depletion and enhancement modes**

Correct Answer	**D**

Q.No: 72	**A certain inverting amplifier has a closed loop gain of 25. The op-amp has an open loop gain of 1,00,000. If another op-amp with an open loop gain of 2,00,000 is substituted in the configuration, the closed loop again**
A	**Doubles**
B	**Drops to 12.5**
C	**Remains at 25**
D	**Increases slightly**
Correct Answer	**C**

Q.No: 73	**The damping factor of an active filter is set by**
A	**The negative feedback circuit**
B	**The positive feedback circuit**
C	**The frequency selective circuit**
D	**The gain of the op-amp**
Correct Answer	**A**

Q.No: 74	**The 2's compliment of 11001000 is**
A	**00110111**
B	**00110001**
C	**01001000**
D	**00111000**
Correct Answer	**D**

Q.No: 75	**A 3-variable karnaugh map has**
A	**Eight cells**
B	**Three cells**
C	**Sixteen cells**
D	**Four cells**
Correct Answer	**A**

Q.No: 76	**To implement the expression $\overline{A}BCD + A\overline{B}CD + AB\overline{C}\overline{D}$, it takes one OR gate and**
A	**One AND gate**
B	**Three AND gate**
C	**Three AND gates and four inverters**

D	**Three AND gates and three inverters**
Correct Answer	**C**

Q.No: 77	**In general, a multiplexer has**
A	**One data input, several data outputs and selection inputs**
B	**One data input, one data output and one selection input**
C	**Several data inputs, several data outputs and selection inputs**
D	**Several data inputs, one data output and selection inputs**
Correct Answer	**D**

Q.No: 78	**Like the latch, the Flip-Flop belongs to a category of logic circuits known as**
A	**Monostable multivibrators**
B	**Bistable multivibrators**
C	**Astable multivibrators**
D	**One shots**
Correct Answer	**B**

Q.No: 79	**A modulus 12 counter must have**
A	**12-Flip-Flops**
B	**3-Flip-Flops**
C	**4-Flip-Flops**
D	**Synchronous clocking**
Correct Answer	**C**

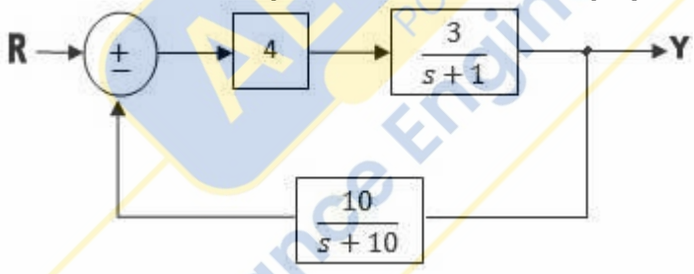
Q.No: 80	**The bit capacity of a memory that has 1024 addresses and can store 8 bits at each address is**
A	**1024**
B	**8192**
C	**8**
D	**4096**
Correct Answer	**B**

Q.No: 81	**In a 3-phase fully controlled bridge rectifier the firing pulse frequency is**
A	**3 times the line frequency**
B	**6 times the line frequency**
C	**9 times the line frequency**

D	**Same as line frequency**
Correct Answer	**B**

Q.No: 82	**In a step-down converter using pulse width modulation, T_{on} = 3 x 10^{-3}s and T_{off} = 1 x 10^{-3}s. The chopping frequency is**
A	**333 Hz**
B	**250 Hz**
C	**500 Hz**
D	**1000Hz**
Correct Answer	**B**

Q.No: 83	**A thyristor has internal power dissipation of 40W and is operated at an ambient temperature of 20°C. If thermal resistance is 1.6 °C/W, the junction temperature is**
A	**114 °C**
B	**64 °C**
C	**94 °C**
D	**84 °C**
Correct Answer	**D**

Q.No: 84	**The characteristic equation of the closed loop system of figure below is** 
A	**s^2+11s+10=0**
B	**s^2+11s+130=0**
C	**s^2+11s+120=0**
D	**s^2+10s+12=0**
Correct Answer	**B**

Q.No: 85	**The error function of a feedback system is** $E(s) = \frac{(S+0.1)(S+0.5)}{S(S+0.1)(S+0.5)+0.5(S+1)}$. **The steady state value of e(t) is**
A	**0.001**
B	**0.1**
C	**0.01**

D	**None of these are correct**
Correct Answer	**D**

Q.No: 86	**Closed loop transfer function of a unity feedback system is given by** $\frac{Y(s)}{R(s)} = \frac{\omega_n^2}{s^2+2\xi\omega_n s+\omega_n^2}$ **System k_v (velocity error constant) is**
A	$\frac{\omega_n}{2_\xi}$
B	1
C	∞
D	$\frac{2_\xi}{\omega_n}$
Correct Answer	**A**

Q.No: 87	**The transfer function of a lag compensator is** $D(s) = \frac{1+\alpha\tau s}{1+\tau s}\ ;\ \tau > 0$ **. The value of α is given by**
A	α **= 1**
B	α **> 1**
C	α **< 1**
D	α **is any constant**
Correct Answer	**B**

Q.No: 88	**A state variable formulation of a system is given by the equations** $\begin{bmatrix}\dot{x_1}\\ \dot{x_2}\end{bmatrix} = \begin{bmatrix}-1 & 0\\ 0 & -3\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix} + \begin{bmatrix}1\\ 1\end{bmatrix}4$ $y=\begin{bmatrix}1 & 0\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix}$ **The transfer function of the system is**
A	$\frac{1}{(s+1)(s+3)}$
B	$\frac{1}{s+1}$
C	$\frac{1}{s+3}$
D	**None of these are correct**
Correct Answer	**B**

Q.No: 89	**Let P_i = core loss and P_c = copper loss. A transformer has maximum efficiency when**
A	**$P_i = 2P_c$**
B	**$P_i = 1.5P_c$**
C	**$P_i = P_c$**
D	**$P_i = 0.5P_c$**
Correct Answer	**C**

Q.No: 90	**Pulsation loss in rotating machines occurs in**
A	**Pole body**
B	**Pole shoes**
C	**Yoke**
D	**Stator and rotor cores**
Correct Answer	**B**

Q.No: 91	**The armature reaction mmf in a DC machine is**
A	**Sinusoidal**
B	**Trapezoidal in shape**
C	**Rectangular in shape**
D	**Triangular in shape**
Correct Answer	**D**

Q.No: 92	**For a given torque, reducing the field turns of a DC series motor**
A	**Increases its speed demanding more armature current**
B	**Increases its speed but armature current remains the same**
C	**Decreases its speed demanding less armature current**
D	**Decreases its speed but armature current remains the same**
Correct Answer	**A**

Q.No: 93	**Synchronous motor speed is controlled by varying**
A	**Field execution**
B	**Supply voltage**
C	**Supply frequency only**
D	**Both (Supply voltage) and (Frequency)**
Correct Answer	**D**

Q.No: 94	**In a 3-phase induction machine at low slip, the torque slip characteristic is**
A	$T \propto \frac{1}{s^2}$
B	$T \propto s^2$
C	$T \propto \frac{1}{s}$
D	$T \propto s$
Correct Answer	**D**

Q.No: 95	**The power input to an induction motor is 40 kW when it is running at 5% slip. The stator resistance and core loss are assumed negligible. The torque developed is synchronous watts is**
A	**42 kW**
B	**40 kW**
C	**38 kW**
D	**2 kW**
Correct Answer	**B**

Q.No: 96	**The converter which can feed power in any one of the four quadrants is**
A	**Semi converter**
B	**Full converter**
C	**Dual converter**
D	**A combination of semi and full converter**
Correct Answer	**C**

Q.No: 97	**Circuit breakers usually operate under**
A	**Transient state of short circuit current**
B	**Sub-transient state of short circuit current**
C	**Steady state of short circuit current**
D	**After dc component has ceased**
Correct Answer	**A**

Q.No: 98	**Current in the primary writing of CT depends on**
A	**Burden in the secondary winding of a transformer**
B	**Load connected to the system in which CT is being used for measurement**

C	**Both burden on the secondary and load connected to a system**
D	**None of these are correct**
Correct Answer	**B**

Q.No: 99	**A synchronous condenser is**
A	**An induction motor**
B	**Under excited synchronous motor**
C	**Over excited synchronous motor**
D	**DC generator**
Correct Answer	**C**

Q.No: 100	**Power generation cost reduces as**
A	**Diversity factor increases and load factor decreases**
B	**Diversity factor decreases and load factor increases**
C	**Both diversity as well as load factor decreases**
D	**Both diversity as well as load factor increases**
Correct Answer	**D**