(Set–"X")

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(M.Phil/Ph.D/URS–EE–2018)

Code A **Subject : ELECTRICAL ENGG.** **Sr. No.** 100021

Time : 1¼ Hours **Max. Marks : 100** **Total Questions : 100**

Roll No. _____ (in figure) _____ (in words)

Name : _____ Father's Name : _____

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(Signature of the candidate) (Signature of the Invigilator)

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1. All questions are compulsory.
2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C, D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet / Answer Key, the same may be brought to the notice of the Controller of Examination in writing / through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered
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6. **There will be no Negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
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Question No.	Questions
1.	The system of linear equations $(4d-1)\,x+y+z=0$ $-y+z=0$ $(4d-1)\,z=0$ has a non-trivial solution, if d equals (1) 1/2 (2) 1/4 (3) 3/4 (4) 1
2.	Eigen vector(s) of the matrix $\begin{bmatrix} 0 & 0 & \alpha \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ is (are) (1) $(0, 0, \alpha)$ (2) $(\alpha, 0, 0)$ (3) (0, 0, 1) (4) $(0, \alpha, 0)$
3.	Consider the z-transform $X(z) = 5z^2 + 4z^{-1} + 3 \; ; \; 0 < \lvert z \rvert < \infty$. The inverse z-transform x [n] is (1) $5\delta[n+2]+3\delta[n]+4\delta[n-1]$ (2) $5\delta[n-2]+3\delta[n]+4\delta[n+1]$ (3) $5u[n+2]+3u[n]+4u[n-1]$ (4) $5u[n-2]+3u[n]+4u[n+1]$

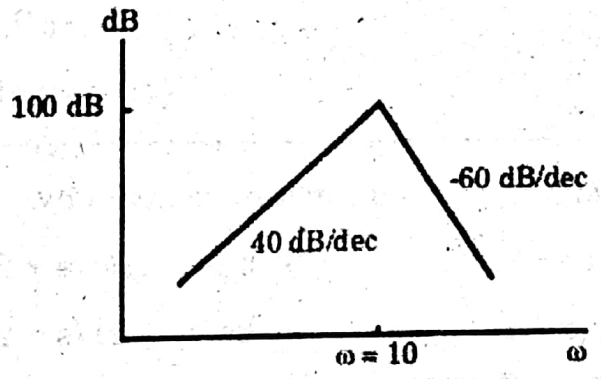
Question No.	Questions
4.	If $\delta(t)$ denotes a unit impulse then Laplace Transform of $\frac{d^2\delta(t)}{dt^2}$ will be (1) l (2) s^2 (3) s (4) s^{-2}
5.	The state equation of LTI system is represented by $\dot{x} = \begin{bmatrix} 0 & 0 \\ -2 & -1 \end{bmatrix} x + \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} u$ The Eigen values are (1) $-1, +1$ (2) $0.5 \pm j\,1.323$ (3) $-1, -1$ (4) None
6.	Line integral can be transformed into a surface integral by using (1) Divergence theorem (2) Gauss theorem (3) Stokes theorem (4) None of these
7.	Four fundamental equations of electromagnetics are known as (1) Fleming's laws (2) Faraday's laws (3) Lorentz equations (4) Maxwell's equations
8.	For a linear electromagnetic circuit, which of the following statements is true ? (1) Field energy is equal to the co-energy (2) Field energy is greater than the co-energy (3) Field energy is lesser than the co-energy (4) Co-energy is zero

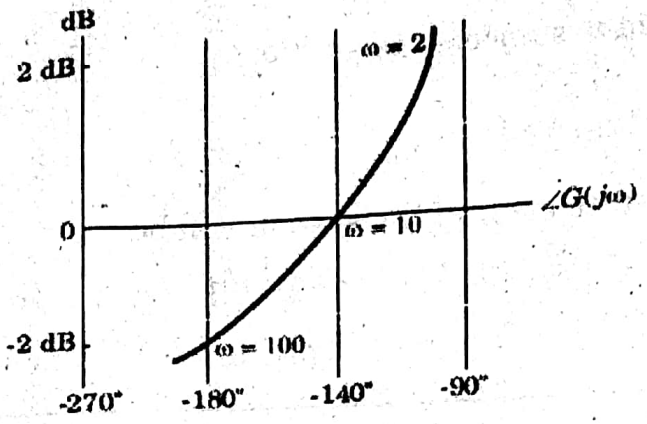
Question No.	Questions
9.	Which of the following statements holds for the divergence of electric and magnetic flux (1) Both are zero (2) These are zero for static densities but non-zero for time varying densities. (3) It is zero for the electric flux density (4) It is zero for the magnetic flux density
10.	A parallel plate capacitor has an electrode area of 100 mm^2, with a spacing of 0.1 mm between the electrodes. The dielectric between the plates is air with a permittivity of 8.85×10^{-12} F/m. The charge on the capacitor is 100V. The Stored energy in the capacitor is : (1) 8.85pJ (2) 440pJ (3) 22.1nJ (4) 44.3nJ
11.	Whenever the magnetic flux changes with respect to an electric conductor or a coil, an EMF is induced in the conductor is Faraday's (1) First law (2) Second law (3) Third law (4) Fourth law
12.	Inside a hollow conducting sphere (1) Electric field is zero. (2) Electric field is a non-zero constant. (3) Electric field changes with magnitude of the charge given to the conductor. (4) Electric field changes with distance from the center of the sphere.

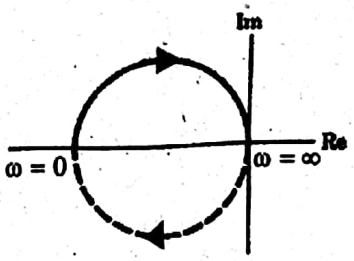
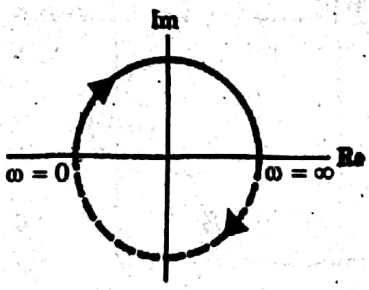
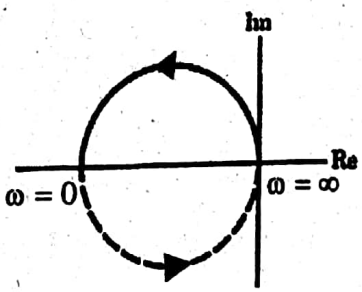
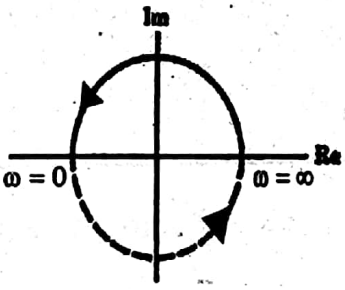
Question No.	Questions
13.	A conductor of length L has current I passing through it, when it is placed parallel to strong magnetic field. The force experienced by the conductor will be (1) BIL (2) BIL^2 (3) BI^2L (4) Zero
14.	Cork Screw rule is used to find (1) Direction of magnetic field (2) Direction of electric field (3) Direction of current (4) Direction of emf
15.	A point pole has a strength of $4\pi \times 10^{-4}$ weber. The force in Newtons on a point pole of $4\pi \times 1.5 \times 10^{-4}$ weber placed at a distance of 10 cm from it will be (1) 20N (2) 15N (3) 7.5N (4) 3.75N
16.	In a sample it is observed that a carrier takes 100 μs to over a distance of 10 cm. If the applied external field is 10^4 V/cm; find the mobolity (1) $10^7 cm^2/Vs$ (2) $10^{-3} cm^2/Vs$ (3) $10 cm^2/Vs$ (4) $10^7 m^2/Vs$
17.	The current gain of a bipolar transistor drops at high frequency because of (1) Transistor internal capacitances (2) High current effects in the base (3) Parasitic inductive elements (4) The Early effect

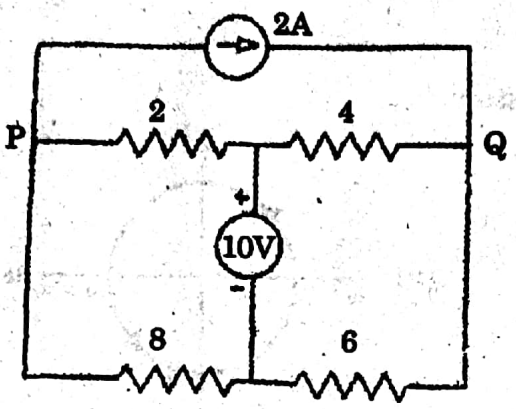
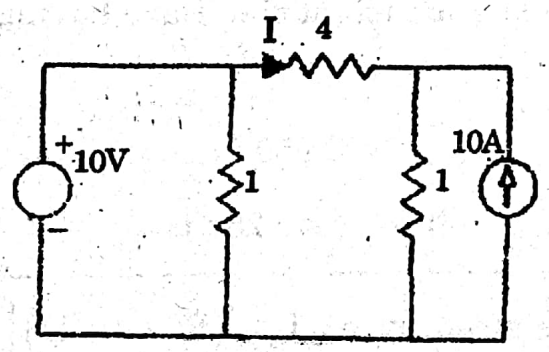
Question No.	Questions
18.	A transistor has $\alpha = 0.98$, then determine β. (1) 50 (2) 49 (3) 70 (4) None of the above
19.	The value of emitter capacitor CE in a multistage amplifier is about (1) 0.1μF (2) 100pF (3) 0.01μF (4) 50μF
20.	The conduction loss versus device current characteristic of a power MOSFET is best (1) A parabola (2) A straight line (3) A rectangular hyperbola (4) An exponentially decaying function
21.	The hexadecimal equivalent of the octal number 171.62 is (1) 3C1.C0 (2) 79.C8 (3) 89.C7 (4) 97.8C
22.	Which of the following circuit can be used as parallel to series converter ? (1) Digital Counter (2) Decoder (3) De-multiplexer (4) Multiplexer
23.	How many fillip-flops are required to construct a decade counter ? (1) 10 (2) 3 (3) 4 (4) 2

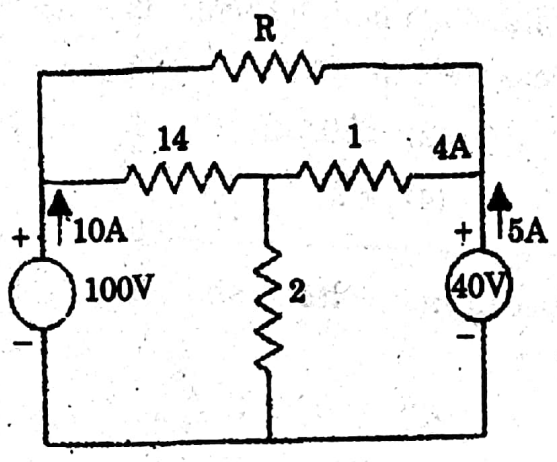
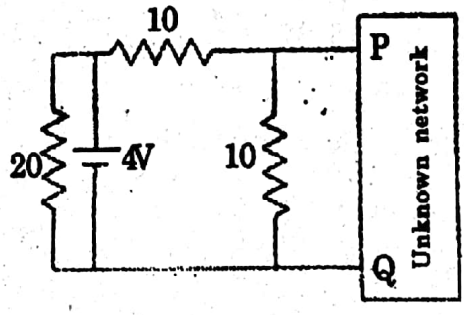
Question No.	Questions
24.	Which is not a type of ROM ? (1) Mask ROM (2) PROM (3) EEPROM (4) XROM
25.	A stage in shift register consist of (1) Latch (2) Flip flop (3) Byte of storage (4) four bits of storage
26.	The closed loop transfer function of a system is $T(s) = \frac{(s+8)(s+6)}{s^5 + s^4 + 4s^3 - 4s^2 + 3s - 2}$ The number of poles in RHP and LHP are (1) 4,1 (2) 1,4 (3) 3,2 (4) 2,3
27.	For a second order system settling time $T_s = 7$sec and peak time $T_p = 3$ sec. The location of poles are (1) $-0.97 \pm j\,0.69$ (2) $-0.69 \pm j\,0.97$ (3) $-1.047 \pm j\,0.571$ (4) $-0.571 \pm j\,1.047$
28.	The open loop transfer function of a unity feedback system is $G(s) = \frac{50}{(1+0.1s)(1+2s)}$ The position, velocity and acceleration error constants are respectively (1) 0, 0, 250 (2) 50, 0, 0 (3) 0, 250, ∞ (4) ∞, 50, 0

Question No.	Questions
29.	A unity feedback system has a forward path transfer function is $G(s) = \frac{10(1+4s)}{s^2(1+s)}$ If the system is subjected to an input $r(t) = 1 + t + \frac{t^2}{2},\ t > 0$ the steady state error of the system will be (1) 1 (2) 0.1 (3) 10 (4) ∞
30.	For the Bode plot shown in figure, the transfer function is  (1) $\frac{100\,s^2}{(1+0.1s)^3}$ (2) $\frac{1000\,s^2}{(1+0.1s)^6}$ (3) $\frac{15.6\,s^2}{(1+0.1s)^6}$ (4) None

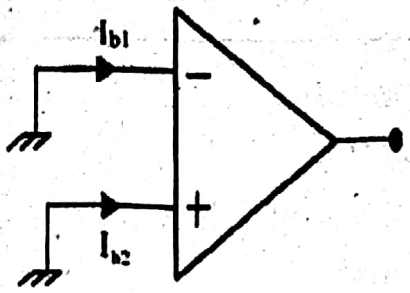
Question No.	Questions
31.	Consider the gain-phase plot shown in fig. The gain margin and phase margin are  Fig (1) – 2 dB, 40° (2) 2 dB, 40° (3) 2 dB, 140° (4) – 2 dB, 140°
32.	The root locus of a unity feed function is given by (1) k/s (s + 1) (s + 2) (2) k (s + 1) /s (s + 2) (3) k (s + 2) /s (s + 1) (4) ks / (s + 1) (s + 2)
33.	The transfer function $\frac{1+0.5s}{1+s}$ represents (1) Lag network (2) Lead network (3) Lag-lead Network (4) Proportional controller
34.	If the stability error for a step input and speed of the response be the criteria for design, the suitable controller will be (1) P Controller (2) PI Controller (3) PD Controller (4) PID Controller

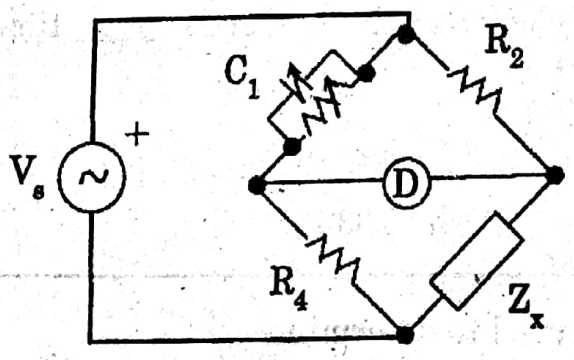
Question No.	Questions
35.	The open loop transfer function of a feedback system is $G(s)H(s) = \frac{K(s+1)}{(1-s)}$. The nyquist plot of this system is (1)  (2)  (3)  (4) 
36.	The equation for 25 cycles electric current sine wave having rms value of 30 amps, will be (1) $42.4 \sin 50\pi t$ (2) $30 \sin 50\pi t$ (3) $30 \sin 25\pi t$ (4) $42.4 \sin 25\pi t$
37.	The equation of an emf is given by $e = I_m\left[\sqrt{(R^2 + 4\omega^2L^2)}\right] \sin 2\omega t$. The amplitude of the wave will be (1) $I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$ (2) $\sqrt{2}I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$ (3) $\left[I_m(R^2 + 4\omega^2L^2)\right]^{1/2}$ (4) $2I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$

Question No.	Questions
38.	In the figure, the potential difference between points P and Q is  (1) 6 (2) −6 (3) 10 (4) 12
39.	In the network shown, what is the electric current I is the direction shown  (1) 0 A. (2) 1/3 A. (3) 5/6 A. (4) 4 A.

Question No.	Questions
40.	In the figure given, the value' of R is  (1) 10 Ω (2) 12 Ω (3) 18 Ω (4) 24 Ω
41.	In the given figure, the Thevenin equivalent voltage and impedance as seen from the terminals P-Q is given by  (1) 4 V and 7.5 Ω (2) 2 V and 7.5 Ω (3) 4 V and 5 Ω (4) 2 V and 5 Ω
42.	A coil having a resistance of 5 Ω and inductance of 0.1 H is connected in series with a condenser of capacitance 50 μF. A constant alternating voltage of 200 V is applied to the circuit. The voltage across coil at resonance is (1) 200 V (2) 1788 V (3) 1800 V (4) 2000 V

Question No.	Questions
43.	An RLC series circuit resonates at a frequency w_r the ratio of w_r L/R = 10 the variable frequency voltage applied to the circuit is 20 sin $(\omega t + \pi/3)$ the voltage measured across the capacitance (1) $200/\sqrt{2}$ (2) $220/\sqrt{2}$ (3) $20/\sqrt{2}$ (4) 1/2
44.	What is the relation between line voltage and phase voltage in case of delta connection ? (1) $V_L = V_p$. (2) $V_t = 1/\sqrt{3}\, V_p$. (3) $V_L = \sqrt{3}\, V_p$. (4) None of these
45.	The rms value of the current is a wire which carries a dc current of 10 A and a sinusoidal alternating current of peak value 20 A is (1) 10 A (2) 14.14 A (3) 15 A (4) 17.32 A
46.	The purpose of compensation for a thermocouple is (1) To decrease temperature sensitivity (2) To increase volatge output (3) To cancel unwanted voltage output of a thermocouple (4) Used for high-temperature circuits
47.	Semiconductor strain gages typical have much higher gage factors than those of metallic strain gages primarily due to (1) Higher temperature sensitivity (2) Higher Poisson's ratio (3) Higher piezoresistive coefficient (4) Higher magnetostrictive coefficient

Question No.	Questions
48.	For the op-amp shown in the figure, the bias currents are $I_{b1} = 450$ nA and $I_{b2} = 350$ nA. The values of the input bias current (I_b) and the input offset current (I_f) are  (1) $I_b = 800$ nA, $I_f = 50$ nA (2) $I_b = 800$ nA, $I_f = 100$ nA (3) $I_b = 400$ nA, $I_f = 50$ nA (4) $I_b = 400$ nA, $I_f = 100$ nA
49.	A Hall Effect sensor (1) exists only in theory (2) is a non-contacting magnetic sensor (3) can operate only a few times before failure (4) produces very large voltages
50.	For turbulent flow, the velocity at the center is _____ times the mean velocity. (1) 1.2 (2) 2.2 (3) 2 (4) 3.333
51.	A psychrometric chart is used to determine (1) pH (2) Sound velocity in glasses (3) CO_2 concentration (4) Relative humidity

Question No.	Questions
52.	The dynamic characteristics of capacitive transducer are similar to those of (1) low pass filter (2) high pass filter (3) notch filter (4) band stop filter
53.	The effect of error damping is to (1) provide larger settling time (2) delay the response (3) reduce steady state error (4) any of the above
54.	The bridge method commonly used for finding mutual inductance is (1) Heaviside Campbell bridge (2) Schering bridge (3) De Sauty's bridge (4) Wien bridge
55.	The bridge circuit shown in the figure below is used for the measurement of an unknown element Z_x. The bridge circuit is best suited when Z_x is a  (1) Lossy capacitor (2) Low Q inductor (3) High resistance (4) Low resistance

Question No.	Questions
56.	A 500 kVA, three phase transformer has iron losses of 300 W and full load copper losses of 600 W. The percentage load at which the transformer is expected to have maximum efficiency is (1) 50.0% (2) 70.7% (3) 141.4% (4) 200.0%
57.	A single phase transformer has a maximum efficiency of 90% at full load and unity power factor. Efficiency at half load at the same power factor is (1) 86.7% (2) 88.26% (3) 88.9% (4) 87.8%
58.	Which of the following motor definitely has a permanent magnet rotor (1) DC commutator motor (2) Brushless DC motor (3) Stepper motor (4) Reluctance motor
59.	The type of single phase induction motor having the highest power factor at full load is (1) Shaded pole type (2) Split phase type (3) Capacitor start type (4) Capacitor run type
60.	The direction of rotation of a three phase induction motor is clockwise when it is supplied with three phase sinusoidal voltage having phase sequence A-B-C, for counter clockwise rotation of the motor, the phase sequence of the power supply should be (1) B-C-A (2) C-A-B (3) A-C-B (4) None of above

Question No.	Questions
61.	A rotating electrical machine having its self-inductance's of both the stator and the rotor windings independent of the rotor position will definitely not develop (1) Starting Torque (2) Synchronizing torque (3) Hysteresis Torque (4) Reluctance torque
62.	If peak value of phase mmf is F_{max}, then peak value of the rotating field caused by three phase is (1) $(3/2)\ F_{max.}$ (2) $F_{max.}$ (3) $3\ F_{max.}$ (4) $(1/2)\ F_{max.}$
63.	A 50 Hz, 4 pole turbo generator rated at 20 MVA, 13.2 KV has inertia constant H = 3 kW sec / KVA. The kinetic energy stored in the rotor is (1) 80 MJ (2) 60 MJ (3) 20 MJ (4) 10 MJ
64.	An alternator is supplying a load of 300 kW of a p.f. of 0.6 lagging. If the power factor is raised to unity. How many more kilowatts can alternator supply for the same KVA loading (1) 100 kW (2) 200 kW (3) 300 kW (4) 500 kW
65.	A 300 kVA, single phase transformer is designed to have resistance of 1.5 % and max. efficiency occurs at load of 173.2 kVA. When supplying the full load at 0.8 p.f. lagging at normal voltage, the efficiency will be (1) 12.6% (2) 97.6% (3) 35.5% (4) 29.6%

Question No.	Questions
66.	For constant load current at which power factor the efficiency of a transformer will be maximum ? (1) Zero power factor (2) Unity power factor (3) Leading power factor (4) Lagging power factor
67.	The all-day efficiency is the term related to (1) Power transformer (2) Distribution transformer (3) Current transformer (4) Voltage transformer
68.	Satisfactory commutation of DC machine requires (1) Smooth, concentric commutator properly undercut (2) Brushes should smoothly run in the holders (3) Brushes should be of proper grade and size (4) All of the above
69.	In a 3 - Φ induction motor running at full load which of these parameters is stationary with respect to the stator mmf wave ? (1) Stator winding (2) Rotor winding (3) Both rotor and stator winding (4) Rotor mmf wave

Question No.	Questions
70.	The damper windings also called the squirrel cage winging's damper grids (1) consists of short-circuited copper bars embedded in the field pole faces (2) are provided in a synchronous motor to make itself starting (3) are provided on the stator for improving power factor (4) both (1) and (2)
71.	EHV transmission has which of the following advantages ? (1) Reduction in noise (2) Increase in transmission efficiency (3) Improves voltage regulation (4) All of these
72.	Absence of skin effect lower line cost, less corona effect are the features of which of the transmission system ? (1) EHV – AC system (2) HVDC system (3) Both (1) and (2) (4) UHV – AC system
73.	Inside the station of the broad gauge line what is the clearance between track and lowest conductor for operating voltages from 650 V– 3 kV ? (1) 10 m (2) 7.2 m (3) 8.6 m (4) 7.6 m

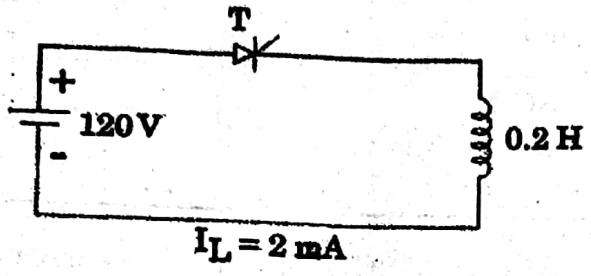
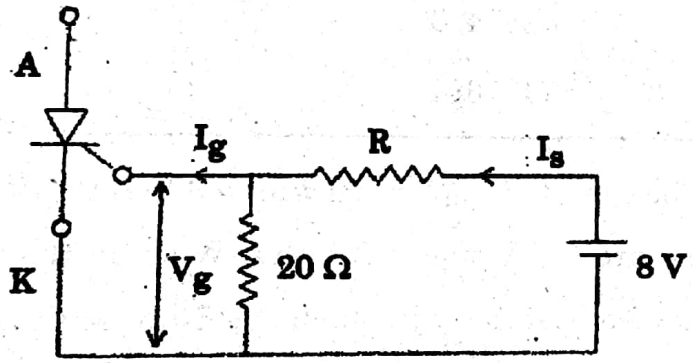
Question No.	Questions
74.	The area under load curve represents (1) System voltage (2) Current (3) Average demand (4) Maximum demand
75.	A power station supplies the peak load of 50 MW, 40 MW and 70 MW to three localities. The annual load factor is 0.50 p.u. and the diversity factor of the load at the station is 1.55 the maximum demand on the station and average load respectively will be (1) 51.61 MW (2) 57.5 MW (3) 53 MW (4) 52 MW
76.	Which of the followng circuit breakers produce least arc energy ? (1) Air blast (2) Air break (3) Minimum oil (4) Plain oil
77.	A 100 Km long transmission line is loaded at 110 kV. If the loss of line is 5 MW and the load is 150 VA the resistance of the line is (1) 4.65 ohms / phase (2) 2.26 ohms / phase (3) 8.06 ohms / phase (4) 6.06 ohms / phase
78.	A three phase, 33 kV oil circuit breaker is rated 1200 A, 2000 MVA, 3 s. The symmetrical breaking current is (1) 1200 A (2) 3600 A (3) 35 kA (4) 104.8 kA

Question No.	Questions
79.	A 3 core cable gives on test a capacitance of 3.7 microfarad between two cores. Find the line charging current of the cable when it is connected to 11 kV, 50 Hz system ? (1) 14.76 A (2) 1.476 A (3) 14.7 mA (4) 1 A
80.	The most suitable circuit breaker for short line fault without switching resistor is (1) Oil circuit breaker (2) Air blast circuit breaker (3) SF_6 breaker (4) None of these
81.	Mho relay is used for the protection of (1) medium length lines (2) long transmission lines (3) short length lines (4) no length criterion
82.	An overhead line conductor has an inductance per unit length of L henry. If the entire medium around the conductor is filled with a dielectric material of permittivity ε, then the inductance will (1) L/ε (2) $L/0.5\varepsilon$ (3) L (4) unchanged
83.	When a line-to-ground fault occurs, the current in the phase is 100 A. The zero sequence current in the case will be (1) 33.3 A (2) 0 A (3) 66.6 A (4) 99.9 A

Question No.	Questions
84.	Air blast circuit breaker is most suitably used in (1) Up to 132 KV line (2) Up to 260 KV line (3) Up to 400 KV line (4) any voltage
85.	To reduce the adverse effect of corona discharge which conductor is specially used ? (1) ACSR (2) Bundle conductor (3) Aluminium conductor (4) Copper conductor
86.	A single phase one pulse controlled circuit has a resistance R and counter emf E load 400 sin (314t) as the source voltage. For a load counter emf of 200 V, the range of firing angle control is (1) 30° to 150° (2) 30° to 180° (3) 60° to 120° (4) 60° to 180°
87.	Let of a thyristor V_{c1}, V_{c2}, V_{c3} are forward break over voltage for gate current I_{g1}, I_{g2}, I_{g3} respectively. Then (1) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} > I_{g2} > I_{g3}$ (2) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} < I_{g2} < I_{g3}$ (3) $V_{c1} = V_{c2} = V_{c3}$ any value of I_g (4) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} \geq I_{g2} \geq I_{g3}$

Question No.	Questions
88.	Triacs cannot be used in AC voltage regulator for a (1) Resistive load (2) Inductive load (3) Back emf load (4) Resistive Inductive
89.	Latching current for an SCR inserted between a dc voltage source of 200 V and load is 100 mA. Compute the minimum rate of width pulse required to turn ON the SCR in case load consists of R = 20 Ω in series with L = 0.2 H (1) 200 μs (2) 300 μs (3) 150 μs (4) 100 μs
90.	Delay time is defined by the interval when (1) gate current increases from 90% to 100% of its final value (2) anode current reaches 10% from forward leakage current (3) anode voltage drops from 100% to 90% of its actual value (4) all of these
91.	Typical range of thyristor turn OFF time is (1) 3 – 10 μs (2) 3 – 50 μs (3) 3 – 100 μs (4) 3 – 500 μs

Question No.	Questions
92.	String efficiency depends upon (1) voltage rating of whole string (2) no. of SCR in the string (3) voltage rating of one SCR (4) all of these
93.	A thyristor string is made of a no. of SCR connected in series and parallel. The string have volume and current of 11 KV and 4 KA. The voltage and current rating of available SCRs are 1800 V and 1000 A. For a string efficiency of 90% let the number of SCRs in series and parallel are a and b respectively. Then the value of a and b will be (1) 5, 7 (2) 4, 6 (3) 7, 5 (4) 6, 4
94.	A 200 A thyristor is to be operated in parallel with a 300 A thyristor. The ON state voltage drops are 1.5 V and 1.2 Volts. What is the value of resistance R to be connected in series with each thyristor, so that current through the combination is 500 A and each of them is fully loaded ? (1) $0.03 \times 10^{-2}\ \Omega$ (2) $0.3 \times 10^{-3}\ \Omega$ (3) $3.0 \times 10^{-3}\ \Omega$ (4) $0.3 \times 10^{-2}\ \Omega$

Question No.	Questions
95.	If a latching current for the circuit shown in figure is 2 mA. Obtain the value of minimum width of the property turn ON the SCR ?  (1) 3 μs (2) 3.1 μs (3) 3.2 μs (4) 3.3 μs
96.	A thyristor will be triggered when $V_g = 1.5$ volt and $I_g = 100$ mA in the given figure. Calculate the value of R in ohm is  (1) 65 (2) 3.714 (3) 37.14 (4) 60
97.	The peak to peak source current ripple in amperes is (1) 0.96 (2) 0.144 (3) 0.192 (4) 0.288

Question No.	Questions
98.	The average source current in amperes in steady state is (1) 3/2 (2) 5/3 (3) 5/2 (4) 15/4
99.	The rms value of load phase voltage is (1) 105.1 V (2) 141.4 V (3) 212.2 V (4) 282.8 V
100.	In the DC bus voltage $V_d = 300$ V, the power consumed by three phase load is (1) 1.5 kW (2) 2.0 kW (3) 2.5 kW (4) 3.0 kW

(Set–"X")

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

(M.Phil/Ph.D/URS–EE–2018)

Code B **Subject : ELECTRICAL ENGG.** Sr. No. 100018

Time : 1¼ Hours **Max. Marks : 100** **Total Questions : 100**

Roll No. _____ (in figure) _____ (in words)

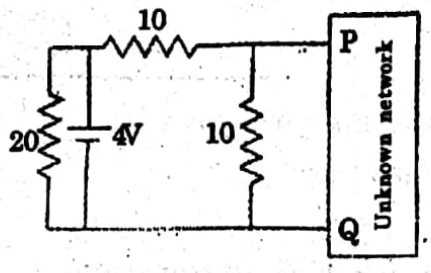
Name : _____ Father's Name : _____

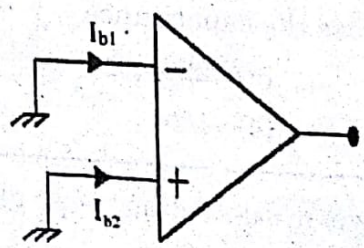
Mother's Name : _____ Date of Examination : _____

(Signature of the candidate) (Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

1. All questions are compulsory.
2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C, D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet / Answer Key, the same may be brought to the notice of the Controller of Examination in writing / through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered
5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers MUST NOT be ticked in the Question book-let.
6. **There will be no Negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only Black or Blue BALL POINT PEN of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

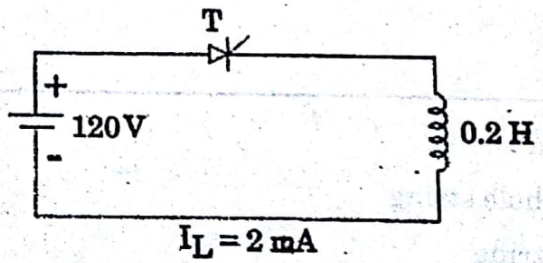
Question No.	Questions
1.	In the given figure, the Thevenin equivalent voltage and impedance as seen from the terminals P-Q is given by  (1) 4 V and 7.5 Ω (2) 2 V and 7.5 Ω (3) 4 V and 5 Ω (4) 2 V and 5 Ω
2.	A coil having a resistance of 5 Ω and inductance of 0.1 H is connected in series with a condenser of capacitance 50 μF. A constant alternating voltage of 200 V is applied to the circuit. The voltage across coil at resonance is (1) 200 V (2) 1788 V (3) 1800 V (4) 2000 V
3.	An RLC series circuit resonates at a frequency w_r the ratio of w_r L/R = 10 the variable frequency voltage applied to the circuit is 20 sin $(\omega t + \pi/3)$ the voltage measured across the capacitance (1) $200/\sqrt{2}$ (2) $220/\sqrt{2}$ (3) $20/\sqrt{2}$ (4) 1/2
4.	What is the relation between line voltage and phase voltage in case of delta connection ? (1) $V_L = V_p$. (2) $V_t = 1/\sqrt{3}\ V_p$. (3) $V_L = \sqrt{3}\ V_p$. (4) None of these

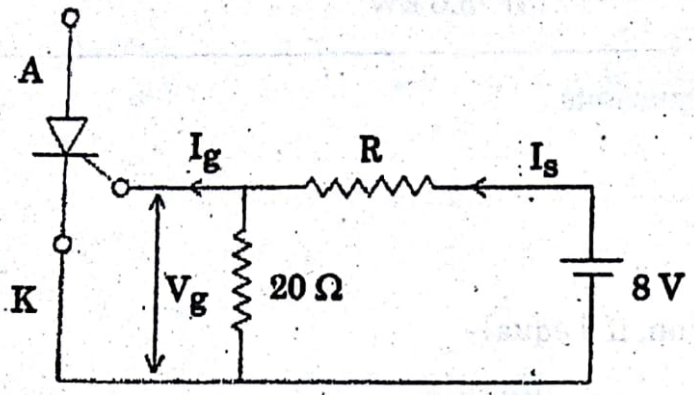
Question No.	Questions
5.	The rms value of the current is a wire which carries a dc current of 10 A and a sinusoidal alternating current of peak value 20 A is (1) 10 A (2) 14.14 A (3) 15 A (4) 17.32 A
6.	The purpose of compensation for a thermocouple is (1) To decrease temperature sensitivity (2) To increase volatge output (3) To cancel unwanted voltage output of a thermocouple (4) Used for high-temperature circuits
7.	Semiconductor strain gages typical have much higher gage factors than those of metallic strain gages primarily due to (1) Higher temperature sensitivity (2) Higher Poisson's ratio (3) Higher piezoresistive coefficient (4) Higher magnetostrictive coefficient
8.	For the op-amp shown in the figure, the bias currents are $I_{b1} = 450$ nA and $I_{b2} = 350$ nA. The values of the input bias current (I_b) and the input offset current (I_f) are  (1) $I_b = 800$ nA, $I_f = 50$ nA (2) $I_b = 800$ nA, $I_f = 100$ nA (3) $I_b = 400$ nA, $I_f = 50$ nA (4) $I_b = 400$ nA, $I_f = 100$ nA

Question No.	Questions
9.	A Hall Effect sensor (1) exists only in theory (2) is a non-contacting magnetic sensor (3) can operate only a few times before failure (4) produces very large voltages
10.	For turbulent flow, the velocity at the center is _____ times the mean velocity. (1) 1.2 (2) 2.2 (3) 2 (4) 3.333
11.	EHV transmission has which of the following advantages ? (1) Reduction in noise (2) Increase in transmission efficiency (3) Improves voltage regulation (4) All of these
12.	Absence of skin effect lower line cost, less corona effect are the features of which of the transmission system ? (1) EHV – AC system (2) HVDC system (3) Both (1) and (2) (4) UHV – AC system

Question No.	Questions
13.	Inside the station of the broad gauge line what is the clearance between track and lowest conductor for operating voltages from 650 V– 3 kV ? (1) 10 m (2) 7.2 m (3) 8.6 m (4) 7.6 m
14.	The area under load curve represents (1) System voltage (2) Current (3) Average demand (4) Maximum demand
15.	A power station supplies the peak load of 50 MW, 40 MW and 70 MW to three localities. The annual load factor is 0.50 p.u. and the diversity factor of the load at the station is 1.55 the maximum demand on the station and average load respectively will be (1) 51.61 MW (2) 57.5 MW (3) 53 MW (4) 52 MW
16.	Which of the followng circuit breakers produce least arc energy ? (1) Air blast (2) Air break (3) Minimum oil (4) Plain oil
17.	A 100 Km long transmission line is loaded at 110 kV. If the loss of line is 5 MW and the load is 150 VA the resistance of the line is (1) 4.65 ohms / phase (2) 2.26 ohms / phase (3) 8.06 ohms / phase (4) 6.06 ohms / phase

Question No.	Questions
18.	A three phase, 33 kV oil circuit breaker is rated 1200 A, 2000 MVA, 3 s. The symmetrical breaking current is (1) 1200 A (2) 3600 A (3) 35 kA (4) 104.8 kA
19.	A 3 core cable gives on test a capacitance of 3.7 microfarad between two cores. Find the line charging current of the cable when it is connected to 11 kV, 50 Hz system ? (1) 14.76 A (2) 1.476 A (3) 14.7 mA (4) 1 A
20.	The most suitable circuit breaker for short line fault without switching resistor is (1) Oil circuit breaker (2) Air blast circuit breaker (3) SF_6 breaker (4) None of these
21.	Typical range of thyristor turn OFF time is (1) 3 – 10 μs (2) 3 – 50 μs (3) 3 – 100 μs (4) 3 – 500 μs
22.	String efficiency depends upon (1) voltage rating of whole string (2) no. of SCR in the string (3) voltage rating of one SCR (4) all of these

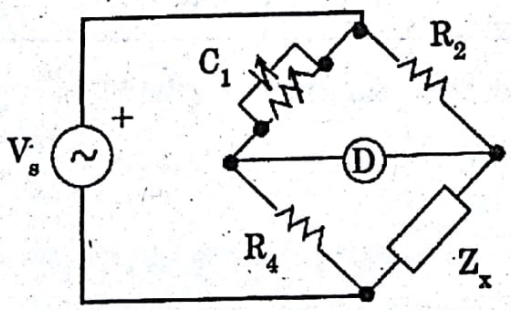
Question No.	Questions
23.	A thyristor string is made of a no. of SCR connected in series and parallel. The string have volume and current of 11 KV and 4 KA. The voltage and current rating of available SCRs are 1800 V and 1000 A. For a string efficiency of 90% let the number of SCRs in series and parallel are a and b respectively. Then the value of a and b will be (1) 5, 7 (2) 4, 6 (3) 7, 5 (4) 6, 4
24.	A 200 A thyristor is to be operated in parallel with a 300 A thyristor. The ON state voltage drops are 1.5 V and 1.2 Volts. What is the value of resistance R to be connected in series with each thyristor, so that current through the combination is 500 A and each of them is fully loaded ? (1) $0.03 \times 10^{-2}\ \Omega$ (2) $0.3 \times 10^{-3}\ \Omega$ (3) $3.0 \times 10^{-3}\ \Omega$ (4) $0.3 \times 10^{-2}\ \Omega$
25.	If a latching current for the circuit shown in figure is 2 mA. Obtain the value of minimum width of the property turn ON the SCR ?  (1) 3 μs (2) 3.1 μs (3) 3.2 μs (4) 3.3 μs

Question No.	Questions
26.	A thyristor will be triggered when V_g = 1.5 volt and I_g = 100 mA in the given figure. Calculate the value of R in ohm is  (1) 65 (2) 3.714 (3) 37.14 (4) 60
27.	The peak to peak source current ripple in amperes is (1) 0.96 (2) 0.144 (3) 0.192 (4) 0.288
28.	The average source current in amperes in steady state is (1) 3/2 (2) 5/3 (3) 5/2 (4) 15/4
29.	The rms value of load phase voltage is (1) 105.1 V (2) 141.4 V (3) 212.2 V (4) 282.8 V

Question No.	Questions
30.	In the DC bus voltage $V_d = 300$ V, the power consumed by three phase load is (1) 1.5 kW (2) 2.0 kW (3) 2.5 kW (4) 3.0 kW
31.	The system of linear equations $(4d - 1)\,x + y + z = 0$ $-y + z = 0$ $(4d - 1)\,z = 0$ has a non-trivial solution, if d equals (1) 1/2 (2) 1/4 (3) 3/4 (4) 1
32.	Eigen vector(s) of the matrix $\begin{bmatrix} 0 & 0 & \alpha \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ is (are) (1) $(0, 0, \alpha)$ (2) $(\alpha, 0, 0)$ (3) $(0, 0, 1)$ (4) $(0, \alpha, 0)$
33.	Consider the z-transform $X(z) = 5z^2 + 4z^{-1} + 3$; $0 < \lvert z \rvert < \infty$. The inverse z-transform x [n] is (1) $5\delta[n+2] + 3\delta[n] + 4\delta[n-1]$ (2) $5\delta[n-2] + 3\delta[n] + 4\delta[n+1]$ (3) $5u[n+2] + 3u[n] + 4u[n-1]$ (4) $5u[n-2] + 3u[n] + 4u[n+1]$

Question No.	Questions
34.	If $\delta(t)$ denotes a unit impulse then Laplace Transform of $\frac{d^2\delta(t)}{dt^2}$ will be (1) l (2) s^2 (3) s (4) s^{-2}
35.	The state equation of LTI system is represented by $\dot{x} = \begin{bmatrix} 0 & 0 \\ -2 & -1 \end{bmatrix} x + \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} u$ The Eigen values are (1) $-1, +1$ (2) $0.5 \pm j\,1.323$ (3) $-1, -1$ (4) None
36.	Line integral can be transformed into a surface integral by using (1) Divergence theorem (2) Gauss theorem (3) Stokes theorem (4) None of these
37.	Four fundamental equations of electromagnetics are known as (1) Fleming's laws (2) Faraday's laws (3) Lorentz equations (4) Maxwell's equations
38.	For a linear electromagnetic circuit, which of the following statements is true ? (1) Field energy is equal to the co-energy (2) Field energy is greater than the co-energy (3) Field energy is lesser than the co-energy (4) Co-energy is zero

Question No.	Questions
39.	Which of the following statements holds for the divergence of electric and magnetic flux (1) Both are zero (2) These are zero for static densities but non-zero for time varying densities. (3) It is zero for the electric flux density (4) It is zero for the magnetic flux density
40.	A parallel plate capacitor has an electrode area of 100 mm^2, with a spacing of 0.1 mm between the electrodes. The dielectric between the plates is air with a permittivity of 8.85×10^{-12} F/m. The charge on the capacitor is 100V. The Stored energy in the capacitor is : (1) 8.85pJ (2) 440pJ (3) 22.1nJ (4) 44.3nJ
41.	A psychrometric chart is used to determine (1) pH (2) Sound velocity in glasses (3) CO_2 concentration (4) Relative humidity
42.	The dynamic characteristics of capacitive transducer are similar to those of (1) low pass filter (2) high pass filter (3) notch filter (4) band stop filter

Question No.	Questions
43.	The effect of error damping is to (1) provide larger settling time (2) delay the response (3) reduce steady state error (4) any of the above
44.	The bridge method commonly used for finding mutual inductance is (1) Heaviside Campbell bridge (2) Schering bridge (3) De Sauty's bridge (4) Wien bridge
45.	The bridge circuit shown in the figure below is used for the measurement of an unknown element Z_x. The bridge circuit is best suited when Z_x is a  (1) Lossy capacitor (2) Low Q inductor (3) High resistance (4) Low resistance

Question No.	Questions
46.	A 500 kVA, three phase transformer has iron losses of 300 W and full load copper losses of 600 W. The percentage load at which the transformer is expected to have maximum efficiency is (1) 50.0% (2) 70.7% (3) 141.4% (4) 200.0%
47.	A single phase transformer has a maximum efficiency of 90% at full load and unity power factor. Efficiency at half load at the same power factor is (1) 86.7% (2) 88.26% (3) 88.9% (4) 87.8%
48.	Which of the following motor definitely has a permanent magnet rotor (1) DC commutator motor (2) Brushless DC motor (3) Stepper motor (4) Reluctance motor
49.	The type of single phase induction motor having the highest power factor at full load is (1) Shaded pole type (2) Split phase type (3) Capacitor start type (4) Capacitor run type

Question No.	Questions
50.	The direction of rotation of a three phase induction motor is clockwise when it is supplied with three phase sinusoidal voltage having phase sequence A-B-C, for counter clockwise rotation of the motor, the phase sequence of the power supply should be (1) B-C-A (2) C-A-B (3) A-C-B (4) None of above
51.	A rotating electrical machine having its self-inductance's of both the stator and the rotor windings independent of the rotor position will definitely not develop (1) Starting Torque (2) Synchronizing torque (3) Hysteresis Torque (4) Reluctance torque
52.	If peak value of phase mmf is F_{max}, then peak value of the rotating field caused by three phase is (1) $(3/2)\ F_{max.}$ (2) $F_{max.}$ (3) $3\ F_{max.}$ (4) $(1/2)\ F_{max.}$
53.	A 50 Hz, 4 pole turbo generator rated at 20 MVA, 13.2 KV has inertia constant H = 3 kW sec / KVA. The kinetic energy stored in the rotor is (1) 80 MJ (2) 60 MJ (3) 20 MJ (4) 10 MJ

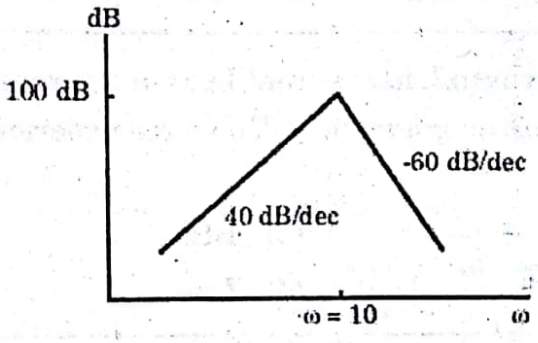
Question No.	Questions
54.	An alternator is supplying a load of 300 kW of a p.f. of 0.6 lagging. If the power factor is raised to unity. How many more kilowatts can alternator supply for the same KVA loading (1) 100 kW (2) 200 kW (3) 300 kW (4) 500 kW
55.	A 300 kVA, single phase transformer is designed to have resistance of 1.5 % and max. efficiency occurs at load of 173.2 kVA. When supplying the full load at 0.8 p.f. lagging at normal voltage, the efficiency will be (1) 12.6% (2) 97.6% (3) 35.5% (4) 29.6%
56.	For constant load current at which power factor the efficiency of a transformer will be maximum ? (1) Zero power factor (2) Unity power factor (3) Leading power factor (4) Lagging power factor
57.	The all-day efficiency is the term related to (1) Power transformer (2) Distribution transformer (3) Current transformer (4) Voltage transformer
58.	Satisfactory commutation of DC machine requires (1) Smooth, concentric commutator properly undercut (2) Brushes should smoothly run in the holders (3) Brushes should be of proper grade and size (4) All of the above

Code–B

Question No.	Questions
59.	In a 3 -Φ induction motor running at full load which of these parameters is stationary with respect to the stator mmf wave ? (1) Stator winding (2) Rotor winding (3) Both rotor and stator winding (4) Rotor mmf wave
60.	The damper windings also called the squirrel cage winging's damper grids (1) consists of short-circuited copper bars embedded in the field pole faces (2) are provided in a synchronous motor to make itself starting (3) are provided on the stator for improving power factor (4) both (1) and (2)
61.	The hexadecimal equivalent of the octal number 171.62 is (1) 3C1.C0 (2) 79.C8 (3) 89.C7 (4) 97.8C
62.	Which of the following circuit can be used as parallel to series converter ? (1) Digital Counter (2) Decoder (3) De-multiplexer (4) Multiplexer
63.	How many fillip-flops are required to construct a decade counter ? (1) 10 (2) 3 (3) 4 (4) 2

Question No.	Questions
64.	Which is not a type of ROM ? (1) Mask ROM (2) PROM (3) EEPROM (4) XROM
65.	A stage in shift register consist of (1) Latch (2) Flip flop (3) Byte of storage (4) four bits of storage
66.	The closed loop transfer function of a system is $T(s) = \frac{(s+8)(s+6)}{s^5 + s^4 + 4s^3 - 4s^2 + 3s - 2}$ The number of poles in RHP and LHP are (1) 4,1 (2) 1,4 (3) 3,2 (4) 2,3
67.	For a second order system settling time $T_s = 7$sec and peak time $T_p = 3$ sec. The location of poles are (1) $-0.97 \pm j\,0.69$ (2) $-0.69 \pm j\,0.97$ (3) $-1.047 \pm j\,0.571$ (4) $-0.571 \pm j\,1.047$
68.	The open loop transfer function of a unity feedback system is $G(s) = \frac{50}{(1+0.1s)(1+2s)}$ The position, velocity and acceleration error constants are respectively (1) 0, 0, 250 (2) 50, 0, 0 (3) 0, 250, ∞ (4) ∞, 50, 0

Code–B

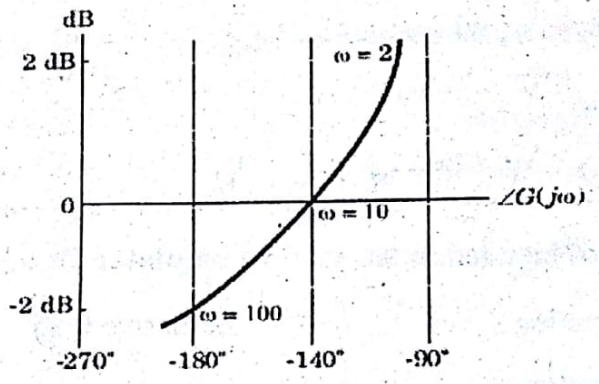
Question No.	Questions
69.	A unity feedback system has a forward path transfer function is $G(s) = \frac{10(1+4s)}{s^2(1+s)}$ If the system is subjected to an input $r(t) = 1 + t + \frac{t^2}{2},\ t > 0$ the steady state error of the system will be (1) 1 (2) 0.1 (3) 10 (4) ∞
70.	For the Bode plot shown in figure, the transfer function is  (1) $\frac{100\ s^2}{(1+0.1s)^3}$ (2) $\frac{1000\ s^2}{(1+0.1s)^6}$ (3) $\frac{15.6\ s^2}{(1+0.1s)^6}$ (4) None

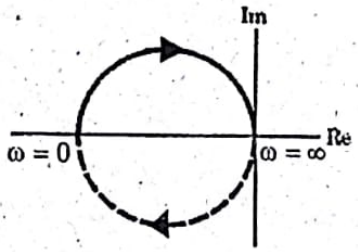
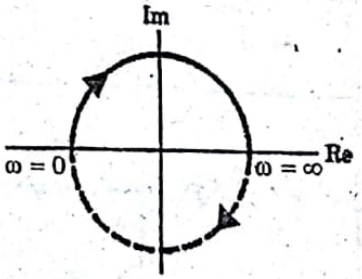
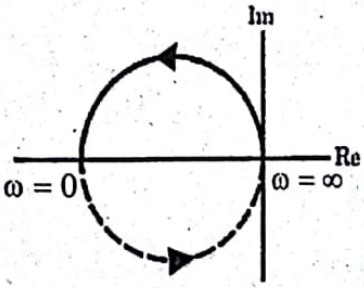
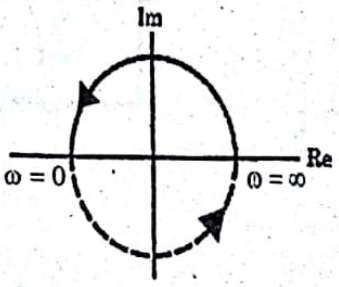
Question No.	Questions
71.	Whenever the magnetic flux changes with respect to an electric conductor or a coil, an EMF is induced in the conductor is Faraday's (1) First law (2) Second law (3) Third law (4) Fourth law
72.	Inside a hollow conducting sphere (1) Electric field is zero. (2) Electric field is a non-zero constant. (3) Electric field changes with magnitude of the charge given to the conductor. (4) Electric field changes with distance from the center of the sphere.
73.	A conductor of length L has current I passing through it, when it is placed parallel to strong magnetic field. The force experienced by the conductor will be (1) BIL (2) BIL^2 (3) BI^2L (4) Zero
74.	Cork Screw rule is used to find (1) Direction of magnetic field (2) Direction of electric field (3) Direction of current (4) Direction of emf
75.	A point pole has a strength of $4\pi \times 10^{-4}$ weber. The force in Newtons on a point pole of $4\pi \times 1.5 \times 10^{-4}$ weber placed at a distance of 10 cm from it will be (1) 20N (2) 15N (3) 7.5N (4) 3.75N

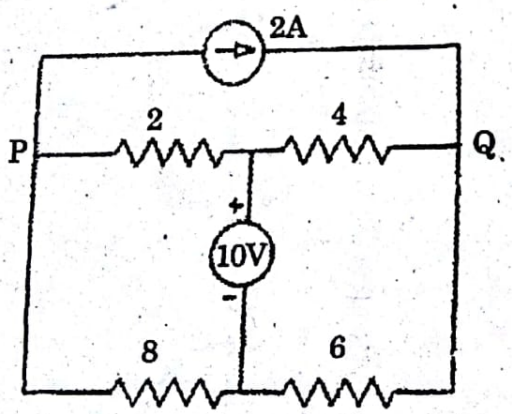
Question No.	Questions
76.	In a sample it is observed that a carrier takes 100 μs to over a distance of 10 cm. If the applied external field is 10^4 V/cm; find the mobolity (1) 10^7 cm²/Vs (2) 10^{-3} cm²/Vs (3) 10 cm²/Vs (4) 10^7 m²/Vs
77.	The current gain of a bipolar transistor drops at high frequency because of (1) Transistor internal capacitances (2) High current effects in the base (3) Parasitic inductive elements (4) The Early effect
78.	A transistor has $\alpha = 0.98$, then determine β. (1) 50 (2) 49 (3) 70 (4) None of the above
79.	The value of emitter capacitor CE in a multistage amplifier is about (1) 0.1μF (2) 100pF (3) 0.01μF (4) 50μF
80.	The conduction loss versus device current characteristic of a power MOSFET is best (1) A parabola (2) A straight line (3) A rectangular hyperbola (4) An exponentially decaying function

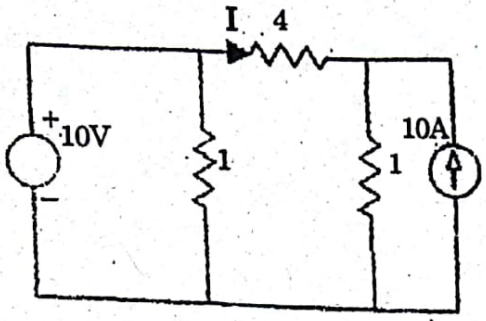
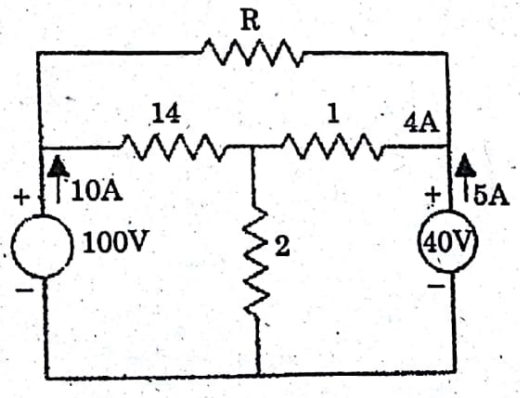
Question No.	Questions
81.	Mho relay is used for the protection of (1) medium length lines (2) long transmission lines (3) short length lines (4) no length criterion
82.	An overhead line conductor has an inductance per unit length of L henry. If the entire medium around the conductor is filled with a dielectric material of permittivity ε, then the inductance will (1) L/ε (2) $L/0.5\varepsilon$ (3) L (4) unchanged
83.	When a line-to-ground fault occurs, the current in the phase is 100 A. The zero sequence current in the case will be (1) 33.3 A (2) 0 A (3) 66.6 A (4) 99.9 A
84.	Air blast circuit breaker is most suitably used in (1) Up to 132 KV line (2) Up to 260 KV line (3) Up to 400 KV line (4) any voltage
85.	To reduce the adverse effect of corona discharge which conductor is specially used ? (1) ACSR (2) Bundle conductor (3) Aluminium conductor (4) Copper conductor

Question No.	Questions
86.	A single phase one pulse controlled circuit has a resistance R and counter emf E load 400 sin (314t) as the source voltage. For a load counter emf of 200 V, the range of firing angle control is (1) 30° to 150° (2) 30° to 180° (3) 60° to 120° (4) 60° to 180°
87.	Let of a thyristor V_{c1}, V_{c2}, V_{c3} are forward break over voltage for gate current I_{g1}, I_{g2}, I_{g3} respectively. Then (1) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} > I_{g2} > I_{g3}$ (2) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} < I_{g2} < I_{g3}$ (3) $V_{c1} = V_{c2} = V_{c3}$ any value of I_g (4) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} \geq I_{g2} \geq I_{g3}$
88.	Triacs cannot be used in AC voltage regulator for a (1) Resistive load (2) Inductive load (3) Back emf load (4) Resistive Inductive
89.	Latching current for an SCR inserted between a dc voltage source of 200 V and load is 100 mA. Compute the minimum rate of width pulse required to turn ON the SCR in case load consists of R = 20 Ω in series with L = 0.2 H (1) 200 μs (2) 300 μs (3) 150 μs (4) 100 μs

Question No.	Questions
90.	Delay time is defined by the interval when (1) gate current increases from 90% to 100% of its final value (2) anode current reaches 10% from forward leakage current (3) anode voltage drops from 100% to 90% of its actual value (4) all of these
91.	Consider the gain-phase plot shown in fig. The gain margin and phase margin are  Fig (1) – 2 dB, 40° (2) 2 dB, 40° (3) 2 dB, 140° (4) – 2 dB, 140°
92.	The root locus of a unity feed function is given by (1) k/s (s + 1) (s + 2) (2) k (s + 1) /s (s + 2) (3) k (s + 2) /s (s + 1) (4) ks / (s + 1) (s + 2)

Question No.	Questions
93.	The transfer function $\frac{1+0.5s}{1+s}$ represents (1) Lag network (2) Lead network (3) Lag-lead Network (4) Proportional controller
94.	If the stability error for a step input and speed of the response be the criteria for design, the suitable controller will be (1) P Controller (2) PI Controller (3) PD Controller (4) PID Controller
95.	The open loop transfer function of a feedback system is $G(s)\,H(s) = \frac{K(s+1)}{(1-s)}$. The nyquist plot of this system is (1)  (2)  (3)  (4) 

Question No.	Questions
96.	The equation for 25 cycles electric current sine wave having rms value of 30 amps, will be (1) $42.4 \sin 50\pi t$ (2) $30 \sin 50\pi t$ (3) $30 \sin 25\pi t$ (4) $42.4 \sin 25\pi t$
97.	The equation of an emf is given by $e = I_m\left[\sqrt{(R^2 + 4\omega^2L^2)}\right] \sin 2\omega t$. The amplitude of the wave will be (1) $I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$ (2) $\sqrt{2}I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$ (3) $\left[I_m(R^2 + 4\omega^2L^2)\right]^{1/2}$ (4) $2I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$
98.	In the figure, the potential difference between points P and Q is  (1) 6 (2) –6 (3) 10 (4) 12

Question No.	Questions
99.	In the network shown, what is the electric current I is the direction shown  (1) 0 A. (2) 1/3 A. (3) 5/6 A. (4) 4 A.
100.	In the figure given, the value' of R is  (1) 10 Ω (2) 12 Ω (3) 18 Ω (4) 24 Ω

(Set–"X")

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

(M.Phil/Ph.D/URS–EE–2018)

Code **C** **Subject : ELECTRICAL ENGG.** Sr. No. 100023

Time : 1¼ Hours **Max. Marks : 100** **Total Questions : 100**

Roll No. _____ (in figure) _____ (in words)

Name : _____ Father's Name : _____

Mother's Name : _____ Date of Examination : _____

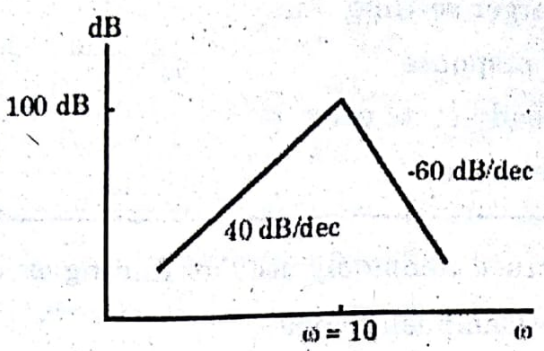
(Signature of the candidate) (Signature of the Invigilator)

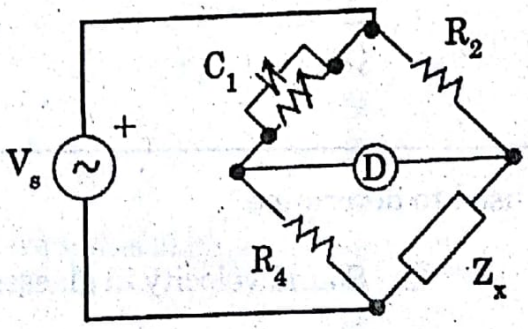
CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

1. All questions are compulsory.
2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C, D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet / Answer Key, the same may be brought to the notice of the Controller of Examination in writing / through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered
5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers **MUST NOT** be ticked in the Question book-let.
6. **There will be no Negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only Black or Blue **BALL POINT PEN** of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

Question No.	Questions
1.	The hexadecimal equivalent of the octal number 171.62 is (1) 3C1.C0 (2) 79.C8 (3) 89.C7 (4) 97.8C
2.	Which of the following circuit can be used as parallel to series converter ? (1) Digital Counter (2) Decoder (3) De-multiplexer (4) Multiplexer
3.	How many fillip-flops are required to construct a decade counter ? (1) 10 (2) 3 (3) 4 (4) 2
4.	Which is not a type of ROM ? (1) Mask ROM (2) PROM (3) EEPROM (4) XROM
5.	A stage in shift register consist of (1) Latch (2) Flip flop (3) Byte of storage (4) four bits of storage
6.	The closed loop transfer function of a system is $T(s) = \frac{(s+8)(s+6)}{s^5 + s^4 + 4s^3 - 4s^2 + 3s - 2}$ The number of poles in RHP and LHP are (1) 4,1 (2) 1,4 (3) 3,2 (4) 2,3

Question No.	Questions
7.	For a second order system settling time $T_s = 7$sec and peak time $T_p = 3$ sec. The location of poles are (1) $-0.97 \pm j\,0.69$ (2) $-0.69 \pm j\,0.97$ (3) $-1.047 \pm j\,0.571$ (4) $-0.571 \pm j\,1.047$
8.	The open loop transfer function of a unity feedback system is $G(s) = \frac{50}{(1+0.1s)(1+2s)}$ The position, velocity and acceleration error constants are respectively (1) 0, 0, 250 (2) 50, 0, 0 (3) 0, 250, ∞ (4) ∞, 50, 0
9.	A unity feedback system has a forward path transfer function is $G(s) = \frac{10(1+4s)}{s^2(1+s)}$ If the system is subjected to an input $r(t) = 1 + t + \frac{t^2}{2},\ t \succ 0$ the steady state error of the system will be (1) 1 (2) 0.1 (3) 10 (4) ∞

Question No.	Questions
10.	For the Bode plot shown in figure, the transfer function is  (1) $\frac{100\ s^2}{(1+0.1s)^3}$ (2) $\frac{1000\ s^2}{(1+0.1s)^6}$ (3) $\frac{15.6\ s^2}{(1+0.1s)^6}$ (4) None
11.	A psychrometric chart is used to determine (1) pH (2) Sound velocity in glasses (3) CO_2 concentration (4) Relative humidity
12.	The dynamic characteristics of capacitive transducer are similar to those of (1) low pass filter (2) high pass filter (3) notch filter (4) band stop filter

Question No.	Questions
13.	The effect of error damping is to (1) provide larger settling time (2) delay the response (3) reduce steady state error (4) any of the above
14.	The bridge method commonly used for finding mutual inductance is (1) Heaviside Campbell bridge (2) Schering bridge (3) De Sauty's bridge (4) Wien bridge
15.	The bridge circuit shown in the figure below is used for the measurement of an unknown element Z_x. The bridge circuit is best suited when Z_x is a  (1) Lossy capacitor (2) Low Q inductor (3) High resistance (4) Low resistance

Question No.	Questions
16.	A 500 kVA, three phase transformer has iron losses of 300 W and full load copper losses of 600 W. The percentage load at which the transformer is expected to have maximum efficiency is (1) 50.0% (2) 70.7% (3) 141.4% (4) 200.0%
17.	A single phase transformer has a maximum efficiency of 90% at full load and unity power factor. Efficiency at half load at the same power factor is (1) 86.7% (2) 88.26% (3) 88.9% (4) 87.8%
18.	Which of the following motor definitely has a permanent magnet rotor (1) DC commutator motor (2) Brushless DC motor (3) Stepper motor (4) Reluctance motor
19.	The type of single phase induction motor having the highest power factor at full load is (1) Shaded pole type (2) Split phase type (3) Capacitor start type (4) Capacitor run type
20.	The direction of rotation of a three phase induction motor is clockwise when it is supplied with three phase sinusoidal voltage having phase sequence A-B-C, for counter clockwise rotation of the motor, the phase sequence of the power supply should be (1) B-C-A (2) C-A-B (3) A-C-B (4) None of above

Question No.	Questions
21.	Mho relay is used for the protection of (1) medium length lines (2) long transmission lines (3) short length lines (4) no length criterion
22.	An overhead line conductor has an inductance per unit length of L henry. If the entire medium around the conductor is filled with a dielectric material of permittivity ε, then the inductance will (1) L/ε (2) $L/0.5\varepsilon$ (3) L (4) unchanged
23.	When a line-to-ground fault occurs, the current in the phase is 100 A. The zero sequence current in the case will be (1) 33.3 A (2) 0 A (3) 66.6 A (4) 99.9 A
24.	Air blast circuit breaker is most suitably used in (1) Up to 132 KV line (2) Up to 260 KV line (3) Up to 400 KV line (4) any voltage
25.	To reduce the adverse effect of corona discharge which conductor is specially used ? (1) ACSR (2) Bundle conductor (3) Aluminium conductor (4) Copper conductor

Question No.	Questions
26.	A single phase one pulse controlled circuit has a resistance R and counter emf E load 400 sin (314t) as the source voltage. For a load counter emf of 200 V, the range of firing angle control is (1) 30° to 150° (2) 30° to 180° (3) 60° to 120° (4) 60° to 180°
27.	Let of a thyristor V_{c1}, V_{c2}, V_{c3} are forward break over voltage for gate current I_{g1}, I_{g2}, I_{g3} respectively. Then (1) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} > I_{g2} > I_{g3}$ (2) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} < I_{g2} < I_{g3}$ (3) $V_{c1} = V_{c2} = V_{c3}$ any value of I_g (4) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} \geq I_{g2} \geq I_{g3}$
28.	Triacs cannot be used in AC voltage regulator for a (1) Resistive load (2) Inductive load (3) Back emf load (4) Resistive Inductive
29.	Latching current for an SCR inserted between a dc voltage source of 200 V and load is 100 mA. Compute the minimum rate of width pulse required to turn ON the SCR in case load consists of R = 20 Ω in series with L = 0.2 H (1) 200 μs (2) 300 μs (3) 150 μs (4) 100 μs

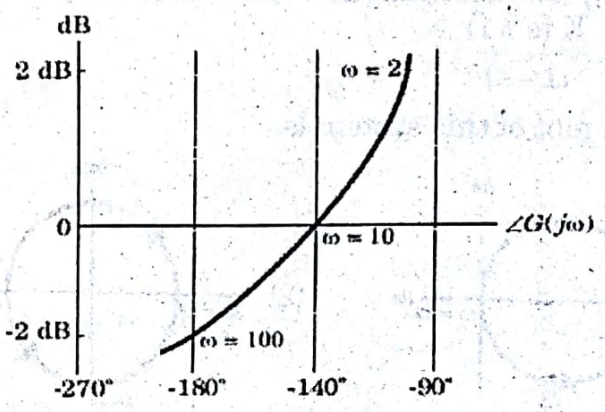
Question No.	Questions
30.	Delay time is defined by the interval when (1) gate current increases from 90% to 100% of its final value (2) anode current reaches 10% from forward leakage current (3) anode voltage drops from 100% to 90% of its actual value (4) all of these
31.	EHV transmission has which of the following advantages ? (1) Reduction in noise (2) Increase in transmission efficiency (3) Improves voltage regulation (4) All of these
32.	Absence of skin effect lower line cost, less corona effect are the features of which of the transmission system ? (1) EHV – AC system (2) HVDC system (3) Both (1) and (2) (4) UHV – AC system
33.	Inside the station of the broad gauge line what is the clearance between track and lowest conductor for operating voltages from 650 V– 3 kV ? (1) 10 m (2) 7.2 m (3) 8.6 m (4) 7.6 m

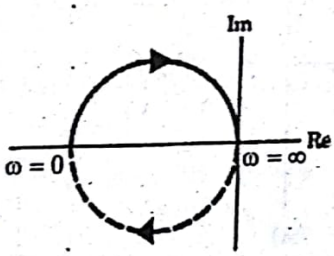
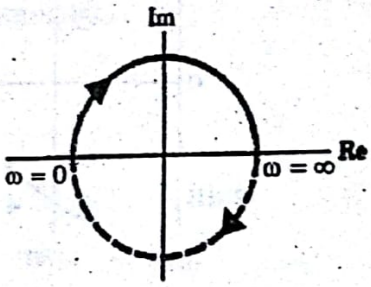
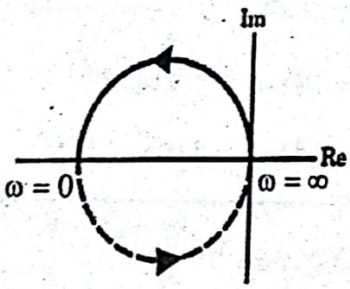
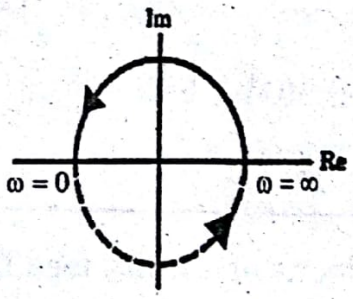
Question No.	Questions
34.	The area under load curve represents (1) System voltage (2) Current (3) Average demand (4) Maximum demand
35.	A power station supplies the peak load of 50 MW, 40 MW and 70 MW to three localities. The annual load factor is 0.50 p.u. and the diversity factor of the load at the station is 1.55 the maximum demand on the station and average load respectively will be (1) 51.61 MW (2) 57.5 MW (3) 53 MW (4) 52 MW
36.	Which of the followng circuit breakers produce least arc energy ? (1) Air blast (2) Air break (3) Minimum oil (4) Plain oil
37.	A 100 Km long transmission line is loaded at 110 kV. If the loss of line is 5 MW and the load is 150 VA the resistance of the line is (1) 4.65 ohms / phase (2) 2.26 ohms / phase (3) 8.06 ohms / phase (4) 6.06 ohms / phase
38.	A three phase, 33 kV oil circuit breaker is rated 1200 A, 2000 MVA, 3 s. The symmetrical breaking current is (1) 1200 A (2) 3600 A (3) 35 kA (4) 104.8 kA

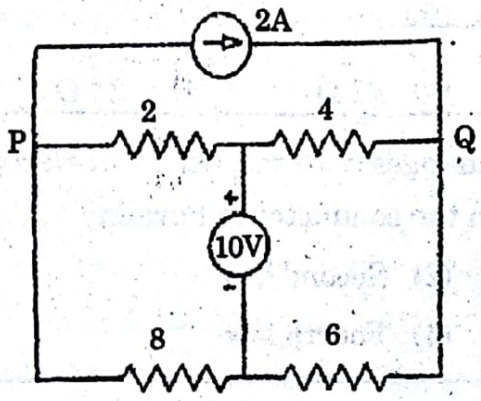
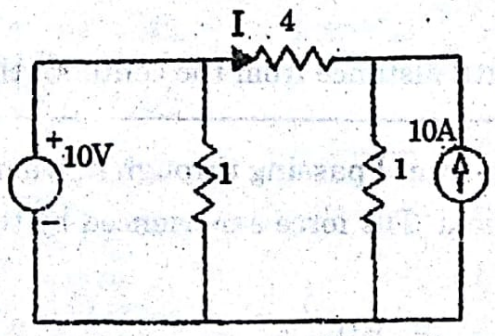
Question No.	Questions
39.	A 3 core cable gives on test a capacitance of 3.7 microfarad between two cores. Find the line charging current of the cable when it is connected to 11 kV, 50 Hz system ? (1) 14.76 A (2) 1.476 A (3) 14.7 mA (4) 1 A
40.	The most suitable circuit breaker for short line fault without switching resistor is (1) Oil circuit breaker (2) Air blast circuit breaker (3) SF_6 breaker (4) None of these
41.	The system of linear equations $(4d - 1)\,x + y + z = 0$ $-y + z = 0$ $(4d - 1)\,z = 0$ has a non-trivial solution, if d equals (1) 1/2 (2) 1/4 (3) 3/4 (4) 1

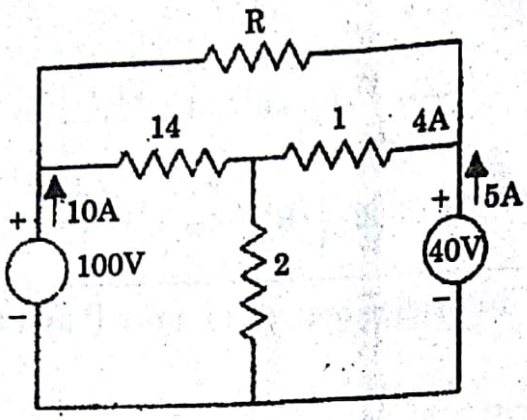
Question No.	Questions
42.	Eigen vector(s) of the matrix $\begin{bmatrix} 0 & 0 & \alpha \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ is (are) (1) $(0, 0, \alpha)$ (2) $(\alpha, 0, 0)$ (3) $(0, 0, 1)$ (4) $(0, \alpha, 0)$
43.	Consider the z-transform $X(z) = 5z^2 + 4z^{-1} + 3 \; ; \; 0 < \lvert z \rvert < \infty$. The inverse z-transform x [n] is (1) $5\delta[n+2] + 3\delta[n] + 4\delta[n-1]$ (2) $5\delta[n-2] + 3\delta[n] + 4\delta[n+1]$ (3) $5u[n+2] + 3u[n] + 4u[n-1]$ (4) $5u[n-2] + 3u[n] + 4u[n+1]$
44.	If $\delta(t)$ denotes a unit impulse then Laplace Transform of $\frac{d^2\delta(t)}{dt^2}$ will be (1) l (2) s^2 (3) s (4) s^{-2}
45.	The state equation of LTI system is represented by $\dot{x} = \begin{bmatrix} 0 & 0 \\ -2 & -1 \end{bmatrix} x + \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} u$ The Eigen values are (1) $-1, +1$ (2) $0.5 \pm j\,1.323$ (3) $-1, -1$ (4) None

Question No.	Questions
46.	Line integral can be transformed into a surface integral by using (1) Divergence theorem (2) Gauss theorem (3) Stokes theorem (4) None of these
47.	Four fundamental equations of electromagnetics are known as (1) Fleming's laws (2) Faraday's laws (3) Lorentz equations (4) Maxwell's equations
48.	For a linear electromagnetic circuit, which of the following statements is true ? (1) Field energy is equal to the co-energy (2) Field energy is greater than the co-energy (3) Field energy is lesser than the co-energy (4) Co-energy is zero
49.	Which of the following statements holds for the divergence of electric and magnetic flux (1) Both are zero (2) These are zero for static densities but non-zero for time varying densities. (3) It is zero for the electric flux density (4) It is zero for the magnetic flux density

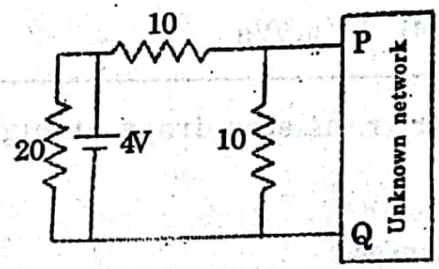
Question No.	Questions
50.	A parallel plate capacitor has an electrode area of 100 mm^2, with a spacing of 0.1 mm between the electrodes. The dielectric between the plates is air with a permittivity of 8.85×10^{-12} F/m. The charge on the capacitor is 100V. The Stored energy in the capacitor is : (1) 8.85pJ (2) 440pJ (3) 22.1nJ (4) 44.3nJ
51.	Consider the gain-phase plot shown in fig. The gain margin and phase margin are  Fig (1) – 2 dB, 40° (2) 2 dB, 40° (3) 2 dB, 140° (4) – 2 dB, 140°
52.	The root locus of a unity feed function is given by (1) k/s (s + 1) (s + 2) (2) k (s + 1) /s (s + 2) (3) k (s + 2) /s (s + 1) (4) ks / (s + 1) (s + 2)

Question No.	Questions
53.	The transfer function $\frac{1+0.5s}{1+s}$ represents (1) Lag network (2) Lead network (3) Lag-lead Network (4) Proportional controller
54.	If the stability error for a step input and speed of the response be the criteria for design, the suitable controller will be (1) P Controller (2) PI Controller (3) PD Controller (4) PID Controller
55.	The open loop transfer function of a feedback system is $G(s)H(s) = \frac{K(s+1)}{(1-s)}$. The nyquist plot of this system is (1)  (2)  (3)  (4) 
56.	The equation for 25 cycles electric current sine wave having rms value of 30 amps, will be (1) $42.4 \sin 50\pi t$ (2) $30 \sin 50\pi t$ (3) $30 \sin 25\pi t$ (4) $42.4 \sin 25\pi t$

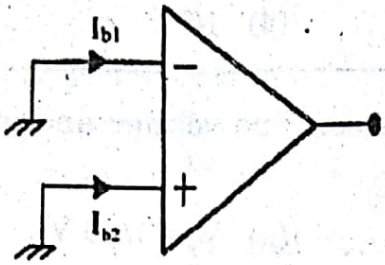
Question No.	Questions
57.	The equation of an emf is given by $e = I_m\left[\sqrt{\left(R^2 + 4\omega^2L^2\right)}\right] \sin 2\omega t$. The amplitude of the wave will be (1) $I_m\left[\left(R^2 + 4\omega^2L^2\right)^{1/2}\right]$ (2) $\sqrt{2}I_m\left[\left(R^2 + 4\omega^2L^2\right)^{1/2}\right]$ (3) $\left[I_m\left(R^2 + 4\omega^2L^2\right)\right]^{1/2}$ (4) $2I_m\left[\left(R^2 + 4\omega^2L^2\right)^{1/2}\right]$
58.	In the figure, the potential difference between points P and Q is  (1) 6 (2) −6 (3) 10 (4) 12
59.	In the network shown, what is the electric current I is the direction shown  (1) 0 A. (2) 1/3 A. (3) 5/6 A. (4) 4 A.

Question No.	Questions
60.	In the figure given, the value' of R is  (1) 10 Ω (2) 12 Ω (3) 18 Ω (4) 24 Ω
61.	Whenever the magnetic flux changes with respect to an electric conductor or a coil, an EMF is induced in the conductor is Faraday's (1) First law (2) Second law (3) Third law (4) Fourth law
62.	Inside a hollow conducting sphere (1) Electric field is zero. (2) Electric field is a non-zero constant. (3) Electric field changes with magnitude of the charge given to the conductor. (4) Electric field changes with distance from the center of the sphere.
63.	A conductor of length L has current I passing through it, when it is placed parallel to strong magnetic field. The force experienced by the conductor will be (1) BIL (2) BIL^2 (3) BI^2L (4) Zero

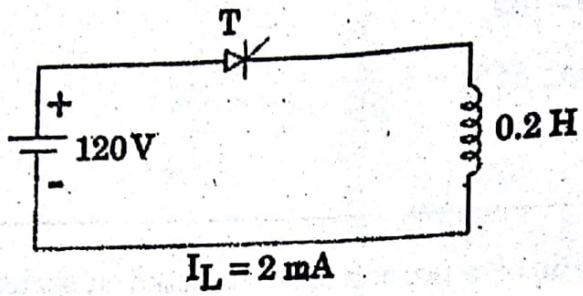
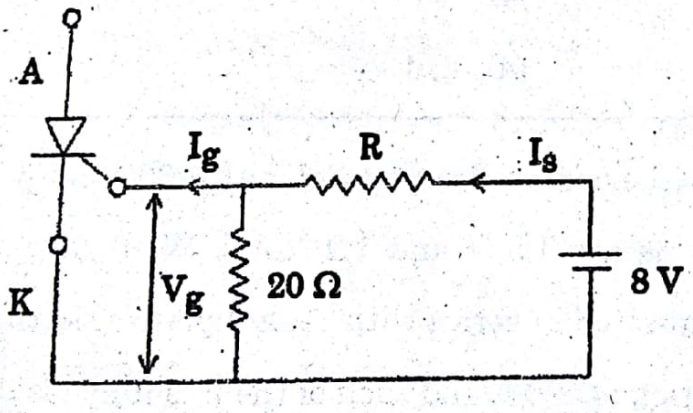
Question No.	Questions
64.	Cork Screw rule is used to find (1) Direction of magnetic field (2) Direction of electric field (3) Direction of current (4) Direction of emf
65.	A point pole has a strength of $4\pi \times 10^{-4}$ weber. The force in Newtons on a point pole of $4\pi \times 1.5 \times 10^{-4}$ weber placed at a distance of 10 cm from it will be (1) 20N (2) 15N (3) 7.5N (4) 3.75N
66.	In a sample it is observed that a carrier takes 100 μs to over a distance of 10 cm. If the applied external field is 10^4 V/cm; find the mobolity (1) 10^7 cm²/Vs (2) 10^{-3} cm²/Vs (3) 10 cm²/Vs (4) 10^7 m²/Vs
67.	The current gain of a bipolar transistor drops at high frequency because of (1) Transistor internal capacitances (2) High current effects in the base (3) Parasitic inductive elements (4) The Early effect
68.	A transistor has $\alpha = 0.98$, then determine β. (1) 50 (2) 49 (3) 70 (4) None of the above

Question No.	Questions
69.	The value of emitter capacitor CE in a multistage amplifier is about (1) 0.1μF (2) 100pF (3) 0.01μF (4) 50μF
70.	The conduction loss versus device current characteristic of a power MOSFET is best (1) A parabola (2) A straight line (3) A rectangular hyperbola (4) An exponentially decaying function
71.	In the given figure, the Thevenin equivalent voltage and impedance as seen from the terminals P-Q is given by  (1) 4 V and 7.5 Ω (2) 2 V and 7.5 Ω (3) 4 V and 5 Ω (4) 2 V and 5 Ω
72.	A coil having a resistance of 5 Ω and inductance of 0.1 H is connected in series with a condenser of capacitance 50μF. A constant alternating voltage of 200 V is applied to the circuit. The voltage across coil at resonance is (1) 200 V (2) 1788 V (3) 1800 V (4) 2000 V

Question No.	Questions
73.	An RLC series circuit resonates at a frequency w_r the ratio of w_r L/R = 10 the variable frequency voltage applied to the circuit is 20 sin $(\omega t + \pi/3)$ the voltage measured across the capacitance (1) $200/\sqrt{2}$ (2) $220/\sqrt{2}$ (3) $20/\sqrt{2}$ (4) 1/2
74.	What is the relation between line voltage and phase voltage in case of delta connection ? (1) $V_L = V_p$. (2) $V_t = 1/\sqrt{3}\, V_p$. (3) $V_L = \sqrt{3}\, V_p$. (4) None of these
75.	The rms value of the current is a wire which carries a dc current of 10 A and a sinusoidal alternating current of peak value 20 A is (1) 10 A (2) 14.14 A (3) 15 A (4) 17.32 A
76.	The purpose of compensation for a thermocouple is (1) To decrease temperature sensitivity (2) To increase volatge output (3) To cancel unwanted voltage output of a thermocouple (4) Used for high-temperature circuits
77.	Semiconductor strain gages typical have much higher gage factors than those of metallic strain gages primarily due to (1) Higher temperature sensitivity (2) Higher Poisson's ratio (3) Higher piezoresistive coefficient (4) Higher magnetostrictive coefficient

Question No.	Questions
78.	For the op-amp shown in the figure, the bias currents are $I_{b1} = 450$ nA and $I_{b2} = 350$ nA. The values of the input bias current (I_b) and the input offset current (I_f) are  (1) $I_b = 800$ nA, $I_f = 50$ nA (2) $I_b = 800$ nA, $I_f = 100$ nA (3) $I_b = 400$ nA, $I_f = 50$ nA (4) $I_b = 400$ nA, $I_f = 100$ nA
79.	A Hall Effect sensor (1) exists only in theory (2) is a non-contacting magnetic sensor (3) can operate only a few times before failure (4) produces very large voltages
80.	For turbulent flow, the velocity at the center is _____ times the mean velocity. (1) 1.2 (2) 2.2 (3) 2 (4) 3.333
81.	Typical range of thyristor turn OFF time is (1) 3 – 10 μs (2) 3 – 50 μs (3) 3 – 100 μs (4) 3 – 500 μs

Question No.	Questions
82.	String efficiency depends upon (1) voltage rating of whole string (2) no. of SCR in the string (3) voltage rating of one SCR (4) all of these
83.	A thyristor string is made of a no. of SCR connected in series and parallel. The string have volume and current of 11 KV and 4 KA. The voltage and current rating of available SCRs are 1800 V and 1000 A. For a string efficiency of 90% let the number of SCRs in series and parallel are a and b respectively. Then the value of a and b will be (1) 5, 7 (2) 4, 6 (3) 7, 5 (4) 6, 4
84.	A 200 A thyristor is to be operated in parallel with a 300 A thyristor. The ON state voltage drops are 1.5 V and 1.2 Volts. What is the value of resistance R to be connected in series with each thyristor, so that current through the combination is 500 A and each of them is fully loaded ? (1) $0.03 \times 10^{-2}\ \Omega$ (2) $0.3 \times 10^{-3}\ \Omega$ (3) $3.0 \times 10^{-3}\ \Omega$ (4) $0.3 \times 10^{-2}\ \Omega$

Question No.	Questions
85.	If a latching current for the circuit shown in figure is 2 mA. Obtain the value of minimum width of the property turn ON the SCR ?  (1) 3 μs (2) 3.1 μs (3) 3.2 μs (4) 3.3 μs
86.	A thyristor will be triggered when $V_g = 1.5$ volt and $I_g = 100$ mA in the given figure. Calculate the value of R in ohm is  (1) 65 (2) 3.714 (3) 37.14 (4) 60

Question No.	Questions
87.	The peak to peak source current ripple in amperes is (1) 0.96 (2) 0.144 (3) 0.192 (4) 0.288
88.	The average source current in amperes in steady state is (1) 3/2 (2) 5/3 (3) 5/2 (4) 15/4
89.	The rms value of load phase voltage is (1) 105.1 V (2) 141.4 V (3) 212.2 V (4) 282.8 V
90.	In the DC bus voltage $V_d = 300$ V, the power consumed by three phase load is (1) 1.5 kW (2) 2.0 kW (3) 2.5 kW (4) 3.0 kW
91.	A rotating electrical machine having its self-inductance's of both the stator and the rotor windings independent of the rotor position will definitely not develop (1) Starting Torque (2) Synchronizing torque (3) Hysteresis Torque (4) Reluctance torque

Question No.	Questions
92.	If peak value of phase mmf is F_{max}, then peak value of the rotating field caused by three phase is (1) $(3/2)\ F_{max.}$ (2) $F_{max.}$ (3) $3\ F_{max.}$ (4) $(1/2)\ F_{max.}$
93.	A 50 Hz, 4 pole turbo generator rated at 20 MVA, 13.2 KV has inertia constant H = 3 kW sec / KVA. The kinetic energy stored in the rotor is (1) 80 MJ (2) 60 MJ (3) 20 MJ (4) 10 MJ
94.	An alternator is supplying a load of 300 kW of a p.f. of 0.6 lagging. If the power factor is raised to unity. How many more kilowatts can alternator supply for the same KVA loading (1) 100 kW (2) 200 kW (3) 300 kW (4) 500 kW
95.	A 300 kVA, single phase transformer is designed to have resistance of 1.5 % and max. efficiency occurs at load of 173.2 kVA. When supplying the full load at 0.8 p.f. lagging at normal voltage, the efficiency will be (1) 12.6% (2) 97.6% (3) 35.5% (4) 29.6%
96.	For constant load current at which power factor the efficiency of a transformer will be maximum ? (1) Zero power factor (2) Unity power factor (3) Leading power factor (4) Lagging power factor

Question No.	Questions
97.	The all-day efficiency is the term related to (1) Power transformer (2) Distribution transformer (3) Current transformer (4) Voltage transformer
98.	Satisfactory commutation of DC machine requires (1) Smooth, concentric commutator properly undercut (2) Brushes should smoothly run in the holders (3) Brushes should be of proper grade and size (4) All of the above
99.	In a 3 - Φ induction motor running at full load which of these parameters is stationary with respect to the stator mmf wave ? (1) Stator winding (2) Rotor winding (3) Both rotor and stator winding (4) Rotor mmf wave
100.	The damper windings also called the squirrel cage winging's damper grids (1) consists of short-circuited copper bars embedded in the field pole faces (2) are provided in a synchronous motor to make itself starting (3) are provided on the stator for improving power factor (4) both (1) and (2)

(Set–"X")

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

(M.Phil/Ph.D/URS–EE–2018)

Code D

Subject : ELECTRICAL ENGG.

Sr. No 100004

INSTRUCTIONS BEFORE START

1. All questions are compulsory.
2. The candidates must return the Qu… answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C, D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet / Answer Key, the same may be brought to the notice of the Controller of Examination in writing / through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered
5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers **MUST NOT** be ticked in the Question book-let.
6. **There will be no Negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only Black or Blue <u>BALL POINT PEN</u> of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

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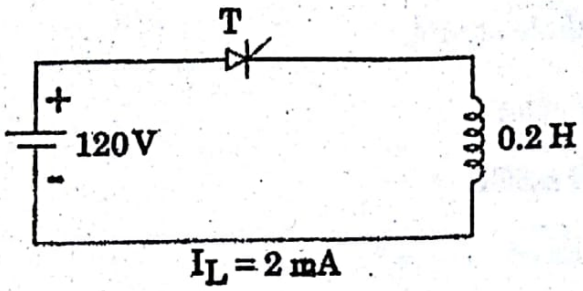
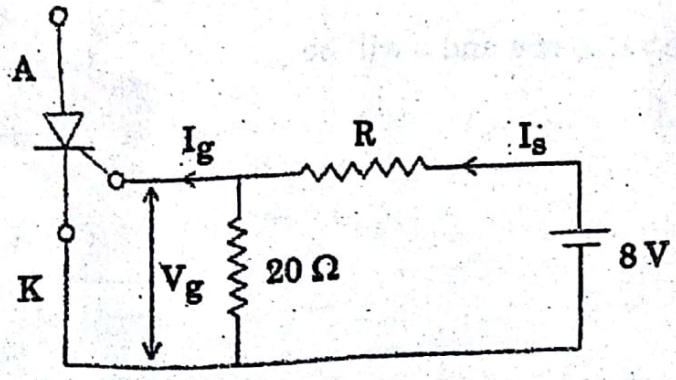
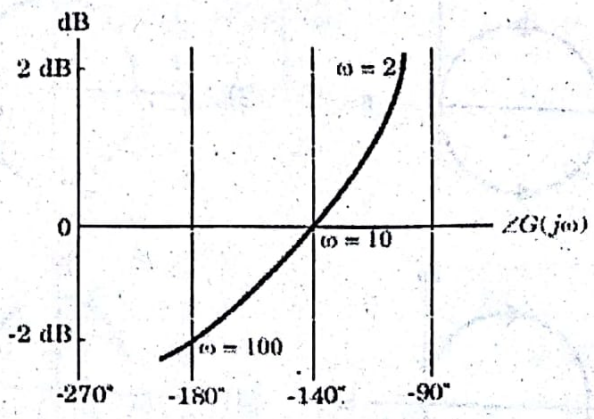
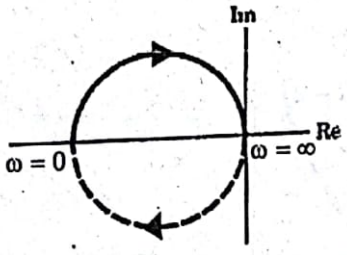
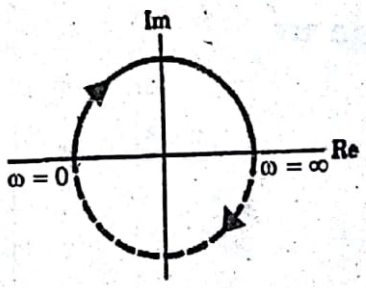
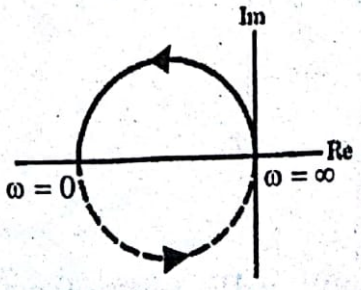
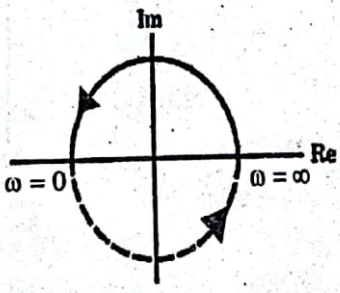
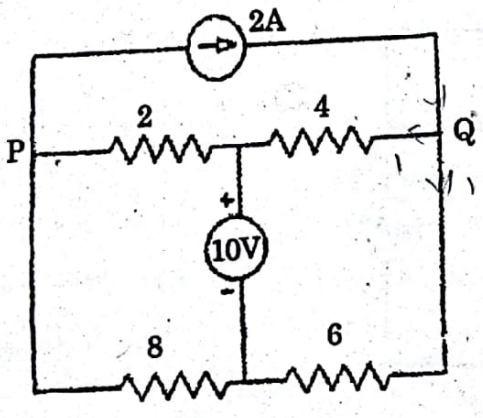
SEAL

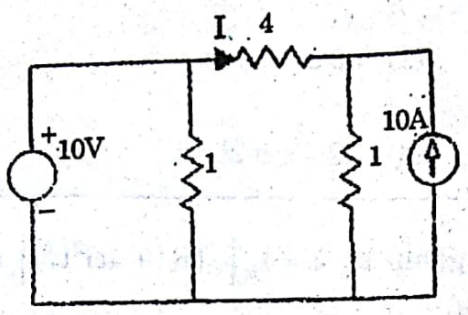
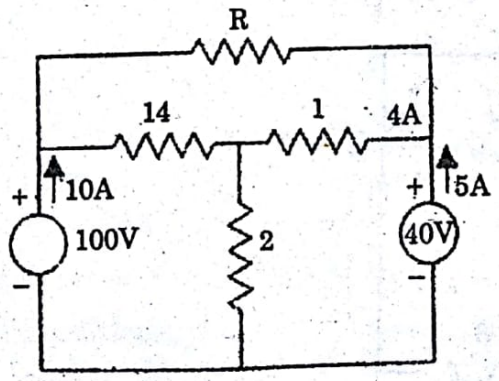
Question No.	Questions
1.	Typical range of thyristor turn OFF time is (1) 3 – 10 μs (2) 3 – 50 μs (3) 3 – 100 μs (4) 3 – 500 μs
2.	String efficiency depends upon (1) voltage rating of whole string (2) no. of SCR in the string (3) voltage rating of one SCR (4) all of these
3.	A thyristor string is made of a no. of SCR connected in series and parallel. The string have volume and current of 11 KV and 4 KA. The voltage and current rating of available SCRs are 1800 V and 1000 A. For a string efficiency of 90% let the number of SCRs in series and parallel are a and b respectively. Then the value of a and b will be (1) 5, 7 (2) 4, 6 (3) 7, 5 (4) 6, 4

Question No.	Questions
4.	A 200 A thyristor is to be operated in parallel with a 300 A thyristor. The ON state voltage drops are 1.5 V and 1.2 Volts. What is the value of resistance R to be connected in series with each thyristor, so that current through the combination is 500 A and each of them is fully loaded ? (1) $0.03 \times 10^{-2}\ \Omega$ (2) $0.3 \times 10^{-3}\ \Omega$ (3) $3.0 \times 10^{-3}\ \Omega$ (4) $0.3 \times 10^{-2}\ \Omega$
5.	If a latching current for the circuit shown in figure is 2 mA. Obtain the value of minimum width of the property turn ON the SCR ?  (1) 3 μs (2) 3.1 μs (3) 3.2 μs (4) 3.3 μs
6.	A thyristor will be triggered when $V_g = 1.5$ volt and $I_g = 100$ mA in the given figure. Calculate the value of R in ohm is  (1) 65 (2) 3.714 (3) 37.14 (4) 60

Question No.	Questions
7.	The peak to peak source current ripple in amperes is (1) 0.96 (2) 0.144 (3) 0.192 (4) 0.288
8.	The average source current in amperes in steady state is (1) 3/2 (2) 5/3 (3) 5/2 (4) 15/4
9.	The rms value of load phase voltage is (1) 105.1 V (2) 141.4 V (3) 212.2 V (4) 282.8 V
10.	In the DC bus voltage $V_d = 300$ V, the power consumed by three phase load is (1) 1.5 kW (2) 2.0 kW (3) 2.5 kW (4) 3.0 kW
11.	Consider the gain-phase plot shown in fig. The gain margin and phase margin are  Fig (1) – 2 dB, 40° (2) 2 dB, 40° (3) 2 dB, 140° (4) – 2 dB, 140°

Question No.	Questions
12.	The root locus of a unity feed function is given by (1) $k/s\,(s+1)\,(s+2)$ (2) $k\,(s+1)/s\,(s+2)$ (3) $k\,(s+2)/s\,(s+1)$ (4) $ks/(s+1)\,(s+2)$
13.	The transfer function $\frac{1+0.5s}{1+s}$ represents (1) Lag network (2) Lead network (3) Lag-lead Network (4) Proportional controller
14.	If the stability error for a step input and speed of the response be the criteria for design, the suitable controller will be (1) P Controller (2) PI Controller (3) PD Controller (4) PID Controller
15.	The open loop transfer function of a feedback system is $G(s)\,H(s) = \frac{K(s+1)}{(1-s)}$. The nyquist plot of this system is (1)  (2)  (3)  (4) 

Question No.	Questions
16.	The equation for 25 cycles electric current sine wave having rms value of 30 amps, will be (1) $42.4 \sin 50\pi t$ (2) $30 \sin 50\pi t$ (3) $30 \sin 25\pi t$ (4) $42.4 \sin 25\pi t$
17.	The equation of an emf is given by $e = I_m\left[\sqrt{(R^2 + 4\omega^2L^2)}\right] \sin 2\omega t$. The amplitude of the wave will be (1) $I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$ (2) $\sqrt{2}I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$ (3) $\left[I_m(R^2 + 4\omega^2L^2)\right]^{1/2}$ (4) $2I_m\left[(R^2 + 4\omega^2L^2)^{1/2}\right]$
18.	In the figure, the potential difference between points P and Q is  (1) 6 (2) −6 (3) 10 (4) 12

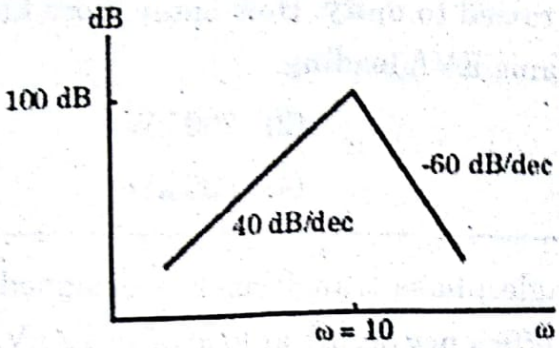
Question No.	Questions
19.	In the network shown, what is the electric current I is the direction shown  (1) 0 A. (2) 1/3 A. (3) 5/6 A. (4) 4 A.
20.	In the figure given, the value' of R is  (1) 10 Ω (2) 12 Ω (3) 18 Ω (4) 24 Ω

Question No.	Questions
21.	EHV transmission has which of the following advantages ? (1) Reduction in noise (2) Increase in transmission efficiency (3) Improves voltage regulation (4) All of these
22.	Absence of skin effect lower line cost, less corona effect are the features of which of the transmission system ? (1) EHV – AC system (2) HVDC system (3) Both (1) and (2) (4) UHV – AC system
23.	Inside the station of the broad gauge line what is the clearance between track and lowest conductor for operating voltages from 650 V– 3 kV ? (1) 10 m (2) 7.2 m (3) 8.6 m (4) 7.6 m
24.	The area under load curve represents (1) System voltage (2) Current (3) Average demand (4) Maximum demand

Question No.	Questions
25.	A power station supplies the peak load of 50 MW, 40 MW and 70 MW to three localities. The annual load factor is 0.50 p.u. and the diversity factor of the load at the station is 1.55 the maximum demand on the station and average load respectively will be (1) 51.61 MW (2) 57.5 MW (3) 53 MW (4) 52 MW
26.	Which of the followng circuit breakers produce least arc energy ? (1) Air blast (2) Air break (3) Minimum oil (4) Plain oil
27.	A 100 Km long transmission line is loaded at 110 kV. If the loss of line is 5 MW and the load is 150 VA the resistance of the line is (1) 4.65 ohms / phase (2) 2.26 ohms / phase (3) 8.06 ohms / phase (4) 6.06 ohms / phase
28.	A three phase, 33 kV oil circuit breaker is rated 1200 A, 2000 MVA, 3 s. The symmetrical breaking current is (1) 1200 A (2) 3600 A (3) 35 kA (4) 104.8 kA
29.	A 3 core cable gives on test a capacitance of 3.7 microfarad between two cores. Find the line charging current of the cable when it is connected to 11 kV, 50 Hz system ? (1) 14.76 A (2) 1.476 A (3) 14.7 mA (4) 1 A

Question No.	Questions
30.	The most suitable circuit breaker for short line fault without switching resistor is (1) Oil circuit breaker (2) Air blast circuit breaker (3) SF_6 breaker (4) None of these
31.	The hexadecimal equivalent of the octal number 171.62 is (1) 3C1.C0 (2) 79.C8 (3) 89.C7 (4) 97.8C
32.	Which of the following circuit can be used as parallel to series converter ? (1) Digital Counter (2) Decoder (3) De-multiplexer (4) Multiplexer
33.	How many fillip-flops are required to construct a decade counter ? (1) 10 (2) 3 (3) 4 (4) 2
34.	Which is not a type of ROM ? (1) Mask ROM (2) PROM (3) EEPROM (4) XROM
35.	A stage in shift register consist of (1) Latch (2) Flip flop (3) Byte of storage (4) four bits of storage

Question No.	Questions
36.	The closed loop transfer function of a system is $T(s)=\frac{(s+8)(s+6)}{s^5+s^4+4s^3-4s^2+3s-2}$ The number of poles in RHP and LHP are (1) 4,1 (2) 1,4 (3) 3,2 (4) 2,3
37.	For a second order system settling time T_s = 7sec and peak time T_p = 3 sec. The location of poles are (1) $-0.97 \pm j\,0.69$ (2) $-0.69 \pm j\,0.97$ (3) $-1.047 \pm j\,0.571$ (4) $-0.571 \pm j\,1.047$
38.	The open loop transfer function of a unity feedback system is $G(s)=\frac{50}{(1+0.1s)(1+2s)}$ The position, velocity and acceleration error constants are respectively (1) 0, 0, 250 (2) 50, 0, 0 (3) 0, 250, ∞ (4) ∞, 50, 0
39.	A unity feedback system has a forward path transfer function is $G(s)=\frac{10(1+4s)}{s^2(1+s)}$ If the system is subjected to an input $r(t)=1+t+\frac{t^2}{2},\ t>0$ the steady state error of the system will be (1) 1 (2) 0.1 (3) 10 (4) ∞

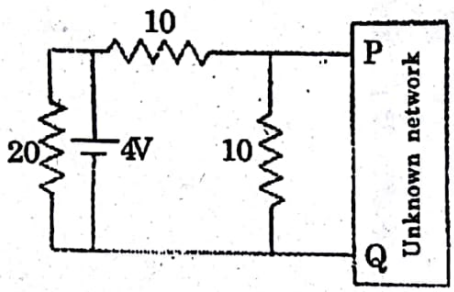
Question No.	Questions
40.	For the Bode plot shown in figure, the transfer function is  (1) $\frac{100\ s^2}{(1+0.1s)^3}$ (2) $\frac{1000\ s^2}{(1+0.1s)^6}$ (3) $\frac{15.6\ s^2}{(1+0.1s)^6}$ (4) None
41.	A rotating electrical machine having its self-inductance's of both the stator and the rotor windings independent of the rotor position will definitely not develop (1) Starting Torque (2) Synchronizing torque (3) Hysteresis Torque (4) Reluctance torque
42.	If peak value of phase mmf is F_{max}, then peak value of the rotating field caused by three phase is (1) $(3/2)\ F_{max.}$ (2) $F_{max.}$ (3) $3\ F_{max.}$ (4) $(1/2)\ F_{max.}$
43.	A 50 Hz, 4 pole turbo generator rated at 20 MVA, 13.2 KV has inertia constant H = 3 kW sec / KVA. The kinetic energy stored in the rotor is (1) 80 MJ (2) 60 MJ (3) 20 MJ (4) 10 MJ

Question No.	Questions
44.	An alternator is supplying a load of 300 kW of a p.f. of 0.6 lagging. If the power factor is raised to unity. How many more kilowatts can alternator supply for the same KVA loading (1) 100 kW (2) 200 kW (3) 300 kW (4) 500 kW
45.	A 300 kVA, single phase transformer is designed to have resistance of 1.5 % and max. efficiency occurs at load of 173.2 kVA. When supplying the full load at 0.8 p.f. lagging at normal voltage, the efficiency will be (1) 12.6% (2) 97.6% (3) 35.5% (4) 29.6%
46.	For constant load current at which power factor the efficiency of a transformer will be maximum ? (1) Zero power factor (2) Unity power factor (3) Leading power factor (4) Lagging power factor
47.	The all-day efficiency is the term related to (1) Power transformer (2) Distribution transformer (3) Current transformer (4) Voltage transformer

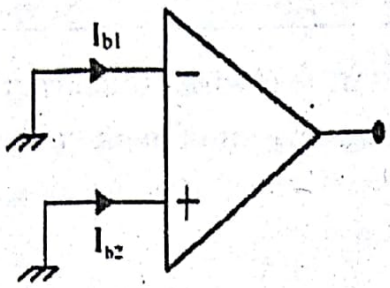
Question No.	Questions
48.	Satisfactory commutation of DC machine requires (1) Smooth, concentric commutator properly undercut (2) Brushes should smoothly run in the holders (3) Brushes should be of proper grade and size (4) All of the above
49.	In a 3 - Φ induction motor running at full load which of these parameters is stationary with respect to the stator mmf wave ? (1) Stator winding (2) Rotor winding (3) Both rotor and stator winding (4) Rotor mmf wave
50.	The damper windings also called the squirrel cage winging's damper grids (1) consists of short-circuited copper bars embedded in the field pole faces (2) are provided in a synchronous motor to make itself starting (3) are provided on the stator for improving power factor (4) both (1) and (2)
51.	Mho relay is used for the protection of (1) medium length lines (2) long transmission lines (3) short length lines (4) no length criterion

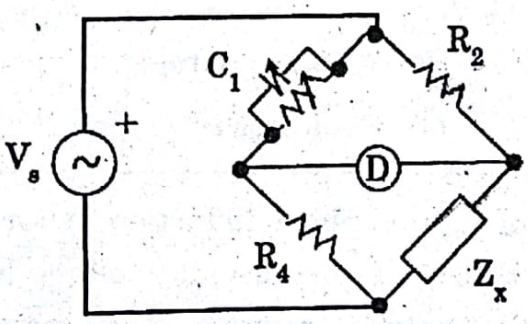
Question No.	Questions
52.	An overhead line conductor has an inductance per unit length of L henry. If the entire medium around the conductor is filled with a dielectric material of permittivity ε, then the inductance will (1) L/ε (2) L/0.5ε (3) L (4) unchanged
53.	When a line-to-ground fault occurs, the current in the phase is 100 A. The zero sequence current in the case will be (1) 33.3 A (2) 0 A (3) 66.6 A (4) 99.9 A
54.	Air blast circuit breaker is most suitably used in (1) Up to 132 KV line (2) Up to 260 KV line (3) Up to 400 KV line (4) any voltage
55.	To reduce the adverse effect of corona discharge which conductor is specially used ? (1) ACSR (2) Bundle conductor (3) Aluminium conductor (4) Copper conductor

Question No.	Questions
56.	A single phase one pulse controlled circuit has a resistance R and counter emf E load 400 sin (314t) as the source voltage. For a load counter emf of 200 V, the range of firing angle control is (1) 30° to 150° (2) 30° to 180° (3) 60° to 120° (4) 60° to 180°
57.	Let of a thyristor V_{c1}, V_{c2}, V_{c3} are forward break over voltage for gate current I_{g1}, I_{g2}, I_{g3} respectively. Then (1) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} > I_{g2} > I_{g3}$ (2) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} < I_{g2} < I_{g3}$ (3) $V_{c1} = V_{c2} = V_{c3}$ any value of I_g. (4) $V_{c1} > V_{c2} > V_{c3}$ when $I_{g1} \geq I_{g2} \geq I_{g3}$
58.	Triacs cannot be used in AC voltage regulator for a (1) Resistive load (2) Inductive load (3) Back emf load (4) Resistive Inductive
59.	Latching current for an SCR inserted between a dc voltage source of 200 V and load is 100 mA. Compute the minimum rate of width pulse required to turn ON the SCR in case load consists of R = 20 Ω in series with L = 0.2 H (1) 200 μs (2) 300 μs (3) 150 μs (4) 100 μs

Question No.	Questions
60.	Delay time is defined by the interval when (1) gate current increases from 90% to 100% of its final value (2) anode current reaches 10% from forward leakage current (3) anode voltage drops from 100% to 90% of its actual value (4) all of these
61.	In the given figure, the Thevenin equivalent voltage and impedance as seen from the terminals P-Q is given by  (1) 4 V and 7.5 Ω (2) 2 V and 7.5 Ω (3) 4 V and 5 Ω (4) 2 V and 5 Ω
62.	A coil having a resistance of 5 Ω and inductance of 0.1 H is connected in series with a condenser of capacitance 50 μF. A constant alternating voltage of 200 V is applied to the circuit. The voltage across coil at resonance is (1) 200 V (2) 1788 V (3) 1800 V (4) 2000 V
63.	An RLC series circuit resonates at a frequency w_r the ratio of w_r L/R = 10 the variable frequency voltage applied to the circuit is 20 sin $(\omega t + \pi/3)$ the voltage measured across the capacitance (1) $200/\sqrt{2}$ (2) $220/\sqrt{2}$ (3) $20/\sqrt{2}$ (4) 1/2

Question No.	Questions
64.	What is the relation between line voltage and phase voltage in case of delta connection ? (1) $V_L = V_p$. (2) $V_t = 1/\sqrt{3}\ V_p$. (3) $V_L = \sqrt{3}\ V_p$. (4) None of these
65.	The rms value of the current is a wire which carries a dc current of 10 A and a sinusoidal alternating current of peak value 20 A is (1) 10 A (2) 14.14 A (3) 15 A (4) 17.32 A
66.	The purpose of compensation for a thermocouple is (1) To decrease temperature sensitivity (2) To increase volatge output (3) To cancel unwanted voltage output of a thermocouple (4) Used for high-temperature circuits
67.	Semiconductor strain gages typical have much higher gage factors than those of metallic strain gages primarily due to (1) Higher temperature sensitivity (2) Higher Poisson's ratio (3) Higher piezoresistive coefficient (4) Higher magnetostrictive coefficient

Question No.	Questions
68.	For the op-amp shown in the figure, the bias currents are $I_{b1} = 450$ nA and $I_{b2} = 350$ nA. The values of the input bias current (I_b) and the input offset current (I_f) are  (1) $I_b = 800$ nA, $I_f = 50$ nA (2) $I_b = 800$ nA, $I_f = 100$ nA (3) $I_b = 400$ nA, $I_f = 50$ nA (4) $I_b = 400$ nA, $I_f = 100$ nA
69.	A Hall Effect sensor (1) exists only in theory (2) is a non-contacting magnetic sensor (3) can operate only a few times before failure (4) produces very large voltages
70.	For turbulent flow, the velocity at the center is _____ times the mean velocity. (1) 1.2 (2) 2.2 (3) 2 (4) 3.333
71.	A psychrometric chart is used to determine (1) pH (2) Sound velocity in glasses (3) CO_2 concentration (4) Relative humidity

Question No.	Questions
72.	The dynamic characteristics of capacitive transducer are similar to those of (1) low pass filter (2) high pass filter (3) notch filter (4) band stop filter
73.	The effect of error damping is to (1) provide larger settling time (2) delay the response (3) reduce steady state error (4) any of the above
74.	The bridge method commonly used for finding mutual inductance is (1) Heaviside Campbell bridge (2) Schering bridge (3) De Sauty's bridge (4) Wien bridge
75.	The bridge circuit shown in the figure below is used for the measurement of an unknown element Z_x. The bridge circuit is best suited when Z_x is a  (1) Lossy capacitor (2) Low Q inductor (3) High resistance (4) Low resistance

Question No.	Questions
76.	A 500 kVA, three phase transformer has iron losses of 300 W and full load copper losses of 600 W. The percentage load at which the transformer is expected to have maximum efficiency is (1) 50.0% (2) 70.7% (3) 141.4% (4) 200.0%
77.	A single phase transformer has a maximum efficiency of 90% at full load and unity power factor. Efficiency at half load at the same power factor is (1) 86.7% (2) 88.26% (3) 88.9% (4) 87.8%
78.	Which of the following motor definitely has a permanent magnet rotor (1) DC commutator motor (2) Brushless DC motor (3) Stepper motor (4) Reluctance motor
79.	The type of single phase induction motor having the highest power factor at full load is (1) Shaded pole type (2) Split phase type (3) Capacitor start type (4) Capacitor run type
80.	The direction of rotation of a three phase induction motor is clockwise when it is supplied with three phase sinusoidal voltage having phase sequence A-B-C, for counter clockwise rotation of the motor, the phase sequence of the power supply should be (1) B-C-A (2) C-A-B (3) A-C-B (4) None of above

Question No.	Questions
81.	The system of linear equations $(4d-1)\,x + y + z = 0$ $-y + z = 0$ $(4d-1)\,z = 0$ has a non-trivial solution, if d equals (1) 1/2 (2) 1/4 (3) 3/4 (4) 1
82.	Eigen vector(s) of the matrix $\begin{bmatrix} 0 & 0 & \alpha \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ is (are) (1) $(0, 0, \alpha)$ (2) $(\alpha, 0, 0)$ (3) (0, 0, 1) (4) $(0, \alpha, 0)$
83.	Consider the z-transform $X(z) = 5z^2 + 4z^{-1} + 3$; $0 < \lvert z \rvert < \infty$. The inverse z-transform x [n] is (1) $5\delta[n+2] + 3\delta[n] + 4\delta[n-1]$ (2) $5\delta[n-2] + 3\delta[n] + 4\delta[n+1]$ (3) $5u[n+2] + 3u[n] + 4u[n-1]$ (4) $5u[n-2] + 3u[n] + 4u[n+1]$

Question No.	Questions
84.	If $\delta(t)$ denotes a unit impulse then Laplace Transform of $\frac{d^2\delta(t)}{dt^2}$ will be (1) l (2) s^2 (3) s (4) s^{-2}
85.	The state equation of LTI system is represented by $\dot{x} = \begin{bmatrix} 0 & 0 \\ -2 & -1 \end{bmatrix} x + \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} u$ The Eigen values are (1) $-1, +1$ (2) $0.5 \pm j\,1.323$ (3) $-1, -1$ (4) None
86.	Line integral can be transformed into a surface integral by using (1) Divergence theorem (2) Gauss theorem (3) Stokes theorem (4) None of these
87.	Four fundamental equations of electromagnetics are known as (1) Fleming's laws (2) Faraday's laws (3) Lorentz equations (4) Maxwell's equations
88.	For a linear electromagnetic circuit, which of the following statements is true ? (1) Field energy is equal to the co-energy (2) Field energy is greater than the co-energy (3) Field energy is lesser than the co-energy (4) Co-energy is zero

Question No.	Questions
89.	Which of the following statements holds for the divergence of electric and magnetic flux (1) Both are zero (2) These are zero for static densities but non-zero for time varying densities. (3) It is zero for the electric flux density (4) It is zero for the magnetic flux density
90.	A parallel plate capacitor has an electrode area of 100 mm^2, with a spacing of 0.1 mm between the electrodes. The dielectric between the plates is air with a permittivity of 8.85×10^{-12} F/m. The charge on the capacitor is 100V. The Stored energy in the capacitor is : (1) 8.85pJ (2) 440pJ (3) 22.1nJ (4) 44.3nJ
91.	Whenever the magnetic flux changes with respect to an electric conductor or a coil, an EMF is induced in the conductor is Faraday's (1) First law (2) Second law (3) Third law (4) Fourth law
92.	Inside a hollow conducting sphere (1) Electric field is zero. (2) Electric field is a non-zero constant. (3) Electric field changes with magnitude of the charge given to the conductor. (4) Electric field changes with distance from the center of the sphere.

Question No.	Questions
93.	A conductor of length L has current I passing through it, when it is placed parallel to strong magnetic field. The force experienced by the conductor will be (1) BIL (2) BIL^2 (3) BI^2L (4) Zero
94.	Cork Screw rule is used to find (1) Direction of magnetic field (2) Direction of electric field (3) Direction of current (4) Direction of emf
95.	A point pole has a strength of $4\pi \times 10^{-4}$ weber. The force in Newtons on a point pole of $4\pi \times 1.5 \times 10^{-4}$ weber placed at a distance of 10 cm from it will be (1) 20N (2) 15N (3) 7.5N (4) 3.75N
96.	In a sample it is observed that a carrier takes 100 μs to over a distance of 10 cm. If the applied external field is 10^4 V/cm; find the mobolity (1) $10^7 cm^2/Vs$ (2) $10^{-3} cm^2/Vs$ (3) $10 cm^2/Vs$ (4) $10^7 m^2/Vs$
97.	The current gain of a bipolar transistor drops at high frequency because of (1) Transistor internal capacitances (2) High current effects in the base (3) Parasitic inductive elements (4) The Early effect

Question No.	Questions
98.	A transistor has $\alpha = 0.98$, then determine β. (1) 50 (2) 49 (3) 70 (4) None of the above
99.	The value of emitter capacitor CE in a multistage amplifier is about (1) 0.1μF (2) 100pF (3) 0.01μF (4) 50μF
100.	The conduction loss versus device current characteristic of a power MOSFET is best (1) A parabola (2) A straight line (3) A rectangular hyperbola (4) An exponentially decaying function

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M. Phil/ PhD/URS Entrance Examination Answer Key

Sr. No.	Set-A	Set-B	Set-C	Set-D
1	B	D	B	C
2	D	C	D	D
3	A	A	C	C
4	B	A	D	D
5	B	D	A	D
6	C	C	C	D
7	D	C	D	C
8	A	D	B	B
9	D	B	B	B
10	D	A	D	D
11	A	D	D	A
12	A	B	D	A
13	D	C	A	A
14	C	C	A	D
15	B	A	D	D
16	C	A	B	A
17	A	C	D	A
18	B	C	B	B
19	D	A	D	A
20	A	C	C	B
21	B	C	B	D
22	D	D	A	B
23	C	C	A	C
24	D	D	C	C
25	A	D	B	A
26	C	D	A	A
27	D	C	B	C
28	B	B	C	C
29	B	B	D	A
30	D	D	D	C
31	A	B	D	B
32	A	D	B	D
33	A	A	C	C
34	D	B	C	D
35	D	B	A	A
36	A	C	A	C
37	A	D	C	D
38	B	A	C	B
39	A	D	A	B
40	B	D	C	D
41	D	D	B	D
42	C	D	D	A
43	A	A	A	B
44	A	A	B	B
45	D	D	B	B
46	C	B	C	B
47	C	D	D	B

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Sr. No	Set-A	Set-B	Set-C	Set-D
48	D	B	A	D
49	B	D	D	D
50	A	C	D	D
51	D	D	A	B
52	D	A	A	A
53	A	B	A	A
54	A	B	D	C
55	D	B	D	B
56	B	B	A	A
57	D	B	A	B
58	B	D	B	C
59	D	D	A	D
60	C	D	B	D
61	D	B	A	D
62	A	D	A	C
63	B	C	D	A
64	B	D	C	A
65	B	A	B	D
66	B	C	C	C
67	B	D	A	C
68	D	B	B	D
69	D	B	D	B
70	D	D	A	A
71	D	A	D	D
72	B	A	C	D
73	C	D	A	A
74	C	C	A	A
75	A	B	D	D
76	A	C	C	B
77	C	A	C	D
78	C	B	D	B
79	A	D	B	D
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83	A	A	C	A
84	C	C	D	B
85	B	B	D	B
86	A	A	D	C
87	B	B	C	D
88	C	C	B	A
89	D	D	B	D
90	D	D	D	D
91	C	A	D	A
92	D	A	A	A
93	C	A	B	D
94	D	D	B	C
95	D	D	B	B
96	D	A	B	C
97	C	A	B	A
98	B	B	D	B
99	B	A	D	D
100	D	B	D	A

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