

# SET-“X”

(Total No. of Printed Pages : 33)

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

(PHD/URS-EE-DECEMBER-2022)

Code

**A**

**ELECTRICAL  
ENGINEERING**

Sr. No. **10009**

Time : 1½ Hours

Total Questions : 100

Max. Marks : 100

Roll No. \_\_\_\_\_ (in figure) \_\_\_\_\_ (in words)

Name : \_\_\_\_\_ Date of Birth : \_\_\_\_\_

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 and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint in any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University Website. The complaint be sent by the students to the Controller of Examinations by hand or through email. 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 booklet itself. Answer **MUST NOT** be ticked in the Question booklet.
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.	<p>Which rule is used to find the Direction of force acting on the current-carrying conductor placed in a magnetic field?</p> <p>(1) Fleming's Right-Hand Rule</p> <p>(2) Fleming's Left-Hand Rule</p> <p>(3) Cork Screw Rule</p> <p>(4) Either Fleming's Left-Hand Rule or Flemings Right-Hand Rule (both are applicable)</p>
2.	<p>While applying KCL to "A.C. circuits", the 'sum' considered is .....</p> <p>(1) Algebraic sum</p> <p>(2) sum of peak values</p> <p>(3) phasor sum</p> <p>(4) sum of average quantities</p>
3.	<p>Given <math>M =</math> system matrix &amp; <math>I =</math> identity matrix, then eigen values of <math>M</math> are</p> <p>(1) solutions <math>\lambda</math> of mod of <math>(\lambda I - M) = 0</math></p> <p>(2) solutions <math>\lambda</math> of mod of <math>(\lambda I - M)</math></p> <p>(3) solutions <math>\lambda</math> of <math>(\lambda I - M) = 0</math></p> <p>(4) solutions <math>\lambda</math> of <math>(\lambda I - M) = 0</math> where <math>0</math> is a null matrix</p>



Question No.	Questions
4.	<p>If <math>L</math> means Laplace Transform &amp; <math>L^{-1}</math> means Inverse Laplace Transform &amp; <math>A</math> is system matrix, then for a continuous time system, the State Transition Matrix is defined as .....</p> <p>(1) <math>L^{-1}(sI - A)^{-1}</math>                      (2) <math>L^{-1}(sI - A)</math>            (3) <math>L(sI - A)^{-1}</math>                        (4) <math>(sI - A)^{-1}</math></p>
5.	<p>A linear differential equation is the one which .....</p> <p>(1) is of the type : <math>dx(t)/dt = Ax^2(t) + Bu(t)</math>            (2) is of the type : <math>x(t)\{d^2x(t)/dt^2\} = Ax(t) + Bu(t)</math>            (3) is of the type : <math>dx(t)/dt = u(t) \times (t) + Bu(t)</math>            (4) can be described by a differential equation that has coefficients which are either constants or are functions of independent variable, time (t)</p>
6.	<p>The bundled-conductor arrangement in transmission lines reduces .....</p> <p>(1) inductance of the line            (2) radio interference due to corona            (3) power loss due to corona            (4) all of the above</p>
7.	<p>For a parallel R-L-C resonant circuit, which statement is true?</p> <p>(1) it has zero power factor.            (2) it has the least impedance.            (3) it does current magnification.            (4) The voltage across individual elements (L or C) can be more than the total supply voltage</p>



Question No.	Questions
8.	<p>When applied to A.C. circuits, which statement is true for Superposition Theorem?</p> <ol style="list-style-type: none"> <li>(1) It applies to linear circuits only and algebraic sums of partial responses (in response to individual sources) has to be considered.</li> <li>(2) It applies to linear circuits only and phasor sums of partial responses (in response to individual sources) has to be considered.</li> <li>(3) It applies to linear as well as non-linear circuits.</li> <li>(4) It applies to non-linear circuits.</li> </ol>
9.	<p>Given a Thevenin equivalent of a complex circuit as <math>V_{TH} = 18.34 \text{ V}</math> and <math>R_{TH} = 9.5 \Omega</math>, then the Norton Equivalent can be directly deduced as :</p> <ol style="list-style-type: none"> <li>(1) <math>I_N = 1.93 \text{ A}</math> and <math>R_N = 9.5 \Omega</math>.</li> <li>(2) <math>I_N = 1.73.85 \text{ A}</math> and <math>R_N = 1.93 \Omega</math>.</li> <li>(3) <math>I_N = 1.93 \text{ A}</math> and <math>R_N = 1.93 \Omega</math>.</li> <li>(4) Norton equivalent can not be directly deduced without having access to the given complex network.</li> </ol>
10.	<p>According to dot-convention, a dot is placed at the terminals which are .....</p> <ol style="list-style-type: none"> <li>(1) instantaneously of the opposite polarity on the basis of mutual inductance alone.</li> <li>(2) instantaneously of the opposite polarity on the basis of self-inductance alone.</li> <li>(3) instantaneously of the same polarity on the basis of mutual inductance alone.</li> <li>(4) instantaneously of the same polarity on the basis of self-inductance alone.</li> </ol>







Question No.	Questions
14.	<p>Power factor correction / improvement apparatus is useful in the following sense :</p> <ol style="list-style-type: none"> <li>(1) It relieves only distribution line (prior to the load) from much reactive current, thus reducing the <math>I^2R</math> losses in distribution line, but no effect on transmission line losses.</li> <li>(2) It relieves the transmission line (prior to the load) from much reactive current, thus reducing the <math>I^2R</math> losses in transmission line, but no effect on distribution line losses.</li> <li>(3) It relieves the transmission/distribution line (between sending end and load) from much reactive current, but has no effect on <math>I^2R</math> losses in transmission/distribution line, as reactive current causes no losses.</li> <li>(4) It relieves the transmission/distribution line (between the sending end and the load) from much reactive current, thus reducing the <math>I^2R</math> losses in the transmission/distribution line.</li> </ol>
15.	<p>Iron losses of a transformer are negligible during short circuit test, because .....</p> <ol style="list-style-type: none"> <li>(1) voltage applied across the h.v. side is a small fraction of the rated voltage and so is the flux.</li> <li>(2) supply is short-circuited.</li> <li>(3) iron core becomes fully saturated, thus losses become negligible.</li> <li>(4) the input voltage is full but input power is not adequate that is may meet <math>Cu</math> losses and iron losses</li> </ol>



Question No.	Questions
16.	<p>An ideal current source will:</p> <ol style="list-style-type: none"> <li>(1) continue to supply same voltage under all loading conditions.</li> <li>(2) have its terminal voltage become zero when terminals are open-circuited.</li> <li>(3) continue to supply same current no matter what load is put in series with it.</li> <li>(4) supply zero current if its terminals are short-circuited.</li> </ol>
17.	<p>Copper losses of a transformer are negligible during open circuit test, because .....</p> <ol style="list-style-type: none"> <li>(1) the currents in both the primary and the secondary are very less.</li> <li>(2) the input voltage is not sufficient.</li> <li>(3) iron core becomes fully saturated, hence hardly any losses.</li> <li>(4) the current in the open circuited secondary only is very less.</li> </ol>
18.	<p>Two cables, each of length 1 km, with insulation resistances <math>R_1</math> and <math>R_2</math> respectively, are properly joined end to end, then insulation resistance of the resultant two km long cable is .....</p> <ol style="list-style-type: none"> <li>(1) <math>R_1 + R_2</math></li> <li>(2) <math>R_1 - R_2</math></li> <li>(3) <math>(R_1 R_2)/(R_1 + R_2)</math></li> <li>(4) <math>2R_1 R_2</math></li> </ol>



Question No.	Questions	Question No.
19.	<p>Why are intersheaths used in cables?</p> <ol style="list-style-type: none"> <li>(1) To provide protection against moisture, current and voltage surges.</li> <li>(2) To improve the insulation level of the cable.</li> <li>(3) To minimize the stress.</li> <li>(4) To provide proper stress distribution.</li> </ol>	22
20.	<p>A long transmission line has .....</p> <ol style="list-style-type: none"> <li>(1) R and C due to conductor resistance and due to air acting as insulator; but no L.</li> <li>(2) R, L and C and higher receiving end voltage than sending end voltage due to Ferranti effect.</li> <li>(3) R and L but no C.</li> <li>(4) lower receiving end voltage than sending end voltage due to Ferranti effect.</li> </ol>	23
21.	<p>In the context of domestic and industrial premises and for transmission lines, which set of voltages are correct?</p> <ol style="list-style-type: none"> <li>(1) Domestic / industrial : 230 V and 440 V. Transmission lines : 33 kV, 66 kV, 132 kV, 440 kV.</li> <li>(2) Domestic / industrial : 230 V and 400 V. Transmission lines : 33 kV, 66 kV, 132 kV, 440 kV.</li> <li>(3) Domestic / industrial : 230 V and 400 V. Transmission lines : 33 kV, 66 kV, 132 kV, 400 kV.</li> <li>(4) Domestic / industrial : 230 V and 440 V. Transmission lines : 33 kV, 66 kV, 132 kV, 400 kV.</li> </ol>	24







**X-22**  
**A-303**

**Set-X**  
**Code-A**

Question No.	Questions
26.	<p>A non-causal system's output depends upon.....</p> <ol style="list-style-type: none"> <li>(1) present inputs only.</li> <li>(2) present and past inputs.</li> <li>(3) does not depend upon inputs.</li> <li>(4) future inputs.</li> </ol>
27.	<p>Transfer Function is defined as .....</p> <ol style="list-style-type: none"> <li>(1) ratio of output to input, given that the initial conditions are zero.</li> <li>(2) ratio of Laplace transform of output to Laplace transform of input, given that the system is LTI and relaxed.</li> <li>(3) ratio of change of output to change in input, given that the initial conditions are zero and system is Linear Time Invariant</li> <li>(4) ratio of change of output to change in input, given that the initial conditions are zero and system can be linear or non-linear.</li> </ol>
28.	<p>In switching applications, CE configuration is preferred because .....</p> <ol style="list-style-type: none"> <li>(1) it requires only one power supply.</li> <li>(2) it has negligible <math>I_{CEO}</math>.</li> <li>(3) it requires low voltage or low current.</li> <li>(4) it has high input impedance.</li> </ol>
29.	<p>Transistor amplifier configuration capable of both a voltage and a current gain more than unity is .....</p> <ol style="list-style-type: none"> <li>(1) common base.</li> <li>(2) common collector.</li> <li>(3) common emitter.</li> <li>(4) none of the above.</li> </ol>



Question No.	Questions
30.	<p>The poles and zeroes of a network function.....</p> <p>(1) are factors of the network function numerator and denominator respectively.</p> <p>(2) are critical complex frequencies of the network.</p> <p>(3) are the scale factors of the network.</p> <p>(4) both participate in determining its stability.</p>
31.	<p>The HOLD signal .....</p> <p>(1) is an input signal to 8085 whereby a fast peripheral asks 8085 to relinquish control of its buses.</p> <p>(2) is an i/p signal to 8085 whereby a slow peripheral acknowledges to 8085 about control of its buses.</p> <p>(3) is an output signal from 8085 asking other peripherals to hold on and wait.</p> <p>(4) is a control signal to interrupt the microprocessor.</p>
32.	<p>For microprocessor 8085, the Stack pointer contents are ..... after a PUSH instruction execution.</p> <p>(1) incremented by 1                      (2) decremented by 1</p> <p>(3) incremented by 2                      (4) decremented by 2</p>



Question No.	Questions
33.	<p>A BSR control word for 8255</p> <ol style="list-style-type: none"><li>(1) affects more than one bits of port C.</li><li>(2) sets or resets one bit in port C and control word is also written onto port C.</li><li>(3) also affects the I/O operations of ports A and B.</li><li>(4) does not affects the I/O operations of ports A and B.</li></ol>
34.	<p>The effect of increasing load on a synchronous motor running with normal excitation is .....</p> <ol style="list-style-type: none"><li>(1) to increase armature current but decrease power factor.</li><li>(2) to increase bot armature current and power factor.</li><li>(3) to decrease armature current but increase power factor.</li><li>(4) to decrease both armature current and power factor.</li></ol>
35.	<p>As per usual configuration and specification, an auto-transformer in a Laboratory connected to a 220 V mains supply can produce .....</p> <ol style="list-style-type: none"><li>(1) output voltage ranging from 0 to 220 V.</li><li>(2) output voltage ranging from 5V to less than 220V.</li><li>(3) output voltage ranging from 0 to 270V.</li><li>(4) output voltage ranging from 220 to 270V.</li></ol>



Question No.	Questions
36.	<p>Which of the following conditions need not be met by alternators working in parallel?</p> <ol style="list-style-type: none"><li>(1) Terminal voltage of each machine must be the same.</li><li>(2) The machines must have equal ratings.</li><li>(3) Machines must have the same phase sequence.</li><li>(4) Alternators must operate at the same frequency.</li></ol>
37.	<p>Salient pole rotors of large diameter alternators have short axial length mainly because .....</p> <ol style="list-style-type: none"><li>(1) it saves a lot of copper in stator winding.</li><li>(2) number of armature conductors held in the large circumference stator being very large, they need not be long to produce the same voltage.</li><li>(3) it saves a lot of copper in rotor winding.</li><li>(4) number of armature conductors held in the large circumference rotor being very large, they need not be long to produce the same voltage.</li></ol>
38.	<p>If excitation is held constant, but the steam supply of an alternator, running in parallel with another identical alternator, is increased, then .....</p> <ol style="list-style-type: none"><li>(1) it will supply greater portion of the load.</li><li>(2) its power factor would be decreased.</li><li>(3) its rotor will fall back in phase with respect to the other machine.</li><li>(4) its excitation will fluctuate.</li></ol>



Question No.	Questions
39.	<p>The purpose of commutator in a D.C. motor is .....</p> <ol style="list-style-type: none"> <li>(1) To convert D.C. into rectified A.C.</li> <li>(2) To give a high starting torque.</li> <li>(3) To convert A.C. into D.C., else without commutator, it would give A.C.</li> <li>(4) To convert alternating torque into unidirectional torque, as without commutator in place, the armature would develop alternating torque.</li> </ol>
40.	<p>If torque angle of a 4-pole synchronous motor is 8 degree (electrical), its value in mechanical degrees is .....</p> <ol style="list-style-type: none"> <li>(1) 0.5</li> <li>(2) 2</li> <li>(3) 4</li> <li>(4) 16</li> </ol>
41.	<p>The ACSR conductor stands for ....., is used to ....., and is used .....</p> <ol style="list-style-type: none"> <li>(1) Aluminium Conductor Steel Reinforced, reduce weight of the line, in distribution lines.</li> <li>(2) Aluminium Core Steel Reinforced, reduce line losses, in transmission lines.</li> <li>(3) Aluminium Conductor Steel Reinforced, reduce ohmic line losses and corona loss, in transmission lines.</li> <li>(4) Aluminium Conductor Steel Reinforced, reduce ohmic line losses and corona loss, in house wiring.</li> </ol>



Question No.	Questions
42.	<p>Due to "Early Effect", the value of .....</p> <ol style="list-style-type: none"> <li>(1) Both Alpha (<math>\alpha</math>) and Beta (<math>\beta</math>) decreases.</li> <li>(2) <math>\alpha</math> decreases and <math>\beta</math> increases.</li> <li>(3) <math>\alpha</math> increases and <math>\beta</math> decreases.</li> <li>(4) both <math>\alpha</math> and <math>\beta</math> increases.</li> </ol>
43.	<p>Skin effect in Electrical Engineering refers to .....</p> <ol style="list-style-type: none"> <li>(1) increase in receiving end voltage.</li> <li>(2) increase in resistance of successive inner annular cylinders (portions) of a conductor.</li> <li>(3) decrease in resistance of successive inner annular cylinders (portions) of a conductor.</li> <li>(4) a bad dermatological symptom for a transformer.</li> </ol>
44.	<p>Choose the most correct for series circuits only : If there are two or more Resistors in a circuit, they are said to be connected in series if .....</p> <ol style="list-style-type: none"> <li>(1) all carry the same value of current.</li> <li>(2) total current equals the sum of branch currents.</li> <li>(3) sum of potential drops across all resistors forming a closed circuit equals the e.m.f. applied across the circuit.</li> <li>(4) The resistors are connected in an end-to-end chain so that current leaving one resistor enters the next in the chain.</li> </ol>



Question No.	Questions
45.	<p>In an A.C. transmission line, result of proximity effect is :</p> <ol style="list-style-type: none"><li>(1) when adjacent conductors carry currents in the same direction, the currents flowing through them get concentrated at the conductor's farthest side.</li><li>(2) when currents flowing through adjacent conductors flow in same directions, the currents get concentrated in the nearest side of both conductors.</li><li>(3) to reduce the line losses.</li><li>(4) more pronounced but it happens in D.C. transmission as well.</li></ol>
46.	<p>Proximity effect .....</p> <ol style="list-style-type: none"><li>(1) Increases with conductor diameter and frequency of a.c. current.</li><li>(2) decreases with conductor diameter and frequency of a.c. current.</li><li>(3) decreases the effective resistance and power loss of transmission line.</li><li>(4) Both (1) and (3).</li></ol>
47.	<p>With nothing stated about whether the supply switch is easily accessible or not, suppose you suddenly come across a colleague who is stuck to live wires in a sub-station, then your first action would be to .....</p> <ol style="list-style-type: none"><li>(1) switch off the supply.</li><li>(2) immediately call for medical assistance.</li><li>(3) pull him away from the live wires by grasping his clothes.</li><li>(4) start artificial breathing straightway.</li></ol>









Question No.	Questions
52.	<p>Terms of lowest degree in the numerator and denominator of a driving point function may .....</p> <ol style="list-style-type: none"><li>(1) differ in degree by at the most zero.</li><li>(2) differ in degree by at the most one.</li><li>(3) differ in degree by at the most two.</li><li>(4) never be of the same degree.</li></ol>
53.	<p>One of the necessary conditions for a Transfer function <math>N(s) = P(s) / Q(s)</math> is .....</p> <ol style="list-style-type: none"><li>(1) polynomial <math>P(s)</math> may have terms missing between the terms of lowest and highest degree.</li><li>(2) real part of poles must be positive.</li><li>(3) if real part of pole is zero, that pole must be repeated.</li><li>(4) degree of <math>P(s)</math> has to be more than zero.</li></ol>
54.	<p>In a.c. machines, the wattless lagging component of current is responsible for .....</p> <ol style="list-style-type: none"><li>(1) production of electric field.</li><li>(2) production of magnetic field.</li><li>(3) production of heat.</li><li>(4) production of non-sinusoidal field.</li></ol>



Question No.	Questions
55.	<p>Non-minimum phase system has .....</p> <ol style="list-style-type: none"> <li>(1) poles in the right half s-plane.</li> <li>(2) poles and zeroes in the left half s-plane.</li> <li>(3) zeroes in the left half s-plane.</li> <li>(4) zeroes in the right half s-plane.</li> </ol>
56.	<p>For constant <math>\omega_n</math>, the contours of root s in the complex s-plane are .....</p> <ol style="list-style-type: none"> <li>(1) straight lines through the origin at an angle <math>\theta = \cos^{-1}(\zeta)</math> with negative real axis.</li> <li>(2) straight lines parallel to the <math>j\omega</math> axis.</li> <li>(3) circles of radius <math>\omega_n</math>.</li> <li>(4) straight lines through the origin at an angle <math>\theta = \cos^{-1}(\omega_n)</math> with negative real axis.</li> </ol>
57.	<p>For a series resistive circuit, with <math>R_1 = 10 \text{ K}\Omega</math>, <math>1\text{W}</math>; <math>R_2 = 10 \text{ K}\Omega</math>, <math>\frac{1}{4}\text{W}</math>; and <math>R_3 = 250 \text{ K}\Omega</math>, <math>\frac{1}{4}\text{W}</math>, the current must not exceed .....</p> <ol style="list-style-type: none"> <li>(1) 100 mA</li> <li>(2) 5 mA</li> <li>(3) 2 mA</li> <li>(4) 1 mA</li> </ol>



Question No.	Questions
58.	<p>The rank of the matrix <math>\begin{bmatrix} 0 &amp; 1 &amp; 4 \\ 0 &amp; 3 &amp; 12 \\ 0 &amp; 4 &amp; 16 \end{bmatrix}</math> is .....</p> <p>(1) 4 (2) 2 (3) 1 (4) either 3 or none of the above</p>
59.	<p>For the impedance of a capacitor C, .....</p> <p>(1) the pole is at 0 and zero is at 0. (2) the pole is at 0 and zero is at <math>\infty</math>. (3) the pole is at <math>\infty</math> and zero is at 0. (4) the pole is at <math>\infty</math> and zero is at <math>\infty</math>.</p>
60.	<p>The main advantage of Initial Value Theorem is that it gives .....</p> <p>(1) initial value of time-domain solution <math>f(t)</math> without having to determine <math>f(t)</math> formally. (2) initial value of frequency-domain solution <math>F(s)</math> without having to determine <math>F(s)</math> formally. (3) final value of time-domain solution <math>f(t)</math> without having to determine <math>f(t)</math> formally. (4) initial value of time-domain solution <math>f(t)</math> but one has to determine <math>f(t)</math> formally.</p>







Question No.	Questions
65.	<p>The phenomenon of 'creeping' occurs in .....</p> <p>(1) energy meters                      (2) watt meters (3) power factor meters              (4) frequency meters</p>
66.	<p>A PMMC instrument has a full scale deflection of 100 <math>\mu</math>A and a coil resistance of 1 K<math>\Omega</math>. Shunt resistance to convert the instrument into an ammeter with full scale deflection of 100 mA is .....</p> <p>(1) 101 <math>\Omega</math>.                      (2) 0.11 <math>\Omega</math>. (3) 1001 <math>\Omega</math>.                      (4) 1.001 <math>\Omega</math>.</p>
67.	<p>In case of extrinsic semi-conductor .....</p> <p>(1) no. of holes is exactly equal to no. of electrons. (2) either holes or electrons will be more in number. (3) no. of electrons is always more than no. of holes. (4) no. of holes is always more than no. of electrons.</p>
68.	<p>If the length of a conductor is tripled and the diameter is also tripled, then its resistance is .....</p> <p>(1) 1/9th of the original resistance. (2) 2/3rd of the original resistance. (3) 1/3rd of the original resistance. (4) not changed at all.</p>



Question No.	Questions
69.	<p>By making no. of rotor slots prime to the no. of stator slots, in an Induction Motor, the chances of which of the following are reduced .....</p> <p>(1) magnetic locking.                      (2) jerky starting. (3) crawling.                                      (4) low starting torque.</p>
70.	<p>If an Ohmmeter is connected to an uncharged good <math>0.05 \mu F</math> capacitor, the reading should .....</p> <p>(1) show high resistance momentarily and then a very low resistance. (2) show low resistance momentarily and back off to a very high resistance. (3) not move at all, i.e., show no reading (as if capacitor not connected). (4) go quickly to <math>200 \Omega</math> approx., and remain there</p>
71.	<p>Regarding an electric field, which statement is not true?</p> <p>(1) unit field intensity is the exertion of a force of one newton on a charge of one coulomb. (2) electric field intensity is a vector quantity. (3) electric field intensity at a point is numerically equal to the force exerted upon a positive charge placed at that point. (4) electric field is defined at a point in space at which an electric charge experiences a force.</p>



Question No.	Questions
72.	<p>Common-collector transistor amplifier is .....</p> <ol style="list-style-type: none"><li>(1) also called collector follower and its voltage gain is close to unity.</li><li>(2) also called emitter follower and its voltage gain is very low (approx. 0.01).</li><li>(3) also called emitter follower and its voltage gain is very high (approx. 100).</li><li>(4) also called emitter follower and its voltage gain is close to unity.</li></ol>
73.	<p>Negative feedback in an amplifier results in .....</p> <ol style="list-style-type: none"><li>(1) decreased bandwidth.</li><li>(2) increased distortion and noise factor.</li><li>(3) increased voltage gain.</li><li>(4) decreased voltage gain.</li></ol>
74.	<p>Speed of a synchronous motor in its operating (&amp; load) range is correctly described by .....</p> <ol style="list-style-type: none"><li>(1) it depends on the magnitude of the applied voltage.</li><li>(2) it is independent of the frequency of the supply.</li><li>(3) it is directly proportional to freq. of applied voltage and inversely proportional to no. of poles.</li><li>(4) it varies directly proportional to the no. of poles.</li></ol>



Question No.	Questions
75.	<p>For a series RLC resonant circuit, which statement is true?</p> <ol style="list-style-type: none"> <li>(1) the voltages across individual elements (L or C) can be more than the total supply voltage.</li> <li>(2) it has the maximum impedance.</li> <li>(3) it does current magnification.</li> <li>(4) the susceptance of the circuit is minimum.</li> </ol>
76.	<p>For the Time Constant of an R-L series circuit, which statement is true?</p> <ol style="list-style-type: none"> <li>(1) the time constant for R-L circuit is <math>R/L</math> seconds.</li> <li>(2) the step response reaches the final value if the initial rate of response is maintained.</li> <li>(3) the step response reaches 60% of final value in T secs at the actual rate of rise.</li> <li>(4) the step response (current) reaches 99% after elapse of one time constant.</li> </ol>
77.	<p>An ideal voltage amplifier should have .....</p> <ol style="list-style-type: none"> <li>(1) zero <math>R_{in}</math> and zero <math>R_{out}</math>.</li> <li>(2) infinite <math>R_{in}</math> and zero <math>R_{out}</math>.</li> <li>(3) zero <math>R_{in}</math> and infinite <math>R_{out}</math>.</li> <li>(4) infinite <math>R_{in}</math> and infinite <math>R_{out}</math>.</li> </ol>







**Questions**

**Question No.**

**82.** The closed line integral of magnetic field intensity is equal to the .....

- (1) rate of change of capacitance.
- (2) rate of change of inductance.
- (3) rate of change of magnetic flux.
- (4) current enclosed.

**83.** The closed line integral of electric field intensity is equal to the .....

- (1) negative time rate of change of magnetic flux linking the closed line.
- (2) negative time rate of change of electric field linking the closed line.
- (3) positive time rate of change of magnetic flux linking the closed line.
- (4) positive time rate of change of electric field linking the closed line.

**84.** Bode plot (asymptotic magnitude part) follows a slope of  $-20$  db/decade from a corner frequency  $\omega_1$  and meets a higher corner freq.  $\omega_2$  due to a double (of multiplicity 2) zero. Resulting slope after  $\omega_2$  is .....

- (1)  $-60$  db / decade.
- (2)  $20$  db / decade.
- (3)  $40$  db / decade.
- (4)  $0$  db / decade.







Question No.	Questions
88.	<p>Phase lag compensator acts as a .....</p> <ol style="list-style-type: none"> <li>(1) lag at low frequencies and lead at high frequencies.</li> <li>(2) lead at low frequencies and lag at high frequencies.</li> <li>(3) low pass filter.</li> <li>(4) high pass filter.</li> </ol>
89.	<p>A chopper can .....</p> <ol style="list-style-type: none"> <li>(1) raise the D.C. voltage.</li> <li>(2) lower the D.C. voltage.</li> <li>(3) raise or lower the A.C. voltage.</li> <li>(4) raise or lower the D.C. voltage.</li> </ol>
90.	<p>Is a MOSFET connected or disconnected in the circuit when power is on and why?</p> <ol style="list-style-type: none"> <li>(1) No, because transient voltages caused by inductive kickback and other effects may exceed <math>V_{GS(max)}</math> and thus wipe out the MOSFET.</li> <li>(2) Yes, it is advisable to connect or disconnect MOSFET in the circuit when power is on, as it is safe to do so.</li> <li>(3) No, because steady state voltages may spoil the MOSFET.</li> <li>(4) No, because lightning voltages may spoil the MOSFET.</li> </ol>



Question No.	Questions
91.	<p>The term SPWM in Power Electronics stands for "....." used in inverters. With this, the inverter generates ".....".</p> <p>(1) "Single phase wide modulation" "an AC output voltage from an DC input with the help of switching circuits to reproduce a sine wave by generating one / more square voltage pulses per half cycle".</p> <p>(2) "Sinusoidal pulse width modulation" "an AC output voltage from a DC input with the help of switching circuits to reproduce a sine wave by generating one / more square voltage pulses per half cycle".</p> <p>(3) "Single pulse width modulation" "an AC output voltage from an DC input with the help of switching circuits to reproduce a sine wave by generating single square voltage pulse per half cycle".</p> <p>(4) "Sinusoidal pulse width modulation" "an AC output voltage from a DC input with the help of switching circuits to reproduce a sine wave by generating modulation index square voltage pulses per half cycle."</p>
92.	<p>The Z-transform of a sampled signal / function <math>kTe^{-akT}</math> is .....</p> <p>(1) <math>z / (z-1)</math>                      (2) <math>Te^{-aT}z / \{(z-e^{-aT})^3\}</math></p> <p>(3) <math>Te^{-aT}z / \{(z-e^{-aT})^2\}</math>                      (4) <math>Tz / \{(z-1)^2\}</math></p>



Question No.	Questions
93.	<p>Shanon's sampling theorem states that .....</p> <ol style="list-style-type: none"> <li>(1) To completely reconstruct a signal, the frequency at which it must be sampled is twice the freq. of the lowest frequency component in the signal.</li> <li>(2) To completely reconstruct a signal, the frequency at which it must be sampled is half the freq. of the lowest frequency component in the signal.</li> <li>(3) For complete reconstruction of a signal, the frequency at which a signal must be sampled is twice the freq. of the highest frequency component in the signal.</li> <li>(4) For complete reconstruction of a signal, the frequency at which a signal must be sampled is half the freq. of the highest frequency component in the signal.</li> </ol>
94.	<p>Steady state errors can be completely eliminated (made zero) by .....</p> <ol style="list-style-type: none"> <li>(1) Integral (I) control action.</li> <li>(2) Derivative (D) control action.</li> <li>(3) Proportional (P) control action.</li> <li>(4) Proportional-Derivative (P-D) control action.</li> </ol>
95.	<p>Zero sequence component in three phase voltage of delta is .....</p> <ol style="list-style-type: none"> <li>(1) Infinite</li> <li>(2) Zero</li> <li>(3) line voltage / 3</li> <li>(4) line voltage / <math>\sqrt{3}</math></li> </ol>



Question No.	Questions
96.	<p>Transposition is used in "....."; and its purpose is to .....</p> <p>(1) "distribution line"; ensure inductances of all phases as different and similarly capacitances of all phases as different.</p> <p>(2) "distribution line"; make inductances of all phases as same and similarly capacitances of all phases as same.</p> <p>(3) "long transmission line"; ensure inductances of all phases as different and similarly capacitances of all phases as different.</p> <p>(4) "long transmission line"; make inductances of all phases as same and similarly capacitances of all phases as same.</p>
97.	<p>Is it safe to open circuit the secondary of a Current Transformer (C.T.) while its primary is energized? Reason why?</p> <p>(1) No. Reason : it will generate dangerously high voltage, as its primary is connected in series with the load, thus its primary current is not a reflection of its secondary current.</p> <p>(2) Yes. Reason : it will generate normal voltage, as its primary current is a reflection of its secondary current.</p> <p>(3) No. Reason : it will generate dangerously high voltage, as its primary current is a reflection of its secondary current.</p> <p>(4) Yes, as there is no secondary current, so there will be only magnetizing current in the primary, so it is safe.</p>



Question No.	Questions
98.	<p>A stationary Lissajous pattern on a Cathode Ray Oscilloscope (C.R.O.) has 3 horizontal maximum values and 5 vertical maximum values. If horizontal frequency is 1500 Hz, the vertical frequency will be .....</p> <p>(1) data is insufficient      (2) 22.5 KHz. (3) 2500 Hz.                      (4) 900 Hz.</p>
99.	<p>Which diode does not show a negative resistance region in its V-I characteristics?</p> <p>(1) tunnel diode.                      (2) Gunn diode. (3) zener diode.                        (4) none of the above.</p>
100.	<p>Relative limiting error adds in the :</p> <p>(1) All of the following cases. (2) case of division of two quantities. (3) case of sum of two quantities. (4) case of difference of two quantities.</p>



# SET-“X”

(Total No. of Printed Pages : 33)

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

(PHD/URS-EE-DECEMBER-2022)

Code

**B**

**ELECTRICAL  
ENGINEERING**

Sr. No. **10014**

Time : 1½ Hours

Total Questions : 100

Max. Marks : 100

Roll No. \_\_\_\_\_ (in figure) \_\_\_\_\_ (in words)

Name : \_\_\_\_\_ Date of Birth : \_\_\_\_\_

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 and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint in any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University Website. The complaint be sent by the students to the Controller of Examinations by hand or through email. 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 booklet itself. Answer **MUST NOT** be ticked in the Question booklet.
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.	<p>The ACSR conductor stands for ....., is used to ....., and is used .....</p> <p>(1) Aluminium Conductor Steel Reinforced, reduce weight of the line, in distribution lines.</p> <p>(2) Aluminium Core Steel Reinforced, reduce line losses, in transmission lines.</p> <p>(3) Aluminium Conductor Steel Reinforced, reduce ohmic line losses and corona loss, in transmission lines.</p> <p>(4) Aluminium Conductor Steel Reinforced, reduce ohmic line losses and corona loss, in house wiring.</p>
2.	<p>Due to "Early Effect", the value of .....</p> <p>(1) Both Alpha (<math>\alpha</math>) and Beta (<math>\beta</math>) decreases.</p> <p>(2) <math>\alpha</math> decreases and <math>\beta</math> increases.</p> <p>(3) <math>\alpha</math> increases and <math>\beta</math> decreases.</p> <p>(4) both <math>\alpha</math> and <math>\beta</math> increases.</p>
3.	<p>Skin effect in Electrical Engineering refers to .....</p> <p>(1) increase in receiving end voltage.</p> <p>(2) increase in resistance of successive inner annular cylinders (portions) of a conductor.</p> <p>(3) decrease in resistance of successive inner annular cylinders (portions) of a conductor.</p> <p>(4) a bad dermatological symptom for a transformer.</p>



Question No.	Questions
4.	<p>Choose the most correct for series circuits only : If there are two or more Resistors in a circuit, they are said to be connected in series if .....</p> <ul style="list-style-type: none"><li>(1) all carry the same value of current.</li><li>(2) total current equals the sum of branch currents.</li><li>(3) sum of potential drops across all resistors forming a closed circuit equals the e.m.f. applied across the circuit.</li><li>(4) The resistors are connected in an end-to-end chain so that current leaving one resistor enters the next in the chain.</li></ul>
5.	<p>In an A.C. transmission line, result of proximity effect is :</p> <ul style="list-style-type: none"><li>(1) when adjacent conductors carry currents in the same direction, the currents flowing through them get concentrated at the conductor's farthest side.</li><li>(2) when currents flowing through adjacent conductors flow in same directions, the currents get concentrated in the nearest side of both conductors.</li><li>(3) to reduce the line losses.</li><li>(4) more pronounced but it happens in D.C. transmission as well.</li></ul>
6.	<p>Proximity effect .....</p> <ul style="list-style-type: none"><li>(1) Increases with conductor diameter and frequency of a.c. current.</li><li>(2) decreases with conductor diameter and frequency of a.c. current.</li><li>(3) decreases the effective resistance and power loss of transmission line.</li><li>(4) Both (1) and (3).</li></ul>



Question No.	Questions
7.	<p>With nothing stated about whether the supply switch is easily accessible or not, suppose you suddenly come across a colleague who is stuck to live wires in a sub-station, then your first action would be to .....</p> <ol style="list-style-type: none"> <li>(1) switch off the supply.</li> <li>(2) immediately call for medical assistance.</li> <li>(3) pull him away from the live wires by grasping his clothes.</li> <li>(4) start artificial breathing straightway.</li> </ol>
8.	<p>In a synchronous motor, the magnitude of back e.m.f. <math>E_b</math> depends upon .....</p> <ol style="list-style-type: none"> <li>(1) d.c. excitation only.</li> <li>(2) both speed and stator flux.</li> <li>(3) speed of the motor.</li> <li>(4) load on the motor.</li> </ol>
9.	<p>A tuned circuit responds .....</p> <ol style="list-style-type: none"> <li>(1) to all audio frequencies.</li> <li>(2) only to one particular frequency.</li> <li>(3) best at one particular frequency.</li> <li>(4) to one frequency plus its harmonics.</li> </ol>







Question No.	Questions	Question No.
13.	<p>Negative feedback in an amplifier results in.....</p> <ol style="list-style-type: none"><li>(1) decreased bandwidth.</li><li>(2) increased distortion and noise factor.</li><li>(3) increased voltage gain.</li><li>(4) decreased voltage gain.</li></ol>	13.
14.	<p>Speed of a synchronous motor in its operating (&amp; load) range is correctly described by .....</p> <ol style="list-style-type: none"><li>(1) it depends on the magnitude of the applied voltage.</li><li>(2) it is independent of the frequency of the supply.</li><li>(3) it is directly proportional to freq. of applied voltage and inversely proportional to no. of poles.</li><li>(4) it varies directly proportional to the no. of poles.</li></ol>	14.
15.	<p>For a series RLC resonant circuit, which statement is true?</p> <ol style="list-style-type: none"><li>(1) the voltages across individual elements (L or C) can be more than the total supply voltage.</li><li>(2) it has the maximum impedance.</li><li>(3) it does current magnification.</li><li>(4) the susceptance of the circuit is minimum.</li></ol>	15.



Question No.	Questions
16.	<p>For the Time Constant of an R-L series circuit, which statement is true?</p> <p>(1) the time constant for R-L circuit is <math>R/L</math> seconds.</p> <p>(2) the step response reaches the final value if the initial rate of response is maintained.</p> <p>(3) the step response reaches 60% of final value in <math>T</math> secs at the actual rate of rise.</p> <p>(4) the step response (current) reaches 99% after elapse of one time constant.</p>
17.	<p>An ideal voltage amplifier should have .....</p> <p>(1) zero <math>R_{in}</math> and zero <math>R_{out}</math>.</p> <p>(2) infinite <math>R_{in}</math> and zero <math>R_{out}</math>.</p> <p>(3) zero <math>R_{in}</math> and infinite <math>R_{out}</math>.</p> <p>(4) infinite <math>R_{in}</math> and infinite <math>R_{out}</math>.</p>
18.	<p>If a dielectric slab of 5mm and relative permittivity of 6 is inserted between the plates of an air capacitor with plate separation of 8 mm, its capacitance is .....</p> <p>(1) almost doubled.</p> <p>(2) almost halved.</p> <p>(3) decreased by a factor of <math>6/8</math>.</p> <p>(4) unaffected.</p>















Question No.	Questions
28.	<p>A stationary Lissajous pattern on a Cathode Ray Oscilloscope (C.R.O.) has 3 horizontal maximum values and 5 vertical maximum values. If horizontal frequency is 1500 Hz, the vertical frequency will be .....</p> <p>(1) data is insufficient                      (2) 22.5 KHz. (3) 2500 Hz.                                      (4) 900 Hz.</p>
29.	<p>Which diode does not show a negative resistance region in its V-I characteristics?</p> <p>(1) tunnel diode.                              (2) Gunn diode. (3) zener diode.                              (4) none of the above.</p>
30.	<p>Relative limiting error adds in the :</p> <p>(1) All of the following cases. (2) case of division of two quantities. (3) case of sum of two quantities. (4) case of difference of two quantities.</p>
31.	<p>Which rule is used to find the Direction of force acting on the current-carrying conductor placed in a magnetic field?</p> <p>(1) Fleming's Right-Hand Rule (2) Fleming's Left-Hand Rule (3) Cork Screw Rule (4) Either Fleming's Left-Hand Rule or Flemings Right-Hand Rule (both are applicable)</p>



Question No.	Questions	Marks
32.	<p>While applying KCL to "A.C. circuits", the 'sum' considered is .....</p> <p>(1) Algebraic sum</p> <p>(2) sum of peak values</p> <p>(3) phasor sum</p> <p>(4) sum of average quantities</p>	1
33.	<p>Given <math>M</math> = system matrix &amp; <math>I</math> = identity matrix, then eigen values of <math>M</math> are :</p> <p>(1) solutions <math>\lambda</math> of mod of <math>(\lambda I - M) = 0</math></p> <p>(2) solutions <math>\lambda</math> of mod of <math>(\lambda I - M)</math></p> <p>(3) solutions <math>\lambda</math> of <math>(\lambda I - M) = 0</math></p> <p>(4) solutions <math>\lambda</math> of <math>(\lambda I - M) = 0</math> where <math>0</math> is a null matrix</p>	1
34.	<p>If <math>L</math> means Laplace Transform &amp; <math>L^{-1}</math> means Inverse Laplace Transform &amp; <math>A</math> is system matrix, then for a continuous time system, the State Transition Matrix is defined as .....</p> <p>(1) <math>L^{-1}(sI - A)^{-1}</math></p> <p>(2) <math>L^{-1}(sI - A)</math></p> <p>(3) <math>L(sI - A)^{-1}</math></p> <p>(4) <math>(sI - A)^{-1}</math></p>	1
35.	<p>A linear differential equation is the one which .....</p> <p>(1) is of the type : <math>dx(t)/dt = Ax^2(t) + Bu(t)</math></p> <p>(2) is of the type : <math>x(t)\{d^2x(t)/dt^2\} = Ax(t) + Bu(t)</math></p> <p>(3) is of the type : <math>dx(t)/dt = u(t) \times (t) + Bu(t)</math></p> <p>(4) can be described by a differential equation that has coefficients which are either constants or are functions of independent variable, time (t)</p>	1



Question No.	Questions
36.	<p>The bundled-conductor arrangement in transmission lines reduces .....</p> <ol style="list-style-type: none"> <li>(1) inductance of the line</li> <li>(2) radio interference due to corona</li> <li>(3) power loss due to corona</li> <li>(4) all of the above</li> </ol>
37.	<p>For a parallel R-L-C resonant circuit, which statement is true?</p> <ol style="list-style-type: none"> <li>(1) it has zero power factor.</li> <li>(2) it has the least impedance.</li> <li>(3) it does current magnification.</li> <li>(4) The voltage across in individual elements (L or C) can be more than the total supply voltage</li> </ol>
38.	<p>When applied to A.C. circuits, which statement is true for Superposition Theorem?</p> <ol style="list-style-type: none"> <li>(1) It applies to linear circuits only and algebraic sums of partial responses (in response to individual sources) has to be considered.</li> <li>(2) It applies to linear circuits only and phasor sums of partial responses (in response to individual sources) has to be considered.</li> <li>(3) It applies to linear as well as non-linear circuits.</li> <li>(4) It applies to non-linear circuits.</li> </ol>







Question No.	Questions
42.	<p>Terms of lowest degree in the numerator and denominator of a driving point function may .....</p> <ol style="list-style-type: none"><li>(1) differ in degree by at the most zero.</li><li>(2) differ in degree by at the most one.</li><li>(3) differ in degree by at the most two.</li><li>(4) never be of the same degree.</li></ol>
43.	<p>One of the necessary conditions for a Transfer function <math>N(s) = P(s) / Q(s)</math> is</p> <ol style="list-style-type: none"><li>(1) polynomial <math>P(s)</math> may have terms missing between the terms of lowest and highest degree.</li><li>(2) real part of poles must be positive.</li><li>(3) if real part of pole is zero, that pole must be repeated.</li><li>(4) degree of <math>P(s)</math> has to be more than zero.</li></ol>
44.	<p>In a.c. machines, the wattless lagging component of current is responsible for .....</p> <ol style="list-style-type: none"><li>(1) production of electric field.</li><li>(2) production of magnetic field.</li><li>(3) production of heat.</li><li>(4) production of non-sinusoidal field.</li></ol>



Question No.	Questions
45.	<p>Non-minimum phase system has .....</p> <ol style="list-style-type: none"> <li>(1) poles in the right half s-plane.</li> <li>(2) poles and zeroes in the left half s-plane.</li> <li>(3) zeroes in the left half s-plane.</li> <li>(4) zeroes in the right half s-plane.</li> </ol>
46.	<p>For constant <math>\omega_n</math>, the contours of root s in the complex s-plane are .....</p> <ol style="list-style-type: none"> <li>(1) straight lines through the origin at an angle <math>\theta = \cos^{-1}(\zeta)</math> with negative real axis.</li> <li>(2) straight lines parallel to the <math>j\omega</math> axis.</li> <li>(3) circles of radius <math>\omega_n</math></li> <li>(4) straight lines through the origin at an angle <math>\theta = \cos^{-1}(\omega_n)</math> with negative real axis.</li> </ol>
47.	<p>For a series resistive circuit, with <math>R_1 = 10\text{ K}\Omega, 1\text{W}</math>; <math>R_2 = 10\text{ K}\Omega, \frac{1}{4}\text{W}</math>; and <math>R_3 = 250\text{ K}\Omega, \frac{1}{4}\text{W}</math>, the current must not exceed .....</p> <ol style="list-style-type: none"> <li>(1) 100 mA</li> <li>(2) 5 mA</li> <li>(3) 2 mA</li> <li>(4) 1 mA</li> </ol>



Question No.	Questions
48.	<p>The rank of the matrix <math>\begin{bmatrix} 0 &amp; 1 &amp; 4 \\ 0 &amp; 3 &amp; 12 \\ 0 &amp; 4 &amp; 16 \end{bmatrix}</math> is .....</p> <p>(1) 4 (2) 2 (3) 1 (4) either 3 or none of the above</p>
49.	<p>For the impedance of a capacitor C, .....</p> <p>(1) the pole is at 0 and zero is at 0. (2) the pole is at 0 and zero is at <math>\infty</math>. (3) the pole is at <math>\infty</math> and zero is at 0. (4) the pole is at <math>\infty</math> and zero is at <math>\infty</math>.</p>
50.	<p>The main advantage of Initial Value Theorem is that it gives .....</p> <p>(1) initial value of time-domain solution <math>f(t)</math> without having to determine <math>f(t)</math> formally. (2) initial value of frequency-domain solution <math>F(s)</math> without having to determine <math>F(s)</math> formally. (3) final value of time-domain solution <math>f(t)</math> without having to determine <math>f(t)</math> formally. (4) initial value of time-domain solution <math>f(t)</math> but one has to determine <math>f(t)</math> formally.</p>







Question No.	Questions
55.	<p>The phenomenon of 'creeping' occurs in .....</p> <p>(1) energy meters                      (2) watt meters</p> <p>(3) power factor meters              (4) frequency meters</p>
56.	<p>A PMMC instrument has a full scale deflection of <math>100 \mu\text{A}</math> and a coil resistance of <math>1 \text{ K}\Omega</math>. Shunt resistance to convert the instrument into an ammeter with full scale deflection of <math>100 \text{ mA}</math> is .....</p> <p>(1) <math>101 \Omega</math>.                      (2) <math>0.11 \Omega</math>.</p> <p>(3) <math>1001 \Omega</math>.                      (4) <math>1.001 \Omega</math>.</p>
57.	<p>In case of extrinsic semi-conductor .....</p> <p>(1) no. of holes is exactly equal to no. of electrons.</p> <p>(2) either holes or electrons will be more in number.</p> <p>(3) no. of electrons is always more than no. of holes.</p> <p>(4) no. of holes is always more than no. of electrons.</p>
58.	<p>If the length of a conductor is tripled and the diameter is also tripled, then its resistance is .....</p> <p>(1) 1/9th of the original resistance.</p> <p>(2) 2/3rd of the original resistance.</p> <p>(3) 1/3rd of the original resistance.</p> <p>(4) not changed at all.</p>



Question No.	Questions
59.	<p>By making no. of rotor slots prime to the no. of stator slots, in an Induction Motor, the chances of which of the following are reduced .....</p> <p>(1) magnetic locking.                      (2) jerky starting.</p> <p>(3) crawling.                                      (4) low starting torque.</p>
60.	<p>If an Ohmmeter is connected to an uncharged good <math>0.05 \mu F</math> capacitor, the reading should .....</p> <p>(1) show high resistance momentarily and then a very low resistance.</p> <p>(2) show low resistance momentarily and back off to a very high resistance.</p> <p>(3) not move at all, i.e., show no reading (as if capacitor not connected).</p> <p>(4) go quickly to <math>200 \Omega</math> approx., and remain there</p>
61.	<p>In the context of domestic and industrial premises and for transmission lines, which set of voltages are correct?</p> <p>(1) Domestic / industrial : 230 V and 440 V. Transmission lines : 33 kV, 66 kV, 132 kV, 440 kV.</p> <p>(2) Domestic / industrial : 230 V and 400 V. Transmission lines : 33 kV, 66 kV, 132 kV, 440 kV.</p> <p>(3) Domestic / industrial : 230 V and 400 V. Transmission lines : 33 kV, 66 kV, 132 kV, 400 kV.</p> <p>(4) Domestic / industrial : 230 V and 440 V. Transmission lines : 33 kV, 66 kV, 132 kV, 400 kV.</p>







Question No.	Questions
66.	<p>A non-causal system's output depends upon .....</p> <p>(1) present inputs only.</p> <p>(2) present and past inputs.</p> <p>(3) does not depend upon inputs.</p> <p>(4) future inputs.</p>
67.	<p>Transfer Function is defined as .....</p> <p>(1) ratio of output to input, given that the initial conditions are zero.</p> <p>(2) ratio of Laplace transform of output to Laplace transform of input, given that the system is LTI and relaxed.</p> <p>(3) ratio of change of output to change in input, given that the initial conditions are zero and system is Linear Time Invariant</p> <p>(4) ratio of change of output to change in input, given that the initial conditions are zero and system can be linear or non-linear.</p>
68.	<p>In switching applications, CE configuration is preferred because .....</p> <p>(1) it requires only one power supply.</p> <p>(2) it has negligible <math>I_{CEO}</math>.</p> <p>(3) it requires low voltage or low current.</p> <p>(4) it has high input impedance.</p>
69.	<p>Transistor amplifier configuration capable of both a voltage and a current gain more than unity is .....</p> <p>(1) common base.                      (2) common collector.</p> <p>(3) common emitter.                  (4) none of the above.</p>



Question No.	Questions
70.	<p>The poles and zeroes of a network function in a short circuit test, because</p> <p>(1) are factors of the network function numerator and denominator respectively</p> <p>(2) are critical complex frequencies of the network.</p> <p>(3) are the scale factors of the network.</p> <p>(4) both participate in determining its stability.</p>
71.	<p>Considering that <math>L</math> denotes the length of the magnetic path, then inductance of a coil is given by the will.</p> <p>(1) <math>N/S</math> where <math>S = L/\mu A</math> is identified as the reluctance of the magnetic path</p> <p>(2) <math>N^2/S</math> where <math>S = L/\mu A</math> is identified as the reluctance of the magnetic path.</p> <p>(3) <math>N^2/S</math> where <math>S = L/\mu A</math> is identified as the reactance of the coil.</p> <p>(4) <math>N/S^2</math> where <math>S = L/\mu A</math> is identified as the reluctance of the magnetic path.</p>
77.	<p>Copper losses of a transformer are negligible during open circuit test, because .....</p>
72.	<p>A 230 V a.c. source has internal impedance of <math>2 + j2\Omega</math>. What load can draw and dissipate the maximum power from this source?</p> <p>(1) <math>\sqrt{2^2 + 2^2} \Omega</math> resistor</p> <p>(2) <math>2\Omega</math> resistor</p> <p>(3) <math>j2 \Omega</math> inductor</p> <p>(4) <math>2 - j2 \Omega</math> capacitive load</p>







Question No.	Questions
75.	<p>Iron losses of a transformer are negligible during short circuit test, because .....</p> <ol style="list-style-type: none"><li>(1) voltage applied across the h.v. side is a small fraction of the rated voltage and so is the flux.</li><li>(2) supply is short-circuited.</li><li>(3) iron core becomes fully saturated, thus losses become negligible.</li><li>(4) the input voltage is full but input power is not adequate that is may meet Cu losses and iron losses</li></ol>
76.	<p>An ideal current source will :</p> <ol style="list-style-type: none"><li>(1) continue to supply same voltage under all loading conditions.</li><li>(2) have its terminal voltage become zero when terminals are open-circuited.</li><li>(3) continue to supply same current no matter what load is put in series with it.</li><li>(4) supply zero current if its terminals are short-circuited.</li></ol>
77.	<p>Copper losses of a transformer are negligible during open circuit test, because .....</p> <ol style="list-style-type: none"><li>(1) the currents in both the primary and the secondary are very less.</li><li>(2) the input voltage is not sufficient.</li><li>(3) iron core becomes fully saturated, hence hardly any losses.</li><li>(4) the current in the open circuited secondary only is very less.</li></ol>







Question No.	Questions
81.	<p>Transfer Function and Impulse Response of a linear time-invariant system are related by :</p> <ol style="list-style-type: none"> <li>(1) one is the inverse of the other and vice-versa.</li> <li>(2) Laplace transform of Transfer Function gives the Impulse Response of the system.</li> <li>(3) inverse Laplace transform of Transfer Function gives the Impulse Response of the system.</li> <li>(4) they are not related to each other.</li> </ol>
82.	<p>The closed line integral of magnetic field intensity is equal to the .....</p> <ol style="list-style-type: none"> <li>(1) rate of change of capacitance.</li> <li>(2) rate of change of inductance.</li> <li>(3) rate of change of magnetic flux.</li> <li>(4) current enclosed.</li> </ol>
83.	<p>The closed line integral of electric field intensity is equal to the .....</p> <ol style="list-style-type: none"> <li>(1) negative time rate of change of magnetic flux linking the closed line.</li> <li>(2) negative time rate of change of electric field linking the closed line.</li> <li>(3) positive time rate of change of magnetic flux linking the closed line.</li> <li>(4) positive time rate of change of electric field linking the closed line.</li> </ol>



Question No.	Questions
84.	<p>Bode plot (asymptotic magnitude part) follows a slope of <math>-20</math> db/decade from a corner frequency <math>\omega_1</math> and meets a higher corner freq. <math>\omega_2</math> due to a double (of multiplicity 2) zero. Resulting slope after <math>\omega_2</math> is .....</p> <p>(1) <math>-60</math> db / decade.                      (2) <math>20</math> db / decade. (3) <math>40</math> db / decade.                      (4) <math>0</math> db / decade.</p>
85.	<p>Open-loop gain <math>K</math> at any point <math>s_0</math> on the root locus is given by .....</p> <p>(1) ratio of (product of phasor lengths from <math>s_0</math> to open-loop poles) to (product of phasor lengths from <math>s_0</math> to open-loop zeros). (2) ratio of (phasor sum of lengths from <math>s_0</math> to open-loop poles) to (phasor sum of lengths from <math>s_0</math> to open-loop zeros). (3) <math>\cos\theta</math> where <math>\theta</math> is the angle from <math>-ve</math> real axis to the line from origin to <math>s_0</math>. (4) ratio of (product of phasor lengths from <math>s_0</math> to open-loop zeros) to (product of phasor lengths from <math>s_0</math> to open-loop poles).</p>
86.	<p>In a Routh-Hurwitz array, the first column elements are : <math>1, 1, \epsilon, 2 - (4/\epsilon)</math> and <math>4</math>. How many roots have positive real parts? (Here, <math>\epsilon</math> is a small positive number replacing <math>0</math> in first column to overcome R-H test break down).</p> <p>(1) 1    (2) 2 (3) 3    (4) Nil</p>



Question No.	Questions
87.	<p>Nyquist stability criterion of <i>closed-loop</i> system is by open-loop system's polar plot's .....</p> <p>(1) encirclements, in c.c. direction, as are the no. of right half zeros of open-loop system.</p> <p>(2) encirclements, in c.c. direction, as many times as are no. of right half poles of open-loop unstable system.</p> <p>(3) non-encirclement of <math>(-1+j0)</math> point, if open-loop system is stable.</p> <p>(4) both (2) and (3).</p>
88.	<p>Phase lag compensator acts as a .....</p> <p>(1) lag at low frequencies and lead at high frequencies.</p> <p>(2) lead at low frequencies and lag at high frequencies.</p> <p>(3) low pass filter.</p> <p>(4) high pass filter.</p>
89.	<p>A chopper can .....</p> <p>(1) raise the D.C. voltage.</p> <p>(2) lower the D.C. voltage.</p> <p>(3) raise or lower the A.C. voltage.</p> <p>(4) raise or lower the D.C. voltage.</p>



Question No.	Questions	
90.	<p>Is a MOSFET connected or disconnected in the circuit when power is on and why?</p> <p>(1) No, because transient voltages caused by inductive kickback and other effects may exceed <math>V_{GS(max)}</math> and thus wipe out the MOSFET.</p> <p>(2) Yes, it is advisable to connect or disconnect MOSFET in the circuit when power is on, as it is safe to do so.</p> <p>(3) No, because steady state voltages may spoil the MOSFET.</p> <p>(4) No, because lightening voltages may spoil the MOSFET.</p>	
91.	<p>The HOLD signal .....</p> <p>(1) is an input signal to 8085 whereby a fast peripheral asks 8085 to relinquish control of its buses.</p> <p>(2) is an i/p signal to 8085 whereby a slow peripheral acknowledges to 8085 about control of its buses.</p> <p>(3) is an output signal from 8085 asking other peripherals to hold on and wait.</p> <p>(4) is a control signal to interrupt the microprocessor.</p>	
92.	<p>For microprocessor 8085, the Stack pointer contents are ..... after a PUSH instruction execution.</p> <p>(1) incremented by 1                      (2) decremented by 1</p> <p>(3) incremented by 2                      (4) decremented by 2</p>	



Question No.	Questions
93.	<p>A BSR control word for 8255</p> <ol style="list-style-type: none"> <li>(1) affects more than one bits of port C.</li> <li>(2) sets or resets one bit in port C and control word is also written onto port C.</li> <li>(3) also affects the I/O operations of ports A and B.</li> <li>(4) does not affects the I/O operations of ports A and B.</li> </ol>
94.	<p>The effect of increasing load on a synchronous motor running with normal excitation is .....</p> <ol style="list-style-type: none"> <li>(1) to increase armature current but decrease power factor.</li> <li>(2) to increase bot armature current and power factor.</li> <li>(3) to decrease armature current but increase power factor.</li> <li>(4) to decrease both armature current and pcter factor.</li> </ol>
95.	<p>As per usual configuration and specification, an auto-transformer in a Laboratory connected to a 220 V mains supply can produce .....</p> <ol style="list-style-type: none"> <li>(1) output voltage ranging from 0 to 220 V.</li> <li>(2) output voltage ranging from 5V to less than 220V.</li> <li>(3) output voltage ranging from 0 to 270V.</li> <li>(4) output voltage ranging from 220 to 270V.</li> </ol>



Question No.	Questions	Question No.
96.	<p>Which of the following conditions need not be met by alternators working in parallel?</p> <p>(1) Terminal voltage of each machine must be the same.</p> <p>(2) The machines must have equal ratings.</p> <p>(3) Machines must have the same phase sequence.</p> <p>(4) Alternators must operate at the same frequency.</p>	
97.	<p>Salient pole rotors of large diameter alternators have short axial length mainly because .....</p> <p>(1) it saves a lot of copper in stator winding.</p> <p>(2) number of armature conductors held in the large circumference stator being very large, they need not be long to produce the same voltage.</p> <p>(3) it saves a lot of copper in rotor winding.</p> <p>(4) number of armature conductors held in the large circumference rotor being very large, they need not be long to produce the same voltage.</p>	
98.	<p>If excitation is held constant, but the steam supply of an alternator, running in parallel with another identical alternator, is increased, then .....</p> <p>(1) it will supply greater portion of the load.</p> <p>(2) its power factor would be decreased.</p> <p>(3) its rotor will fall back in phase with respect to the other machine.</p> <p>(4) its excitation will fluctuate.</p>	



Question No.	Questions	
99.	<p>The purpose of commutator in a D.C. motor is .....</p> <ol style="list-style-type: none"> <li>(1) To convert D.C. into rectified A.C.</li> <li>(2) To give a high starting torque.</li> <li>(3) To convert A.C. into D.C., else without commutator, it would give A.C.</li> <li>(4) To convert alternating torque into unidirectional torque, as without commutator in place, the armature would develop alternating torque.</li> </ol>	
100.	<p>If torque angle of a 4-pole synchronous motor is 8 degree (electrical), its value in mechanical degrees is .....</p> <ol style="list-style-type: none"> <li>(1) 0.5</li> <li>(2) 2</li> <li>(3) 4</li> <li>(4) 16</li> </ol>	







Question No.	Questions
5.	<p>In power system analysis, the per unit system has advantage that calculations are simplified because quantities expressed as per-unit .....</p> <ul style="list-style-type: none"><li>(1) don't change when they are referred from one side of a transformer to the other side.</li><li>(2) are improved when they are referred from one side of a transformer to the other.</li><li>(3) change to moderate values when they are referred from one side of a transformer to the other.</li><li>(4) change to low values when they are referred from one side of a transformer to the other.</li></ul>
6.	<p>A non-causal system's output depends upon .....</p> <ul style="list-style-type: none"><li>(1) present inputs only.</li><li>(2) present and past inputs.</li><li>(3) does not depend upon inputs.</li><li>(4) future inputs.</li></ul>
7.	<p>Transfer Function is defined as .....</p> <ul style="list-style-type: none"><li>(1) ratio of output to input, given that the initial conditions are zero.</li><li>(2) ratio of Laplace transform of output to Laplace transform of input, given that the system is LTI and relaxed.</li><li>(3) ratio of change of output to change in input, given that the initial conditions are zero and system is Linear Time Invariant</li><li>(4) ratio of change of output to change in input, given that the initial conditions are zero and system can be linear or non-linear.</li></ul>



Question No.	Questions
8.	<p>In switching applications, CE configuration is preferred because .....</p> <p>(1) it requires only one power supply.                      (2) it has negligible <math>I_{CEO}</math>.                      (3) it requires low voltage or low current.                      (4) it has high input impedance.</p>
9.	<p>Transistor amplifier configuration capable of both a voltage and a current gain more than unity is .....</p> <p>(1) common base.                      (2) common collector.                      (3) common emitter.                  (4) none of the above.</p>
10.	<p>The poles and zeroes of a network function .....</p> <p>(1) are factors of the network function numerator and denominator respectively.                      (2) are critical complex frequencies of the network.                      (3) are the scale factors of the network.                      (4) both participate in determining its stability.</p>
11.	<p>When key is closed in an RC circuit with <math>R = 10\Omega</math>, <math>C = 4\mu F</math>, the energy dissipated is <math>18 \times 10^{-6}</math>, the initial charge on the capacitor must be .....</p> <p>(1) <math>576\mu C</math>                                  (2) <math>4\mu C</math>                      (3) <math>25\mu C</math>                                  (4) <math>12\mu C</math></p>



Question No.	Questions
12.	<p>Terms of lowest degree in the numerator and denominator of a driving point function may .....</p> <ul style="list-style-type: none"><li>(1) differ in degree by at the most zero.</li><li>(2) differ in degree by at the most one.</li><li>(3) differ in degree by at the most two.</li><li>(4) never be of the same degree.</li></ul>
13.	<p>One of the necessary conditions for a Transfer function <math>N(s) = P(s) / Q(s)</math> is .....</p> <ul style="list-style-type: none"><li>(1) polynomial <math>P(s)</math> may have terms missing between the terms of lowest and highest degree.</li><li>(2) real part of poles must be positive.</li><li>(3) if real part of pole is zero, that pole must be repeated.</li><li>(4) degree of <math>P(s)</math> has to be more than zero.</li></ul>
14.	<p>In a.c. machines, the wattless lagging component of current is responsible for .....</p> <ul style="list-style-type: none"><li>(1) production of electric field.</li><li>(2) production of magnetic field.</li><li>(3) production of heat.</li><li>(4) production of non-sinusoidal field.</li></ul>



Question No.	Questions
15.	<p>Non-minimum phase system has .....</p> <ul style="list-style-type: none"><li>(1) poles in the right half s-plane.</li><li>(2) poles and zeroes in the left half s-plane.</li><li>(3) zeroes in the left half s-plane.</li><li>(4) zeroes in the right half s-plane.</li></ul>
16.	<p>For constant <math>\omega_n</math>, the contours of root s in the complex s-plane are .....</p> <ul style="list-style-type: none"><li>(1) straight lines through the origin at an angle <math>\theta = \cos^{-1}(\zeta)</math> with negative real axis.</li><li>(2) straight lines parallel to the <math>j\omega</math> axis.</li><li>(3) circles of radius <math>\omega_n</math>.</li><li>(4) straight lines through the origin at an angle <math>\theta = \cos^{-1}(\omega_n)</math> with negative real axis.</li></ul>
17.	<p>For a series resistive circuit, with <math>R_1 = 10 \text{ K}\Omega, 1\text{W}</math>; <math>R_2 = 10 \text{ K}\Omega, \frac{1}{4}\text{W}</math>; and <math>R_3 = 250 \text{ K}\Omega, \frac{1}{4}\text{W}</math>, the current must not exceed .....</p> <ul style="list-style-type: none"><li>(1) 100 mA</li><li>(2) 5 mA</li><li>(3) 2 mA</li><li>(4) 1 mA</li></ul>



Question No.	Questions
18.	<p>The rank of the matrix <math>\begin{bmatrix} 0 &amp; 1 &amp; 4 \\ 0 &amp; 3 &amp; 12 \\ 0 &amp; 4 &amp; 16 \end{bmatrix}</math> is .....</p> <p>(1) 4 (2) 2 (3) 1 (4) either 3 or none of the above</p>
19.	<p>For the impedance of a capacitor C, .....</p> <p>(1) the pole is at 0 and zero is at 0. (2) the pole is at 0 and zero is at <math>\infty</math>. (3) the pole is at <math>\infty</math> and zero is at 0. (4) the pole is at <math>\infty</math> and zero is at <math>\infty</math>.</p>
20.	<p>The main advantage of Initial Value Theorem is that it gives .....</p> <p>(1) initial value of time-domain solution <math>f(t)</math> without having to determine <math>f(t)</math> formally. (2) initial value of frequency-domain solution <math>F(s)</math> without having to determine <math>F(s)</math> formally. (3) final value of time-domain solution <math>f(t)</math> without having to determine <math>f(t)</math> formally. (4) initial value of time-domain solution <math>f(t)</math> but one has to determine <math>f(t)</math> formally.</p>



Question No.	Questions
21.	<p>Transfer Function and Impulse Response of a linear time-invariant system are related by :</p> <ol style="list-style-type: none"><li>(1) one is the inverse of the other and vice-versa.</li><li>(2) Laplace transform of Transfer Function gives the Impulse Response of the system.</li><li>(3) inverse Laplace transform of Transfer Function gives the Impulse Response of the system.</li><li>(4) they are not related to each other.</li></ol>
22.	<p>The closed line integral of magnetic field intensity is equal to the .....</p> <ol style="list-style-type: none"><li>(1) rate of change of capacitance.</li><li>(2) rate of change of inductance.</li><li>(3) rate of change of magnetic flux.</li><li>(4) current enclosed.</li></ol>
23.	<p>The closed line integral of electric field intensity is equal to the .....</p> <ol style="list-style-type: none"><li>(1) negative time rate of change of magnetic flux linking the closed line.</li><li>(2) negative time rate of change of electric field linking the closed line.</li><li>(3) positive time rate of change of magnetic flux linking the closed line.</li><li>(4) positive time rate of change of electric field linking the closed line.</li></ol>



Question No.	Questions
24.	<p>Bode plot (asymptotic magnitude part) follows a slope of <math>-20</math> db/decade from a corner frequency <math>\omega_1</math> and meets a higher corner freq. <math>\omega_2</math> due to a double (of multiplicity 2) zero. Resulting slope after <math>\omega_2</math> is .....</p> <p>(1) <math>-60</math> db / decade.                      (2) <math>20</math> db / decade.  (3) <math>40</math> db / decade.                      (4) <math>0</math> db / decade.</p>
25.	<p>Open-loop gain <math>K</math> at any point <math>s_0</math> on the root locus is given by .....</p> <p>(1) ratio of (product of phasor lengths from <math>s_0</math> to open-loop poles) to (product of phasor lengths from <math>s_0</math> to open-loop zeros).  (2) ratio of (phasor sum of lengths from <math>s_0</math> to open-loop poles) to (phasor sum of lengths from <math>s_0</math> to open-loop zeros).  (3) <math>\cos\theta</math> where <math>\theta</math> is the angle from <math>-ve</math> real axis to the line from origin to <math>s_0</math>.  (4) ratio of (product of phasor lengths from <math>s_0</math> to open-loop zeros) to (product of phasor lengths from <math>s_0</math> to open-loop poles).</p>
26.	<p>In a Routh-Hurwitz array, the first column elements are : <math>1, 1, \epsilon, 2 - (4/\epsilon)</math> and <math>4</math>. How many roots have positive real parts? (Here, <math>\epsilon</math> is a small positive number replacing <math>0</math> in first column to overcome R-H test break down).</p> <p>(1) 1    (2) 2  (3) 3    (4) Nil</p>



Question No.	Questions
27.	<p>Nyquist stability criterion of <i>closed-loop</i> system is by open-loop system's polar plot's .....</p> <ul style="list-style-type: none"><li>(1) encirclements, in c.c. direction, as are the no. of right half zeros of open-loop system.</li><li>(2) encirclements, in c.c. direction, as many times as are no. of right half poles of open-loop unstable system.</li><li>(3) non-encirclement of <math>(-1+j0)</math> point, if open-loop system is stable.</li><li>(4) both (2) and (3).</li></ul>
28.	<p>Phase lag compensator acts as a .....</p> <ul style="list-style-type: none"><li>(1) lag at low frequencies and lead at high frequencies.</li><li>(2) lead at low frequencies and lag at high frequencies.</li><li>(3) low pass filter.</li><li>(4) high pass filter.</li></ul>
29.	<p>A chopper can .....</p> <ul style="list-style-type: none"><li>(1) raise the D.C. voltage.</li><li>(2) lower the D.C. voltage.</li><li>(3) raise or lower the A.C. voltage.</li><li>(4) raise or lower the D.C. voltage.</li></ul>



Question No.	Questions
30.	<p>Is a MOSFET connected or disconnected in the circuit when power is on and why?</p> <p>(1) No, because transient voltages caused by inductive kickback and other effects may exceed <math>V_{GS(max)}</math> and thus wipe out the MOSFET.</p> <p>(2) Yes, it is advisable to connect or disconnect MOSFET in the circuit when power is on, as it is safe to do so.</p> <p>(3) No, because steady state voltages may spoil the MOSFET.</p> <p>(4) No, because lightening voltages may spoil the MOSFET.</p>
31.	<p>Regarding an electric field, which statement is not true?</p> <p>(1) unit field intensity is the exertion of a force of one newton on a charge of one coulomb.</p> <p>(2) electric field intensity is a vector quantity.</p> <p>(3) electric field intensity at a point is numerically equal to the force exerted upon a positive charge placed at that point.</p> <p>(4) electric field is defined at a point in space at which an electric charge experiences a force.</p>
32.	<p>Common-collector transistor amplifier is .....</p> <p>(1) also called collector follower and its voltage gain is close to unity.</p> <p>(2) also called emitter follower and its voltage gain is very low (approx. 0.01).</p> <p>(3) also called emitter follower and its voltage gain is very high (approx. 100).</p> <p>(4) also called emitter follower and its voltage gain is close to unity.</p>



Question No.	Questions
33.	<p>Negative feedback in an amplifier results in .....</p> <ol style="list-style-type: none"><li>(1) decreased bandwidth.</li><li>(2) increased distortion and noise factor.</li><li>(3) increased voltage gain.</li><li>(4) decreased voltage gain.</li></ol>
34.	<p>Speed of a synchronous motor in its operating (&amp; load) range is correctly described by .....</p> <ol style="list-style-type: none"><li>(1) it depends on the magnitude of the applied voltage.</li><li>(2) it is independent of the frequency of the supply.</li><li>(3) it is directly proportional to freq. of applied voltage and inversely proportional to no. of poles.</li><li>(4) it varies directly proportional to the no. of poles.</li></ol>
35.	<p>For a series RLC resonant circuit, which statement is true?</p> <ol style="list-style-type: none"><li>(1) the voltages across individual elements (L or C) can be more than the total supply voltage.</li><li>(2) it has the maximum impedance.</li><li>(3) it does current magnification.</li><li>(4) the susceptance of the circuit is minimum.</li></ol>



Question No.	Questions
36.	<p>For the Time Constant of an R-L series circuit, which statement is true?</p> <ul style="list-style-type: none"><li>(1) the time constant for R-L circuit is <math>R/L</math> seconds.</li><li>(2) the step response reaches the final value if the initial rate of response is maintained.</li><li>(3) the step response reaches 60% of final value in T secs at the actual rate of rise.</li><li>(4) the step response (current) reaches 99% after elapse of one time constant.</li></ul>
37.	<p>An ideal voltage amplifier should have .....</p> <ul style="list-style-type: none"><li>(1) zero <math>R_{in}</math> and zero <math>R_{out}</math>.</li><li>(2) infinite <math>R_{in}</math> and zero <math>R_{out}</math>.</li><li>(3) zero <math>R_{in}</math> and infinite <math>R_{out}</math>.</li><li>(4) infinite <math>R_{in}</math> and infinite <math>R_{out}</math>.</li></ul>
38.	<p>If a dielectric slab of 5mm and relative permittivity of 6 is inserted between the plates of an air capacitor with plate separation of 8 mm, its capacitance is .....</p> <ul style="list-style-type: none"><li>(1) almost doubled.</li><li>(2) almost halved.</li><li>(3) decreased by a factor of <math>6/8</math>.</li><li>(4) unaffected.</li></ul>











Question No.	Questions
45.	<p>Iron losses of a transformer are negligible during short circuit test, because .....</p> <ol style="list-style-type: none"><li>(1) voltage applied across the h.v. side is a small fraction of the rated voltage and so is the flux.</li><li>(2) supply is short-circuited.</li><li>(3) iron core becomes fully saturated, thus losses become negligible.</li><li>(4) the input voltage is full but input power is not adequate that is may meet Cu losses and iron losses</li></ol>
46.	<p>An ideal current source will :</p> <ol style="list-style-type: none"><li>(1) continue to supply same voltage under all loading conditions.</li><li>(2) have its terminal voltage become zero when terminals are open-circuited.</li><li>(3) continue to supply same current no matter what load is put in series with it.</li><li>(4) supply zero current if its terminals are short-circuited.</li></ol>
47.	<p>Copper losses of a transformer are negligible during open circuit test, because .....</p> <ol style="list-style-type: none"><li>(1) the currents in both the primary and the secondary are very less.</li><li>(2) the input voltage is not sufficient.</li><li>(3) iron core becomes fully saturated, hence hardly any losses.</li><li>(4) the current in the open circuited secondary only is very less.</li></ol>







Question No.	Questions
51.	<p>The HOLD signal .....</p> <ul style="list-style-type: none"><li>(1) is an input signal to 8085 whereby a fast peripheral asks 8085 to relinquish control of its buses.</li><li>(2) is an i/p signal to 8085 whereby a slow peripheral acknowledges to 8085 about control of its buses.</li><li>(3) is an output signal from 8085 asking other peripherals to hold on and wait.</li><li>(4) is a control signal to interrupt the microprocessor.</li></ul>
52.	<p>For microprocessor 8085, the Stack pointer contents are ..... after a PUSH instruction execution.</p> <ul style="list-style-type: none"><li>(1) incremented by 1</li><li>(2) decremented by 1</li><li>(3) incremented by 2</li><li>(4) decremented by 2</li></ul>
53.	<p>A BSR control word for 8255 .....</p> <ul style="list-style-type: none"><li>(1) affects more than one bits of port C.</li><li>(2) sets or resets one bit in port C and control word is also written onto port C.</li><li>(3) also affects the I/O operations of ports A and B.</li><li>(4) does not affects the I/O operations of ports A and B.</li></ul>

Question No.	Questions
54.	<p>The effect of increasing load on a synchronous motor running with normal excitation is .....</p> <ol style="list-style-type: none"> <li>(1) to increase armature current but decrease power factor.</li> <li>(2) to increase bot armature current and power factor.</li> <li>(3) to decrease armature current but increase power factor.</li> <li>(4) to decrease both armature current and power factor.</li> </ol>
55.	<p>As per usual configuration and specification, an auto-transformer in a Laboratory connected to a 220 V mains supply can produce .....</p> <ol style="list-style-type: none"> <li>(1) output voltage ranging from 0 to 220 V.</li> <li>(2) output voltage ranging from 5V to less than 220V.</li> <li>(3) output voltage ranging from 0 to 270V.</li> <li>(4) output voltage ranging from 220 to 270V.</li> </ol>
56.	<p>Which of the following conditions need not be met by alternators working in parallel?</p> <ol style="list-style-type: none"> <li>(1) Terminal voltage of each machine must be the same.</li> <li>(2) The machines must have equal ratings.</li> <li>(3) Machines must have the same phase sequence.</li> <li>(4) Alternators must operate at the same frequency.</li> </ol>



Question No.	Questions
57.	<p>Salient pole rotors of large diameter alternators have short axial length mainly because .....</p> <ol style="list-style-type: none"><li>(1) it saves a lot of copper in stator winding.</li><li>(2) number of armature conductors held in the large circumference stator being very large, they need not be long to produce the same voltage.</li><li>(3) it saves a lot of copper in rotor winding.</li><li>(4) number of armature conductors held in the large circumference rotor being very large, they need not be long to produce the same voltage.</li></ol>
58.	<p>If excitation is held constant, but the steam supply of an alternator, running in parallel with another identical alternator, is increased, then .....</p> <ol style="list-style-type: none"><li>(1) it will supply greater portion of the load.</li><li>(2) its power factor would be decreased.</li><li>(3) its rotor will fall back in phase with respect to the other machine.</li><li>(4) its excitation will fluctuate.</li></ol>
59.	<p>The purpose of commutator in a D.C. motor is .....</p> <ol style="list-style-type: none"><li>(1) To convert D.C. into rectified A.C.</li><li>(2) To give a high starting torque.</li><li>(3) To convert A.C. into D.C., else without commutator, it would give A.C.</li><li>(4) To convert alternating torque into unidirectional torque, as without commutator in place, the armature would develop alternating torque.</li></ol>







Question No.	Questions
68.	<p>When applied to A.C. circuits, which statement is true for Superposition Theorem?</p> <ol style="list-style-type: none"><li>(1) It applies to linear circuits only and algebraic sums of partial responses (in response to individual sources) has to be considered.</li><li>(2) It applies to linear circuits only and phasor sums of partial responses (in response to individual sources) has to be considered.</li><li>(3) It applies to linear as well as non-linear circuits.</li><li>(4) It applies to non-linear circuits.</li></ol>
69.	<p>Given a Thevenin equivalent of a complex circuit as <math>V_{TH} = 18.34 \text{ V}</math> and <math>R_{TH} = 9.5 \Omega</math>, then the Norton Equivalent can be directly deduced as :</p> <ol style="list-style-type: none"><li>(1) <math>I_N = 1.93 \text{ A}</math> and <math>R_N = 9.5 \Omega</math>.</li><li>(2) <math>I_N = 1.73.85 \text{ A}</math> and <math>R_N = 1.93 \Omega</math>.</li><li>(3) <math>I_N = 1.93 \text{ A}</math> and <math>R_N = 1.93 \Omega</math>.</li><li>(4) Norton equivalent can not be directly deduced without having access to the given complex network.</li></ol>
70.	<p>According to dot-convention, a dot is placed at the terminals which are .....</p> <ol style="list-style-type: none"><li>(1) instantaneously of the opposite polarity on the basis of mutual inductance alone.</li><li>(2) instantaneously of the opposite polarity on the basis of self-inductance alone.</li><li>(3) instantaneously of the same polarity on the basis of mutual inductance alone.</li><li>(4) instantaneously of the same polarity on the basis of self-inductance alone.</li></ol>



Question No.	Questions
71.	<p>The ACSR conductor stands for ....., is used to ....., and is used .....</p> <ol style="list-style-type: none"><li>(1) Aluminium Conductor Steel Reinforced, reduce weight of the line, in distribution lines.</li><li>(2) Aluminium Core Steel Reinforced, reduce line losses, in transmission lines.</li><li>(3) Aluminium Conductor Steel Reinforced, reduce ohmic line losses and corona loss, in transmission lines.</li><li>(4) Aluminium Conductor Steel Reinforced, reduce ohmic line losses and corona loss, in house wiring.</li></ol>
72.	<p>Due to "Early Effect", the value of .....</p> <ol style="list-style-type: none"><li>(1) Both Alpha (<math>\alpha</math>) and Beta (<math>\beta</math>) decreases.</li><li>(2) <math>\alpha</math> decreases and <math>\beta</math> increases.</li><li>(3) <math>\alpha</math> increases and <math>\beta</math> decreases.</li><li>(4) both <math>\alpha</math> and <math>\beta</math> increases.</li></ol>
73.	<p>Skin effect in Electrical Engineering refers to .....</p> <ol style="list-style-type: none"><li>(1) increase in receiving end voltage.</li><li>(2) increase in resistance of successive inner annular cylinders (portions) of a conductor.</li><li>(3) decrease in resistance of successive inner annular cylinders (portions) of a conductor.</li><li>(4) a bad dermatological symptom for a transformer.</li></ol>

Question No.	Questions
74.	<p>Choose the most correct for series circuits only : If there are two or more Resistors in a circuit, they are said to be connected in series if .....</p> <ol style="list-style-type: none"> <li>(1) all carry the same value of current.</li> <li>(2) total current equals the sum of branch currents.</li> <li>(3) sum of potential drops across all resistors forming a closed circuit equals the e.m.f. applied across the circuit.</li> <li>(4) The resistors are connected in an end-to-end chain so that current leaving one resistor enters the next in the chain.</li> </ol>
75.	<p>In an A.C. transmission line, result of proximity effect is :</p> <ol style="list-style-type: none"> <li>(1) when adjacent conductors carry currents in the same direction, the currents flowing through them get concentrated at the conductor's farthest side.</li> <li>(2) when currents flowing through adjacent conductors flow in same directions, the currents get concentrated in the nearest side of both conductors.</li> <li>(3) to reduce the line losses.</li> <li>(4) more pronounced but it happens in D.C. transmission as well.</li> </ol>
76.	<p>Proximity effect .....</p> <ol style="list-style-type: none"> <li>(1) Increases with conductor diameter and frequency of a.c. current.</li> <li>(2) decreases with conductor diameter and frequency of a.c. current.</li> <li>(3) decreases the effective resistance and power loss of transmission line.</li> <li>(4) Both (1) and (3).</li> </ol>



Question No.	Questions
77.	<p>With nothing stated about whether the supply switch is easily accessible or not, suppose you suddenly come across a colleague who is stuck to live wires in a sub-station, then your first action would be to .....</p> <ul style="list-style-type: none"><li>(1) switch off the supply.</li><li>(2) immediately call for medical assistance.</li><li>(3) pull him away from the live wires by grasping his clothes.</li><li>(4) start artificial breathing straightway.</li></ul>
78.	<p>In a synchronous motor, the magnitude of back e.m.f. <math>E_b</math> depends upon .....</p> <ul style="list-style-type: none"><li>(1) d.c. excitation only.</li><li>(2) both speed and stator flux.</li><li>(3) speed of the motor.</li><li>(4) load on the motor.</li></ul>
79.	<p>A tuned circuit responds .....</p> <ul style="list-style-type: none"><li>(1) to all audio frequencies.</li><li>(2) only to one particular frequency.</li><li>(3) best at one particular frequency.</li><li>(4) to one frequency plus its harmonics.</li></ul>











Question No.	Questions
88.	<p>A stationary Lissajous pattern on a Cathode Ray Oscilloscope (C.R.O.) has 3 horizontal maximum values and 5 vertical maximum values. If horizontal frequency is 1500 Hz, the vertical frequency will be .....</p> <p>(1) data is insufficient                      (2) 22.5 KHz. (3) 2500 Hz.                                      (4) 900 Hz.</p>
89.	<p>Which diode does not show a negative resistance region in its V-I characteristics?</p> <p>(1) tunnel diode.                              (2) Gunn diode. (3) zener diode.                                (4) none of the above.</p>
90.	<p>Relative limiting error adds in the :</p> <p>(1) All of the following cases. (2) case of division of two quantities. (3) case of sum of two quantities. (4) case of difference of two quantities.</p>
91.	<p>An R-L circuit has steady state current of 10 mA when supplied from 10V battery. The time Constant of the R-L circuit is 0.01 sec. Its inductance is .....</p> <p>(1) 10 <math>\mu</math>H.                                      (2) 10 H (3) 1.25 mH                                      (4) 1.25 H</p>







<b>Question No.</b>	<b>Questions</b>
<b>100.</b>	<p>If an Ohmmeter is connected to an uncharged good <math>0.05 \mu\text{F}</math> capacitor, the reading should .....</p> <ol style="list-style-type: none"><li>(1) show high resistance momentarily and then a very low resistance.</li><li>(2) show low resistance momentarily and back off to a very high resistance.</li><li>(3) not move at all, i.e., show no reading (as if capacitor not connected).</li><li>(4) go quickly to <math>200 \Omega</math> approx., and remain there</li></ol>





Question No.	Questions				
3.	<p>Shanon's sampling theorem states that .....</p> <ol style="list-style-type: none"><li>(1) To completely reconstruct a signal, the frequency at which it must be sampled is twice the freq. of the lowest frequency component in the signal.</li><li>(2) To completely reconstruct a signal, the frequency at which it must be sampled is half the freq. of the lowest frequency component in the signal.</li><li>(3) For complete reconstruction of a signal, the frequency at which a signal must be sampled is twice the freq. of the highest frequency component in the signal.</li><li>(4) For complete reconstruction of a signal, the frequency at which a signal must be sampled is half the freq. of the highest frequency component in the signal.</li></ol>				
4.	<p>Steady state errors can be completely eliminated (made zero) by .....</p> <ol style="list-style-type: none"><li>(1) Integral (I) control action.</li><li>(2) Derivative (D) control action.</li><li>(3) Proportional (P) control action.</li><li>(4) Proportional-Derivative (P-D) control action.</li></ol>				
5.	<p>Zero sequence component in three phase voltage of delta is .....</p> <table border="0" style="width: 100%;"><tr><td>(1) Infinite</td><td>(2) Zero</td></tr><tr><td>(3) line voltage / 3</td><td>(4) line voltage / <math>\{\sqrt{3}\}</math></td></tr></table>	(1) Infinite	(2) Zero	(3) line voltage / 3	(4) line voltage / $\{\sqrt{3}\}$
(1) Infinite	(2) Zero				
(3) line voltage / 3	(4) line voltage / $\{\sqrt{3}\}$				



Question No.	Questions
6.	<p>Transposition is used in "....."; and its purpose is to .....</p> <p>(1) "distribution line"; ensure inductances of all phases as different and similarly capacitances of all phases as different.</p> <p>(2) "distribution line"; make inductances of all phases as same and similarly capacitances of all phases as same.</p> <p>(3) "long transmission line"; ensure inductances of all phases as different and similarly capacitances of all phases as different.</p> <p>(4) "long transmission line"; make inductances of all phases as same and similarly capacitances of all phases as same.</p>
7.	<p>Is it safe to open circuit the secondary of a Current Transformer (C.T.) while its primary is energized? Reason why?</p> <p>(1) No. Reason : it will generate dangerously high voltage, as its primary is connected in series with the load, thus its primary current is not a reflection of its secondary current.</p> <p>(2) Yes. Reason : it will generate normal voltage, as its primary current is a reflection of its secondary current.</p> <p>(3) No. Reason : it will generate dangerously high voltage, as its primary current is a reflection of its secondary current.</p> <p>(4) Yes, as there is no secondary current, so there will be only magnetizing current in the primary, so it is safe.</p>

Question No.	Questions
8.	<p>A stationary Lissajous pattern on a Cathode Ray Oscilloscope (C.R.O.) has 3 horizontal maximum values and 5 vertical maximum values. If horizontal frequency is 1500 Hz, the vertical frequency will be .....</p> <p>(1) data is insufficient                      (2) 22.5 KHz. (3) 2500 Hz.                                      (4) 900 Hz.</p>
9.	<p>Which diode does not show a negative resistance region in its V-I characteristics?</p> <p>(1) tunnel diode.                              (2) Gunn diode. (3) zener diode.                                (4) none of the above.</p>
10.	<p>Relative limiting error adds in the :</p> <p>(1) All of the following cases. (2) case of division of two quantities. (3) case of sum of two quantities. (4) case of difference of two quantities.</p>
11.	<p>The HOLD signal .....</p> <p>(1) is an input signal to 8085 whereby a fast peripheral asks 8085 to relinquish control of its buses. (2) is an i/p signal to 8085 whereby a slow peripheral acknowledges to 8085 about control of its buses. (3) is an output signal from 8085 asking other peripherals to hold on and wait. (4) is a control signal to interrupt the microprocessor.</p>



Question No.	Questions
12.	<p>For microprocessor 8085, the Stack pointer contents are ..... after a PUSH instruction execution.</p> <p>(1) incremented by 1                      (2) decremented by 1</p> <p>(3) incremented by 2                      (4) decremented by 2</p>
13.	<p>A BSR control word for 8255 .....</p> <p>(1) affects more than one bits of port C.</p> <p>(2) sets or resets one bit in port C and control word is also written onto port C.</p> <p>(3) also affects the I/O operations of ports A and B.</p> <p>(4) does not affects the I/O operations of ports A and B.</p>
14.	<p>The effect of increasing load on a synchronous motor running with normal excitation is .....</p> <p>(1) to increase armature current but decrease power factor.</p> <p>(2) to increase bot armature current and power factor.</p> <p>(3) to decrease armature current but increase power factor.</p> <p>(4) to decrease both armature current and power factor.</p>

Question No.	Questions
15.	<p>As per usual configuration and specification, an auto-transformer in a Laboratory connected to a 220 V mains supply can produce .....</p> <ol style="list-style-type: none"><li>(1) output voltage ranging from 0 to 220 V.</li><li>(2) output voltage ranging from 5V to less than 220V.</li><li>(3) output voltage ranging from 0 to 270V.</li><li>(4) output voltage ranging from 220 to 270V.</li></ol>
16.	<p>Which of the following conditions need not be met by alternators working in parallel?</p> <ol style="list-style-type: none"><li>(1) Terminal voltage of each machine must be the same.</li><li>(2) The machines must have equal ratings.</li><li>(3) Machines must have the same phase sequence.</li><li>(4) Alternators must operate at the same frequency.</li></ol>
17.	<p>Salient pole rotors of large diameter alternators have short axial length mainly because .....</p> <ol style="list-style-type: none"><li>(1) it saves a lot of copper in stator winding.</li><li>(2) number of armature conductors held in the large circumference stator being very large, they need not be long to produce the same voltage.</li><li>(3) it saves a lot of copper in rotor winding.</li><li>(4) number of armature conductors held in the large circumference rotor being very large, they need not be long to produce the same voltage.</li></ol>



Question No.	Questions
18.	<p>If excitation is held constant, but the steam supply of an alternator, running in parallel with another identical alternator, is increased, then .....</p> <ul style="list-style-type: none"><li>(1) it will supply greater portion of the load.</li><li>(2) its power factor would be decreased.</li><li>(3) its rotor will fall back in phase with respect to the other machine.</li><li>(4) its excitation will fluctuate.</li></ul>
19.	<p>The purpose of commutator in a D.C. motor is .....</p> <ul style="list-style-type: none"><li>(1) To convert D.C. into rectified A.C.</li><li>(2) To give a high starting torque.</li><li>(3) To convert A.C. into D.C., else without commutator, it would give A.C.</li><li>(4) To convert alternating torque into unidirectional torque, as without commutator in place, the armature would develop alternating torque.</li></ul>
20.	<p>If torque angle of a 4-pole synchronous motor is 8 degree (electrical), its value in mechanical degrees is .....</p> <ul style="list-style-type: none"><li>(1) 0.5</li><li>(2) 2</li><li>(3) 4</li><li>(4) 16</li></ul>
21.	<p>Regarding an electric field, which statement is not true?</p> <ul style="list-style-type: none"><li>(1) unit field intensity is the exertion of a force of one newton on a charge of one coulomb.</li><li>(2) electric field intensity is a vector quantity.</li><li>(3) electric field intensity at a point is numerically equal to the force exerted upon a positive charge placed at that point.</li><li>(4) electric field is defined at a point in space at which an electric charge experiences a force.</li></ul>

Question No.	Questions
22.	<p>Common-collector transistor amplifier is .....</p> <ul style="list-style-type: none"><li>(1) also called collector follower and its voltage gain is close to unity.</li><li>(2) also called emitter follower and its voltage gain is very low (approx. 0.01).</li><li>(3) also called emitter follower and its voltage gain is very high (approx. 100).</li><li>(4) also called emitter follower and its voltage gain is close to unity.</li></ul>
23.	<p>Negative feedback in an amplifier results in .....</p> <ul style="list-style-type: none"><li>(1) decreased bandwidth.</li><li>(2) increased distortion and noise factor.</li><li>(3) increased voltage gain.</li><li>(4) decreased voltage gain.</li></ul>
24.	<p>Speed of a synchronous motor in its operating (&amp; load) range is correctly described by .....</p> <ul style="list-style-type: none"><li>(1) it depends on the magnitude of the applied voltage.</li><li>(2) it is independent of the frequency of the supply.</li><li>(3) it is directly proportional to freq. of applied voltage and inversely proportional to no. of poles.</li><li>(4) it varies directly proportional to the no. of poles.</li></ul>



Question No.	Questions
25.	<p>For a series RLC resonant circuit, which statement is true?</p> <ul style="list-style-type: none"><li>(1) the voltages across individual elements (L or C) can be more than the total supply voltage.</li><li>(2) it has the maximum impedance.</li><li>(3) it does current magnification.</li><li>(4) the susceptance of the circuit is minimum.</li></ul>
26.	<p>For the Time Constant of an R-L series circuit, which statement is true?</p> <ul style="list-style-type: none"><li>(1) the time constant for R-L circuit is <math>R/L</math> seconds.</li><li>(2) the step response reaches the final value if the initial rate of response is maintained.</li><li>(3) the step response reaches 60% of final value in T secs at the actual rate of rise.</li><li>(4) the step response (current) reaches 99% after elapse of one time constant.</li></ul>
27.	<p>An ideal voltage amplifier should have .....</p> <ul style="list-style-type: none"><li>(1) zero <math>R_{in}</math> and zero <math>R_{out}</math>.</li><li>(2) infinite <math>R_{in}</math> and zero <math>R_{out}</math>.</li><li>(3) zero <math>R_{in}</math> and infinite <math>R_{out}</math>.</li><li>(4) infinite <math>R_{in}</math> and infinite <math>R_{out}</math>.</li></ul>







Question No.	Questions
36.	<p>A non-causal system's output depends upon .....</p> <ul style="list-style-type: none"><li>(1) present inputs only.</li><li>(2) present and past inputs.</li><li>(3) does not depend upon inputs.</li><li>(4) future inputs.</li></ul>
37.	<p>Transfer Function is defined as .....</p> <ul style="list-style-type: none"><li>(1) ratio of output to input, given that the initial conditions are zero.</li><li>(2) ratio of Laplace transform of output to Laplace transform of input, given that the system is LTI and relaxed.</li><li>(3) ratio of change of output to change in input, given that the initial conditions are zero and system is Linear Time Invariant</li><li>(4) ratio of change of output to change in input, given that the initial conditions are zero and system can be linear or non-linear.</li></ul>
38.	<p>In switching applications, CE configuration is preferred because .....</p> <ul style="list-style-type: none"><li>(1) it requires only one power supply.</li><li>(2) it has negligible <math>I_{CEO}</math>.</li><li>(3) it requires low voltage or low current.</li><li>(4) it has high input impedance.</li></ul>
39.	<p>Transistor amplifier configuration capable of both a voltage and a current gain more than unity is .....</p> <ul style="list-style-type: none"><li>(1) common base.</li><li>(2) common collector.</li><li>(3) common emitter.</li><li>(4) none of the above.</li></ul>





Question No.	Questions
44.	<p>For a D.C. shunt generator, if pole flux of and speed are both doubled, the generated e.m.f. will be .....</p> <p>(1) unchanged.                      (2) reduced to half. (3) doubled.                         (4) four times.</p>
45.	<p>The phenomenon of 'creeping' occurs in .....</p> <p>(1) energy meters                      (2) watt meters (3) power factor meters              (4) frequency meters</p>
46.	<p>A PMMC instrument has a full scale deflection of <math>100 \mu\text{A}</math> and a coil resistance of <math>1 \text{ K}\Omega</math>. Shunt resistance to convert the instrument into an ammeter with full scale deflection of <math>100 \text{ mA}</math> is .....</p> <p>(1) <math>101 \Omega</math>.                              (2) <math>0.11 \Omega</math>. (3) <math>1001 \Omega</math>.                             (4) <math>1.001 \Omega</math>.</p>
47.	<p>In case of extrinsic semi-conductor .....</p> <p>(1) no. of holes is exactly equal to no. of electrons. (2) either holes or electrons will be more in number. (3) no. of electrons is always more than no. of holes. (4) no. of holes is always more than no. of electrons.</p>



Question No.	Questions
48.	<p>If the length of a conductor is tripled and the diameter is also tripled, then its resistance is .....</p> <p>(1) 1/9th of the original resistance. (2) 2/3rd of the original resistance. (3) 1/3rd of the original resistance. (4) not changed at all.</p>
49.	<p>By making no. of rotor slots prime to the no. of stator slots, in an Induction Motor, the chances of which of the following are reduced .....</p> <p>(1) magnetic locking.                      (2) jerky starting. (3) crawling.                                      (4) low starting torque.</p>
50.	<p>If an Ohmmeter is connected to an uncharged good <math>0.05 \mu F</math> capacitor, the reading should .....</p> <p>(1) show high resistance momentarily and then a very low resistance. (2) show low resistance momentarily and back off to a very high resistance. (3) not move at all, i.e., show no reading (as if capacitor not connected). (4) go quickly to <math>200 \Omega</math> approx., and remain there</p>

Question No.	Questions
51.	<p>Transfer Function and Impulse Response of a linear time-invariant system are related by :</p> <ol style="list-style-type: none"><li>(1) one is the inverse of the other and vice-versa.</li><li>(2) Laplace transform of Transfer Function gives the Impulse Response of the system.</li><li>(3) inverse Laplace transform of Transfer Function gives the Impulse Response of the system.</li><li>(4) they are not related to each other.</li></ol>
52.	<p>The closed line integral of magnetic field intensity is equal to the .....</p> <ol style="list-style-type: none"><li>(1) rate of change of capacitance.</li><li>(2) rate of change of inductance.</li><li>(3) rate of change of magnetic flux.</li><li>(4) current enclosed.</li></ol>
53.	<p>The closed line integral of electric field intensity is equal to the .....</p> <ol style="list-style-type: none"><li>(1) negative time rate of change of magnetic flux linking the closed line.</li><li>(2) negative time rate of change of electric field linking the closed line.</li><li>(3) positive time rate of change of magnetic flux linking the closed line.</li><li>(4) positive time rate of change of electric field linking the closed line.</li></ol>



Question No.	Questions
54.	<p>Bode plot (asymptotic magnitude part) follows a slope of <math>-20</math> db/decade from a corner frequency <math>\omega_1</math> and meets a higher corner freq. <math>\omega_2</math> due to a double (of multiplicity 2) zero. Resulting slope after <math>\omega_2</math> is .....</p> <p>(1) <math>-60</math> db / decade.                      (2) <math>20</math> db / decade. (3) <math>40</math> db / decade.                      (4) <math>0</math> db / decade.</p>
55.	<p>Open-loop gain <math>K</math> at any point <math>s_0</math> on the root locus is given by .....</p> <p>(1) ratio of (product of phasor lengths from <math>s_0</math> to open-loop poles) to (product of phasor lengths from <math>s_0</math> to open-loop zeros). (2) ratio of (phasor sum of lengths from <math>s_0</math> to open-loop poles) to (phasor sum of lengths from <math>s_0</math> to open-loop zeros). (3) <math>\cos\theta</math> where <math>\theta</math> is the angle from <math>-ve</math> real axis to the line from origin to <math>s_0</math>. (4) ratio of (product of phasor lengths from <math>s_0</math> to open-loop zeros) to (product of phasor lengths from <math>s_0</math> to open-loop poles).</p>
56.	<p>In a Routh-Hurwitz array, the first column elements are : <math>1, 1, \epsilon, 2 - (4/\epsilon)</math> and <math>4</math>. How many roots have positive real parts? (Here, <math>\epsilon</math> is a small positive number replacing <math>0</math> in first column to overcome R-H test break down).</p> <p>(1) 1    (2) 2 (3) 3    (4) Nil</p>

Question No.	Questions
57.	<p>Nyquist stability criterion of <i>closed-loop</i> system is by open-loop system's polar plot's .....</p> <ul style="list-style-type: none"><li>(1) encirclements, in c.c. direction, as are the no. of right half zeros of open-loop system.</li><li>(2) encirclements, in c.c. direction, as many times as are no. of right half poles of open-loop unstable system.</li><li>(3) non-encirclement of <math>(-1+j0)</math> point, if open-loop system is stable.</li><li>(4) both (2) and (3).</li></ul>
58.	<p>Phase lag compensator acts as a .....</p> <ul style="list-style-type: none"><li>(1) lag at low frequencies and lead at high frequencies.</li><li>(2) lead at low frequencies and lag at high frequencies.</li><li>(3) low pass filter.</li><li>(4) high pass filter.</li></ul>
59.	<p>A chopper can .....</p> <ul style="list-style-type: none"><li>(1) raise the D.C. voltage.</li><li>(2) lower the D.C. voltage.</li><li>(3) raise or lower the A.C. voltage.</li><li>(4) raise or lower the D.C. voltage.</li></ul>



Question No.	Questions
60.	<p>Is a MOSFET connected or disconnected in the circuit when power is on and why?</p> <ol style="list-style-type: none"><li>(1) No, because transient voltages caused by inductive kickback and other effects may exceed <math>V_{GS(max)}</math> and thus wipe out the MOSFET.</li><li>(2) Yes, it is advisable to connect or disconnect MOSFET in the circuit when power is on, as it is safe to do so.</li><li>(3) No, because steady state voltages may spoil the MOSFET.</li><li>(4) No, because lightening voltages may spoil the MOSFET.</li></ol>
61.	<p>The ACSR conductor stands for ....., is used to ....., and is used .....</p> <ol style="list-style-type: none"><li>(1) Aluminium Conductor Steel Reinforced, reduce weight of the line, in distribution lines.</li><li>(2) Aluminium Core Steel Reinforced, reduce line losses, in transmission lines.</li><li>(3) Aluminium Conductor Steel Reinforced, reduce ohmic line losses and corona loss, in transmission lines.</li><li>(4) Aluminium Conductor Steel Reinforced, reduce ohmic line losses and corona loss, in house wiring.</li></ol>

Question No.	Questions
62.	<p>Due to "Early Effect", the value of .....</p> <ul style="list-style-type: none"><li>(1) Both Alpha (<math>\alpha</math>) and Beta (<math>\beta</math>) decreases.</li><li>(2) <math>\alpha</math> decreases and <math>\beta</math> increases.</li><li>(3) <math>\alpha</math> increases and <math>\beta</math> decreases.</li><li>(4) both <math>\alpha</math> and <math>\beta</math> increases.</li></ul>
63.	<p>Skin effect in Electrical Engineering refers to .....</p> <ul style="list-style-type: none"><li>(1) increase in receiving end voltage.</li><li>(2) increase in resistance of successive inner annular cylinders (portions) of a conductor.</li><li>(3) decrease in resistance of successive inner annular cylinders (portions) of a conductor.</li><li>(4) a bad dermatological symptom for a transformer.</li></ul>
64.	<p>Choose the most correct for series circuits only : If there are two or more Resistors in a circuit, they are said to be connected in series if .....</p> <ul style="list-style-type: none"><li>(1) all carry the same value of current.</li><li>(2) total current equals the sum of branch currents.</li><li>(3) sum of potential drops across all resistors forming a closed circuit equals the e.m.f. applied across the circuit.</li><li>(4) The resistors are connected in an end-to-end chain so that current leaving one resistor enters the next in the chain.</li></ul>



Question No.	Questions
65.	<p>In an A.C. transmission line, result of proximity effect is :</p> <ol style="list-style-type: none"><li>(1) when adjacent conductors carry currents in the same direction, the currents flowing through them get concentrated at the conductor's farthest side.</li><li>(2) when currents flowing through adjacent conductors flow in same directions, the currents get concentrated in the nearest side of both conductors.</li><li>(3) to reduce the line losses.</li><li>(4) more pronounced but it happens in D.C. transmission as well.</li></ol>
66.	<p>Proximity effect .....</p> <ol style="list-style-type: none"><li>(1) Increases with conductor diameter and frequency of a.c. current.</li><li>(2) decreases with conductor diameter and frequency of a.c. current.</li><li>(3) decreases the effective resistance and power loss of transmission line.</li><li>(4) Both (1) and (3).</li></ol>
67.	<p>With nothing stated about whether the supply switch is easily accessible or not, suppose you suddenly come across a colleague who is stuck to live wires in a sub-station, then your first action would be to .....</p> <ol style="list-style-type: none"><li>(1) switch off the supply.</li><li>(2) immediately call for medical assistance.</li><li>(3) pull him away from the live wires by grasping his clothes.</li><li>(4) start artificial breathing straightway.</li></ol>





Question No.	Questions
72.	<p>Terms of lowest degree in the numerator and denominator of a driving point function may .....</p> <ol style="list-style-type: none"><li>(1) differ in degree by at the most zero.</li><li>(2) differ in degree by at the most one.</li><li>(3) differ in degree by at the most two.</li><li>(4) never be of the same degree.</li></ol>
73.	<p>One of the necessary conditions for a Transfer function <math>N(s) = P(s) / Q(s)</math> is .....</p> <ol style="list-style-type: none"><li>(1) polynomial <math>P(s)</math> may have terms missing between the terms of lowest and highest degree.</li><li>(2) real part of poles must be positive.</li><li>(3) if real part of pole is zero, that pole must be repeated.</li><li>(4) degree of <math>P(s)</math> has to be more than zero.</li></ol>
74.	<p>In a.c. machines, the wattless lagging component of current is responsible for .....</p> <ol style="list-style-type: none"><li>(1) production of electric field.</li><li>(2) production of magnetic field.</li><li>(3) production of heat.</li><li>(4) production of non-sinusoidal field.</li></ol>

Question No.	Questions
75.	<p>Non-minimum phase system has .....</p> <ul style="list-style-type: none"><li>(1) poles in the right half s-plane.</li><li>(2) poles and zeroes in the left half s-plane.</li><li>(3) zeroes in the left half s-plane.</li><li>(4) zeroes in the right half s-plane.</li></ul>
76.	<p>For constant <math>\omega_n</math>, the contours of root s in the complex s-plane are .....</p> <ul style="list-style-type: none"><li>(1) straight lines through the origin at an angle <math>\theta = \cos^{-1}(\zeta)</math> with negative real axis.</li><li>(2) straight lines parallel to the <math>j\omega</math> axis.</li><li>(3) circles of radius <math>\omega_n</math>.</li><li>(4) straight lines through the origin at an angle <math>\theta = \cos^{-1}(\omega_n)</math> with negative real axis.</li></ul>
77.	<p>For a series resistive circuit, with <math>R_1 = 10\text{ K}\Omega, 1\text{W}</math>; <math>R_2 = 10\text{ K}\Omega, \frac{1}{4}\text{W}</math>; and <math>R_3 = 250\text{ K}\Omega, \frac{1}{4}\text{W}</math>, the current must not exceed .....</p> <ul style="list-style-type: none"><li>(1) 100 mA</li><li>(2) 5 mA</li><li>(3) 2 mA</li><li>(4) 1 mA</li></ul>



Question No.	Questions
78.	<p>The rank of the matrix <math>\begin{bmatrix} 0 &amp; 1 &amp; 4 \\ 0 &amp; 3 &amp; 12 \\ 0 &amp; 4 &amp; 16 \end{bmatrix}</math> is .....</p> <p>(1) 4 (2) 2 (3) 1 (4) either 3 or none of the above</p>
79.	<p>For the impedance of a capacitor <math>\dot{C}</math>, .....</p> <p>(1) the pole is at 0 and zero is at 0. (2) the pole is at 0 and zero is at <math>\infty</math>. (3) the pole is at <math>\infty</math> and zero is at 0. (4) the pole is at <math>\infty</math> and zero is at <math>\infty</math>.</p>
80.	<p>The main advantage of Initial Value Theorem is that it gives .....</p> <p>(1) initial value of time-domain solution <math>f(t)</math> without having to determine <math>f(t)</math> formally. (2) initial value of frequency-domain solution <math>F(s)</math> without having to determine <math>F(s)</math> formally. (3) final value of time-domain solution <math>f(t)</math> without having to determine <math>f(t)</math> formally. (4) initial value of time-domain solution <math>f(t)</math> but one has to determine <math>f(t)</math> formally.</p>

Question No.	Questions
81.	<p>Which rule is used to find the Direction of force acting on the current-carrying conductor placed in a magnetic field?</p> <ul style="list-style-type: none"><li>(1) Fleming's Right-Hand Rule</li><li>(2) Fleming's Left-Hand Rule</li><li>(3) Cork Screw Rule</li><li>(4) Either Fleming's Left-Hand Rule or Flemings Right-Hand Rule (both are applicable)</li></ul>
82.	<p>While applying KCL to "A.C. circuits", the 'sum' considered is .....</p> <ul style="list-style-type: none"><li>(1) Algebraic sum</li><li>(2) sum of peak values</li><li>(3) phasor sum</li><li>(4) sum of average quantities</li></ul>
83.	<p>Given <math>M =</math> system matrix &amp; <math>I =</math> identity matrix, then eigen values of <math>M</math> are :</p> <ul style="list-style-type: none"><li>(1) solutions <math>\lambda</math> of mod of <math>(\lambda I - M) = 0</math></li><li>(2) solutions <math>\lambda</math> of mod of <math>(\lambda I - M)</math></li><li>(3) solutions <math>\lambda</math> of <math>(\lambda I - M) = 0</math></li><li>(4) solutions <math>\lambda</math> of <math>(\lambda I - M) = 0</math> where <math>0</math> is a null matrix</li></ul>





Question No.	Questions
88.	<p>When applied to A.C. circuits, which statement is true for Superposition Theorem?</p> <ol style="list-style-type: none"><li>(1) It applies to linear circuits only and algebraic sums of partial responses (in response to individual sources) has to be considered.</li><li>(2) It applies to linear circuits only and phasor sums of partial responses (in response to individual sources) has to be considered.</li><li>(3) It applies to linear as well as non-linear circuits.</li><li>(4) It applies to non-linear circuits.</li></ol>
89.	<p>Given a Thevenin equivalent of a complex circuit as <math>V_{TH} = 18.34 \text{ V}</math> and <math>R_{TH} = 9.5 \Omega</math>, then the Norton Equivalent can be directly deduced as :</p> <ol style="list-style-type: none"><li>(1) <math>I_N = 1.93 \text{ A}</math> and <math>R_N = 9.5 \Omega</math>.</li><li>(2) <math>I_N = 1.73.85 \text{ A}</math> and <math>R_N = 1.93 \Omega</math>.</li><li>(3) <math>I_N = 1.93 \text{ A}</math> and <math>R_N = 1.93 \Omega</math>.</li><li>(4) Norton equivalent can not be directly deduced without having access to the given complex network.</li></ol>
90.	<p>According to dot-convention, a dot is placed at the terminals which are .....</p> <ol style="list-style-type: none"><li>(1) instantaneously of the opposite polarity on the basis of mutual inductance alone.</li><li>(2) instantaneously of the opposite polarity on the basis of self-inductance alone.</li><li>(3) instantaneously of the same polarity on the basis of mutual inductance alone.</li><li>(4) instantaneously of the same polarity on the basis of self-inductance alone.</li></ol>





Question No.	Questions
94.	<p>Power factor correction / improvement apparatus is useful in the following sense :</p> <ol style="list-style-type: none"><li>(1) It relieves only distribution line (prior to the load) from much reactive current, thus reducing the <math>I^2R</math> losses in distribution line, but no effect on transmission line losses.</li><li>(2) It relieves the transmission line (prior to the load) from much reactive current, thus reducing the <math>I^2R</math> losses in transmission line, but no effect on distribution line losses.</li><li>(3) It relieves the transmission/distribution line (between sending end and load) from much reactive current, but has no effect on <math>I^2R</math> losses in transmission/distribution line, as reactive current causes no losses.</li><li>(4) It relieves the transmission/distribution line (between the sending end and the load) from much reactive current, thus reducing the <math>I^2R</math> losses in the transmission/distribution line.</li></ol>
95.	<p>Iron losses of a transformer are negligible during short circuit test, because .....</p> <ol style="list-style-type: none"><li>(1) voltage applied across the h.v. side is a small fraction of the rated voltage and so is the flux.</li><li>(2) supply is short-circuited.</li><li>(3) iron core becomes fully saturated, thus losses become negligible.</li><li>(4) the input voltage is full but input power is not adequate that is may meet <math>Cu</math> losses and iron losses</li></ol>




Question No.	Questions
96.	<p>An ideal current source will :</p> <ol style="list-style-type: none"> <li>(1) continue to supply same voltage under all loading conditions.</li> <li>(2) have its terminal voltage become zero when terminals are open-circuited.</li> <li>(3) continue to supply same current no matter what load is put in series with it.</li> <li>(4) supply zero current if its terminals are short-circuited.</li> </ol>
97.	<p>Copper losses of a transformer are negligible during open circuit test, because .....</p> <ol style="list-style-type: none"> <li>(1) the currents in both the primary and the secondary are very less.</li> <li>(2) the input voltage is not sufficient.</li> <li>(3) iron core becomes fully saturated, hence hardly any losses.</li> <li>(4) the current in the open circuited secondary only is very less.</li> </ol>
98.	<p>Two cables, each of length 1 km, with insulation resistances <math>R_1</math> and <math>R_2</math> respectively, are properly joined end to end, then insulation resistance of the resultant two km long cable is .....</p> <ol style="list-style-type: none"> <li>(1) <math>R_1 + R_2</math></li> <li>(2) <math>R_1 - R_2</math></li> <li>(3) <math>(R_1 R_2) / (R_1 + R_2)</math></li> <li>(4) <math>2R_1 R_2</math></li> </ol>

Question No.	Questions
99.	<p>Why are intersheaths used in cables?</p> <ol style="list-style-type: none"><li>(1) To provide protection against moisture, current and voltage surges.</li><li>(2) To improve the insulation level of the cable.</li><li>(3) To minimize the stress.</li><li>(4) To provide proper stress distribution.</li></ol>
100.	<p>A long transmission line has .....</p> <ol style="list-style-type: none"><li>(1) R and C due to conductor resistance and due to air acting as insulator; but no L.</li><li>(2) R, L and C and higher receiving end voltage than sending end voltage due to Ferranti effect.</li><li>(3) R and L but no C.</li><li>(4) lower receiving end voltage than sending end voltage due to Ferranti effect.</li></ol>



## ANSWER KEYS OF EE UIET FOR SESSION 2022-23

Q. NO.	A	B	C	D
1	2	3	2	2
2	3	4	4	3
3	1	2	1	3
4	1	4	3	1
5	4	1	1	2
6	4	1	4	4
7	3	3	2	1
8	2	2	3	4
9	1	3	3	3
10	3	1	2	2
11	2	3	4	1
12	4	4	2	4
13	2	4	1	4
14	4	3	2	1
15	1	1	4	3
16	3	2	3	2
17	1	2	4	2
18	3	1	3	1
19	4	4	2	4
20	2	3	1	3
21	2	2	3	3
22	4	3	4	4
23	1	3	1	4
24	3	1	2	3
25	1	2	1	1
26	4	4	2	2
27	2	1	4	2
28	3	4	3	1
29	3	3	4	4
30	2	2	1	3
31	1	2	3	2
32	4	3	4	4
33	4	1	4	1
34	1	1	3	3
35	3	4	1	1
36	2	4	2	4
37	2	3	2	2
38	1	2	1	3
39	4	1	4	3
40	3	3	3	2
41	3	4	2	2
42	4	2	4	1
43	2	1	2	3
44	4	2	4	4
45	1	4	1	1
46	1	3	3	4
47	3	4	1	2
48	2	3	3	3
49	3	2	4	1
50	1	1	2	2

  
 14/11/22  
 SBA  
 14/12/22

## ANSWER KEYS OF EE UIET FOR SESSION 2022-23

Q. NO.	A	B	C	D
51	4	2	1	3
52	2	1	4	4
53	1	3	4	1
54	2	4	1	2
55	4	1	3	1
56	3	4	2	2
57	4	2	2	4
58	3	3	1	3
59	2	1	4	4
60	1	2	3	1
61	2	2	2	3
62	1	4	3	4
63	3	1	1	2
64	4	3	1	4
65	1	1	4	1
66	4	4	4	1
67	2	2	3	3
68	3	3	2	2
69	1	3	1	3
70	2	2	3	1
71	3	2	3	4
72	4	4	4	2
73	4	2	2	1
74	3	4	4	2
75	1	1	1	4
76	2	3	1	3
77	2	1	3	4
78	1	3	2	3
79	4	4	3	2
80	3	2	1	1
81	3	3	2	2
82	4	4	3	3
83	1	1	3	1
84	2	2	1	1
85	1	1	2	4
86	2	2	4	4
87	4	4	1	3
88	3	3	4	2
89	4	4	3	1
90	1	1	2	3
91	2	1	2	2
92	3	4	1	4
93	3	4	3	2
94	1	1	4	4
95	2	3	1	1
96	4	2	4	3
97	1	2	2	1
98	4	1	3	3
99	3	4	1	4
100	2	3	2	2

*Diff*  
14/12/22

*SBhoshne*  
14/12/22