Module Name : PhD Electrical and Electronics Engineering-E
Exam Date : 18-Sep-2020 Batch : 12:30-14:30

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	1	A DC power supply has a no load voltage of 30 volts, and a full load voltage of 25 volts at a full load current of one amp. Its output resistance and load regulation respectively are A1 : 5 Ω and 29 % A2 : 25 Ω and 20 % A3 : 5 Ω and 16.7 % A4 : 25 Ω and 16.7 %	4.0	1.00
Objective Question				
2	2	A Zener diode when used in voltage stabilization circuits, is biased in A1 : Reverse bias region below the breakdown voltage A2 : Reverse breakdown region A3 : Forward bias region A4 : Forward bias constant current mode	4.0	1.00
Objective Question				
3	3	A DMA transfer implies A1 : Direct transfer of data between memory and accumulator A2 : Direct transfer of data between memory and I/O devices without use of microprocessor A3 : Transfer of data exclusively within microprocessor A4 : A fast transfer of data between microprocessor and I/O devices	4.0	1.00
Objective Question				
4	4	The number of hardware interrupts (which require an external signal to interrupt) present in 8085 microprocessor are A1 : 1	4.0	1.00

		A2: 4 A3: 5 A4: 13		
Objective Question				
5	5	Indicate which of the following logic gates can be used to realized all possible combinational logic gates: A1: NAND gates only A2: EX-OR gates only A3: AND gates only A4: OR gates only	4.0	1.00
Objective Question				
6	6	Which of the following is the steady state error of a control system with step error, ramp error and parabolic error constants k_p, k_v and k_a respectively for the input $(1-t^2)3u(t)$? A1: $\frac{3}{1+k_p}-\frac{3}{2k_a}$ A2: $\frac{3}{1+k_p}+\frac{6}{2k_a}$ A3: $\frac{3}{1+k_p}-\frac{3}{k_a}$ A4: $\frac{3}{1+k_p}-\frac{6}{k_a}$	4.0	1.00
Objective Question				
7	7	The unit impulse response of a system is given as $c(t) = -4e^{-t} + 6e^{-2t}$. The step response of the same system for $t \geq 0$ is equal to A1: $3e^{-2t}-4e^{-t}+1$ A2: $-3e^{-2t}+4e^{-t}+1$ A3: $-3e^{-2t}+4e^{-t}-1$ A4: $3e^{-2t}+4e^{-t}+1$	4.0	1.00
Objective Question				

8	8	The Nyquist plot for the closed loop control system with the loop transfer function $G(s)H(s) = \frac{100}{s(s+10)}$ is plotted. Then, the critical point (-1, j0) is A1 : Never enclosed A2 : Enclosed under certain conditions A3 : Just touched A4 : Enclosed	4.0	1.00
Objective Question				
9	9	A unity feedback system has an open loop transfer function as $$G(s) = \frac{K}{s(1+0.2s)(1+0.05s)}$$ The phase crossover frequency of the Nyquist plot is given by A1 : 5 rad/s A2 : 10 rad/s A3 : 50 rad/s A4 : 100 rad/s	4.0	1.00
Objective Question				
10	10	The compensator $G_c(s) = \frac{5(1+0.3s)}{1+0.1s}$ would provide a maximum phase shift of A1 : 20^o A2 : 30^o A3 : 45^o A4 : 60^o	4.0	1.00
Objective Question				
11	11	The state space representation in phase variable form for the transfer function $G(s) = \frac{2s+1}{s^2+7s+9}$ is A1 : $\dot{x} = \begin{bmatrix} 0 & 1 \\ -9 & -7 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u; y = [1 \quad 2]x$	4.0	1.00

		A2: $\dot{x} = \begin{bmatrix} 1 & 0 \\ -9 & -7 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u; y = \begin{bmatrix} 0 & 1 \end{bmatrix} x$ A3: $\dot{x} = \begin{bmatrix} -9 & 0 \\ 0 & -7 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u; y = \begin{bmatrix} 2 & 0 \end{bmatrix} x$ A4: $\dot{x} = \begin{bmatrix} 9 & -7 \\ 1 & 0 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u; y = \begin{bmatrix} 1 & 2 \end{bmatrix} x$		

Objective Question

12	12	Two 10 kV/ 440 v, 1 phase transformers of ratings 600 KVA and 350 KVA are connected in parallel to share a load of 800 KVA. The reactances of the transformers, referred to the secondary side are 0.0198 Ω and 0.0304 Ω respectively (resistance negligible). The load shared by the two transformers will be respectively A1: 484.5 kVA and 315.5 kVA A2: 315.5 kVA and 484.5 kVA A3: 533 kVA and 267 kVA A4: 267 kVA and 533 kVA	4.0	1.00

Objective Question

13	13	Assertion (A): The distribution transformers are designed for minimum core losses. Reason (R): Primary windings of distribution transformers are energized throughout the day. A1: Both A and R are true and R is the correct explanation of A A2: Both A and R are true but R is the NOT the correct explanation of A A3: A is true but R is false A4: A is false but R is true	4.0	1.00

Objective Question

14	14	A 10 kVA, 2500/250 single phase transformer has the following results:	4.0	1.00

O.C. Test	250 Volts	0.8 amp.	50 W
S.C. Test	60 Volts	3 amp.	45 W

Then efficiency at half full load at 0.8 power factor will be

A1: 98.49%

A2: 97.68%

A3: 98.28%

		A4 : 96.85%		

Objective Question

15	15	A 100 kVA, 2400/240 V, 50 Hz single phase transformer has an exciting current of 0.64 A and core loss 700 W when its high voltage side is energized at rated voltage and frequency. If load current is 40 A at 0.8 p.f. lagging on the LV side, then magnitude of the primary current will be A1 : 4.58 A A2 : 4 A A3 : 4.64 A A4 : 4.85 A	4.0	1.00

Objective Question

16	16	What is the ratio of starting torque and maximum torque of a 3 phase, 50 Hz, 4 pole induction motor for a maximum torque at 1200 rpm? A1 : 0.421 A2 : 0.384 A3 : 0.6 A4 : 0.5	4.0	1.00

Objective Question

17	17	A 6 pole, 50 Hz, 3 phase induction motor with a rotor resistance of 0.25 Ω develops a maximum torque of 10 Nm at 875 rpm. The rotor reactance and slip at maximum torque is A1 : 2 Ω and 0.125 p.u A2 : 2 Ω and 0.25 p.u A3 : 1 Ω and 0.25 p.u A4 : 1 Ω and 0.125 p.u	4.0	1.00

Objective Question

18	18	Assertion (A): The short circuit ratio (SCR) of a three phase alternator should be high. Reason(R): A high value of SCR will decrease the value of voltage regulation and will increase the maximum power output. A1 : Both A and R are true and R is the correct explanation of A	4.0	1.00

		A2: Both A and R are true but R is NOT the correct explanation of A A3: A is true but R is false A4: A is false but R is true		
Objective Question				
19	19	The direction of rotation of a d.c. series motor can be reversed A1: By interchanging supply terminals A2: By interchanging field terminals A3: Either by interchanging supply terminals or by interchanging field terminals A4: By interchanging supply terminals as well as file terminals	4.0	1.00
Objective Question				
20	20	What is the approximate efficiency of a normal thermal power station? A1: 30-40% A2: 45-55% A3: 20-25% A4: 60-70%	4.0	1.00
Objective Question				
21	21	A power station plant load factor is defined as the ratio of A1: The energy generated to that of maximum energy that could have been generated A2: Average load to peak load A3: Minimum load to peak load A4: Minimum load to average load	4.0	1.00
Objective Question				
22	22	A generating station has a maximum demand of 30 MW, a load factor of 60 % and a plant capacity factor of 50%. The reserve capacity of the plant is	4.0	1.00

		A1: 5 MW A2: 4 MW A3: 6 MW A4: 10 MW		
Objective Question				
23	23	The surge impedance of a 3 phase, 400 kV transmission line is 400 Ω. The surge impedance loading(SIL) is A1: 400 MW A2: 100 MW A3: 1600 MW A4: 200 MW	4.0	1.00
Objective Question				
24	24	Consider the following statements regarding corona: 1. It causes radio interference. 2. It attenuates lightning surges. 3. It causes power loss. 4. It is more prevalent in the middle conductor of transmission line employing flat conductor configuration. A1: 1,2 and 3 only A2: 1,2 and 4 only A3: 1,2,3 and 4 A4: 3 and 4 only	4.0	1.00
Objective Question				
25	25	In a short transmission line, voltage regulation is zero when the power factor angle of the load at the receiving end side is equal to A1: $\tan^{-1}(X/R)$ A2: $\tan^{-1}(R/X)$ A3: $\tan^{-1}(X/Z)$	4.0	1.00

		A4 : $\tan^{-1}(R/Z)$		
Objective Question				
26	26	The insulation level of a 400 kV, EHV overhead transmission line is decided on the basis of A1 : Lightening over voltage A2 : Switching over voltage A3 : Corona inception voltage A4 : Radio and TV interference	4.0	1.00
Objective Question				
27	27	The insulation resistance of a cable of length 10 km is 1 MΩ. For a length of 100 km of the same cable, the insulation resistance will be A1 : 1 MΩ A2 : 10 MΩ A3 : 0.1 MΩ A4 : 0.01 MΩ	4.0	1.00
Objective Question				
28	28	Consider a long, two-wire line composed of solid round conductors. The radius of both conductors is 0.25cm and the distance between their centers is 1m. If this distance is doubled, then the inductance per unit length A1 : Doubles A2 : Halves A3 : Increases but does not double A4 : Decreases but does not double	4.0	1.00
Objective Question				
29	29	An HVDC link consists of rectifier, inverter transmission line and other equipments. Which one of the following is true for this link? A1 : The transmission line produce/supplies reactive power A2 : The rectifier consumes reactive power and the inverter supplies reactive power from/to the respective connected consumes	4.0	1.00

		A3 : Rectifier supplies reactive power and the inverted consumes reactive power to/from the respective connected AC systems A4 : Both the converters (rectifier and inverter) consume reactive power from the respective connected AC systems		
Objective Question				
30	30	In a long transmission line with r, l, g and c are the resistance, inductance, shunt conductance and capacitance per unit length respectively, the condition for distortionless transmission is A1 : $rc=lg$ A2 : $r=l/r$ A3 : $rg=lc$ A4 : $r=\sqrt{c/l}$	4.0	1.00
Objective Question				
31	31	Bundled conductors are mainly used in high voltage overhead transmission lines to A1 : Reduce transmission line losses A2 : Increase mechanical strength of the line A3 : Reduce Corona A4 : Reduce Sag	4.0	1.00
Objective Question				
32	32	In order to have a lower cost of electrical energy generation, A1 : The load factor and diversity factor should be low A2 : The load factor should be low but diversity factor should be high A3 : The load factor should be high but diversity factor should be low A4 : The load factor and diversity factor should be high	4.0	1.00
Objective Question				
33	33	For a fully transposed line A1 : Positive, negative and zero sequence impedance are equal	4.0	1.00

		A2: Positive and negative sequence impedance are equal A3: Zero and positive sequence impedances are equal A4: Negative and zero sequence impedance are equal		
Objective Question				
34	34	Three generators rated 100 MVA, 11 kV have an impedance of 0.15 p.u.each. if in the same plant, these generators are being replaced by a single equivalent generator, the effective impedance of equivalent generator will be A1: 0.05 p.u. A2: 0.15 p.u. A3: 0.25 p.u. A4: 0.45 p.u.	4.0	1.00
Objective Question				
35	35	A 10 kVA, 400/200 V single phase transformer with 10 % impedance draws a steady short circuit current of A1: 50 A A2: 150 A A3: 250 A A4: 350 A	4.0	1.00
Objective Question				
36	36	The positive, negative and zero sequence per unit impedances of two generators connected in parallel are X1=0.12 p.u., X2=0.096 p.u. and X0=0.036 p.u. For a L-G fault at generator terminals(with 1 p.u. voltage) the positive sequence current will be A1: 7.936 p.u. A2: 11.936 p.u. A3: 10.936 p.u. A4: 8.936 p.u.	4.0	1.00
Objective Question				

37	37	The YBUS matrix of a 100 bus interconnected system is 90% sparse. Hence the number of transmission of lines in the system must be A1 : 450 A2 : 500 A3 : 900 A4 : 1000	4.0	1.00
Objective Question				
38	38	Assertion (A): The main advantage of decoupled load flow (DLF) method as compared to Newton Raphson method is its reduced memory requirements in storing the Jacobian. Reason(R): An important characteristics of any practical electric power transmission system operating in steady state is the strong interdependence between the real power and bus voltage angles, and between the reactive powers and voltages magnitudes. A1 : Both A and R are true and R is the correct explanation of A A2 : Both A and R are true but R is NOT the correct explanation of A A3 : A is true but R is false A4 : A is false but R is true	4.0	1.00
Objective Question				
39	39	Two 50 Hz generating units operate in parallel within the same power plant and have the following ratings: Unit 1: 500 MVA, 0.85 pf, 20 kV, 3000 rpm, H1=5 MJ/MVA Unit 2: 200 MVA, 0.9 pf, 20 kV, 1500 rpm, H2=5 MJ/MVA The equivalent inertia constant H in MJ/MVA on 100 MVA base is A1 : 2.5 A2 : 5.0 A3 : 10.0 A4 : 35.0	4.0	1.00
Objective Question				
40	40	If a 500 MVA, 11 kV three phase generator at 50 Hz feeds, through a transfer impedance of (0.0 + j 0.605) Ω per phase, an infinite bus also at 11 kV; then the maximum steady state power transfer on the base of 500 MVA and 11 kV is A1 : 1.0 p.u.	4.0	1.00

		A2 : 0.8 p.u. A3 : 0.5 p.u. A4 : 0.4 p.u.		
Objective Question				
41	41	The steady state stability limit of a synchronous machine connected to infinite bus is 2.2 p.u. Infinite bus voltage is 1 p.u. and synchronous machine voltage is 1.1 p.u. The transfer reactance between generator and infinite bus is A1 : j 0.5 A2 : –j 0.5 A3 : j 1.0 A4 : –j 1.0	4.0	1.00
Objective Question				
42	42	A 50 Hz, 3 phase synchronous generator has inductance per phase of 15 mH. The capacitance of generator and circuit breaker is 0.002 μF. What is its natural frequency of oscillation? A1 : 29 KHz A2 : 2.9 KHz A3 : 290 KHz A4 : 29 MHz	4.0	1.00
Objective Question				
43	43	Which type of connection is employed for current transformers for the protection of a star delta connected 3 phase transformer? A1 : Delta-delta A2 : Star-star A3 : Star-delta A4 : Delta-star	4.0	1.00
Objective Question				
44	44	A relay is connected to a 400/5 A current transformer and set for 150 %. The primary fault current of 2400 A needs a plug	4.0	1.00

setting multiplier of

A1: 2

A2: 4

A3: 6

A4: 8

Objective Question

45	45	The loss formula coefficient matrix of a two plant system is given by $B = \begin{bmatrix} 0.001 & -0.0001 \\ -0.0001 & 0.0013 \end{bmatrix} MW^{-1}$ The economic schedule for a certain load is given as P_1=150 MW and P_2=275 MW What is the penalty factor for plant 1 for this condition? A1: 1.324 A2: 1.515 A3: 1.575 A4: 1.721	4.0	1.00

Objective Question

46	46	The method used to implement a asynchronous link is A1: Dc back to back connected converter A2: 0-360^{o} static phase shifter A3: Rotary transformer A4: Static VAR compensator	4.0	1.00

Objective Question

47	47	The per unit impedance of an alternator corresponding to base values of 13.2 kV and 30 MVA is 0.2 p.u. The p.u. value of the impedance for the base values 13.8 kV and 50 MVA in p.u. will be A1: 0.131 A2: 0.226	4.0	1.00

		A3 : 0.305 A4 : 0.364		
Objective Question				
48	48	A travelling wave of 400/1/50 means crest value of A1 : 400 V with raise time of 1/50 ms A2 : 400 kV with raise time of 1 s and fall time of 50 s A3 : 400 kV with raise time of 1 μs with fall time of 50 μs A4 : 400 MV with raise time 1μs and fall time of 50 μs	4.0	1.00
Objective Question				
49	49	Snubber circuits are used to protect thyristor from which of the following? A1 : High di/dt and low dv/dt A2 : High dv/dt and low di/dt A3 : Low dv/dt and low di/dt A4 : High dv/dt and high di/dt	4.0	1.00
Objective Question				
50	50	The anode current through a conducting SCR is 10 A. If its gate current is made one fourth, then what will be the anode current? A1 : 0 A A2 : 5 A A3 : 10 A A4 : 20 A	4.0	1.00
Objective Question				
51	51	In a three phase full wave a.c to d.c converter, the ratio of output ripple-frequency to the supply voltage frequency is A1 : 2	4.0	1.00

		A2: 3 A3: 6 A4: 12		
Objective Question				
52	52	When the firing angle α of a single phase fully controlled rectifier feeding constant d.c current into load is 30^0, what is the displacement factor of the rectifier? A1: 1 A2: 0.5 A3: $\sqrt{3}$ A4: $\frac{\sqrt{3}}{2}$	4.0	1.00
Objective Question				
53	53	A three pulse converter is feeding a purely resistive load. What is the value of firing delay angle α, which dictates the boundary between the continuous and discontinuous mode of current conduction? A1: $\alpha= 0^0$ A2: $\alpha= 30^0$ A3: $\alpha= 60^0$ A4: $\alpha= 150^0$	4.0	1.00
Objective Question				
54	54	A single phase full converter feeds power to RLE load with R= 10 Ω, L = 10 mH, E = 50 V, the ac source voltage is 230 V, 50 Hz. For continuous conduction, what is the average value of load current for firing angle delay of 60^o? A1: 4.63 A A2: 6 A A3: 6.5 A A4: 5.35 A	4.0	1.00

Objective Question				
55	55	An ideal chopper operating at a frequency of 500 Hz, supplies a load having resistance of 3 Ω and inductance of 9 mH from a 60 V battery. The mean value of the load voltage for on/off ratio of 4/1 (assuming that load is shunted by a perfect commutating diode and battery is loss-less) is A1 : 240 V A2 : 48 V A3 : 15 V A4 : 4 V	4.0	1.00
Objective Question				
56	56	For elimination of 5^{th} harmonics from the output of an inverter, what will be the position of pulse in a PWM inverter? A1 : 72^o A2 : 36^o A3 : 60^o A4 : 90^o	4.0	1.00
Objective Question				
57	57	A constant current source inverter supplies 20 A to a load resistance of 1 Ω. If the load resistance changes to 5 Ω, then the load current A1 : Remains 20 A and the load voltage changes to 100 V A2 : Changes to 4 A from 20 A and the load voltage changes to 20 V A3 : Changes to 4 A from 20 A and the load voltage changes to 80 V A4 : Load voltage stay at 20 A and 20 V respectively.	4.0	1.00
Objective Question				
58	58	In a single phase VSI bridge inverter, the load current is $I_0 = 200 \sin(wt-45^o)$ mA. The d.c. supply voltage is 220 V. What is the power drawn from the supply? A1 : 9.8 W A2 : 19.8 W A3 27.25 W	4.0	1.00

		A4 : 34.03 W		

Objective Question

59	59	The most suitable solid state converter for controlling the speed of the three phase cage motor at 25 Hz is A1 : Cycloconverter A2 : Current source inverter A3 : Voltage source inverter A4 : Load commuted inverter	4.0	1.00

Objective Question

60	60	A DC chopper is used in regenerative braking mode of a dc series motor. The dc supply is 600 V, the duty cycle is 70%. The average value of armature current is 100 A. It is continuous and ripple free. What is the value of power feedback to the supply? A1 : 3 kW A2 : 9 kW A3 : 19 kW A4 : 35 kW	4.0	1.00

Objective Question

61	61	Which one of the following is used as the main switching element in a switched mode power supply operating in 20 kHz to 100 kHz range? A1 : Thyristor A2 : MOSFET A3 : Triac A4 : UJT	4.0	1.00

Objective Question

62	62	A band-limited signal with a maximum frequency of 5 kHz is to be sampled. According to the sampling theorem, the sampling frequency in kHz which is not valid is A1 : 5	4.0	1.00

A2: 12

A3: 15

A4: 20

Objective Question				
63	63	The impulse response of a continuous time system is given by $h(t) = \delta(t-1) + \delta(t-3)$. The value of the step response at t = 2 is A1: 0 A2: 1 A3: 2 A4: 3	4.0	1.00
Objective Question				
64	64	If u(t), r(t) denote the unit step and unit ramp functions respectively and u(t)*r(t) their convolution, then the function u(t+1)*r(t-2) is given by A1: (1/2)(t-1)(t-2) A2: 2(t+1)(t-2) A3: $(1/2)(t-1)^2u(t-1)$ A4: None of these	4.0	1.00
Objective Question				
65	65	The value of the contour integral in the complex – plane $\oint \frac{z^3-2z+3}{z-2}dz$ along the contour $\lvert z \rvert = 3$, taken counter clockwise is A1: -18 πi A2: 0 A3: 14 πi A4: 48 πi	4.0	1.00

Objective Question				
66	66	Let the eigenvalues of a 2×2 matrix A be 1,−2 with eigenvectors x_1 and x_2 respectively. Then the eigenvalues and eigenvectors of the matrix A^2−3A+4I would respectively, be A1 : 2, 14; x_1,x_2 A2 : 2,14; x_1+x_2, x_1-x_2 A3 : 2, 0; x_1,x_2 A4 : 2,0; x_1+x_2, x_1-x_2	4.0	1.00
Objective Question				
67	67	Two in-phase, 50Hz sinusoidal waveform of unit amplitude are fed into channel-1 and channel-2 respectively of an oscilloscope. Assuming that the voltage scale, time scale and other settings are exactly the same for both the channels, what would be observed if the oscilloscope is operated in x-y mode? A1 : A circle of unit radius A2 : An ellipse A3 : A parabola A4 : A straight line inclined at 45^o with respect to the x-axis	4.0	1.00
Objective Question				
68	68	Instrument transformers are known to introduce magnitude and phase errors in measurements. These are primarily due to A1 : Improper connections on the primary side A2 : Measurement errors inherent in the meter connected to the transformer secondary A3 : Open and short circuit parameters of the instrument transformers A4 : None of these	4.0	1.00
Objective Question				
69	69	Which of the following instrument will be used to measure a small current of very high frequency? A1 : Electrodynamic ammeter A2 : Moving coil galvanometer A3 : Thermocouple type instrument	4.0	1.00

		A4: Induction type instrument		

Objective Question

70	70	A current i=5+14.14 sin (314t+450) is passed through a center zero PMMC, hot wire and moving iron instrument, the respective readings are A1: -5, 15 and $\sqrt{125}$ A2: 5, $\sqrt{125}$ and $\sqrt{125}$ A3: -5, $\sqrt{125}$ and 19.14 A4: 5, 10 and 10	4.0	1.00

Objective Question

71	71	Two wattmeter method is employed to measure power in a 3 phase balanced system with the current coil connected in the A and C lines. The phase sequence is ABC. If the wattmeter with its current coil in A phase line reads zero, then the power factor of the 3 phase load will be A1: Zero lagging A2: Zero leading A3: 0.5 lagging A4: 0.5 leading	4.0	1.00

Objective Question

72	72	A current transformer has a phase error of $+3^{o}$. The phase angle between the primary and secondary current is A1: 3^{o} A2: 177^{o} A3: 180^{o} A4: 183^{o}	4.0	1.00

Objective Question

73	73	A Kelvin double bridge is best suited for the measurement of A1: Inductance	4.0	1.00

		A2 : Capacitance A3 : Low resistance A4 : High resistance		

Objective Question

74	74	The bridge method commonly used for finding mutual inductance is A1 : Heaviside Campbell bridge A2 : Schering bridge A3 : De Sauty bridge A4 : Wien bridge	4.0	1.00

Objective Question

75	75	A 3-phase balanced load which has a power factor of 0.707 is connected to a balanced supply. The power consumed by the load is 5 kW. The power is measured by the two-wattmeter method. The readings of the two wattmeters are A1 : 3.94 kW and 1.06 kW A2 : 2.50 kW and 2.50 kW A3 : 5.00 kW and 0.00 kW A4 : 2.96 kW and 2.04 kW	4.0	1.00

Objective Question

76	76	A dynamometer type wattmeter responds to the A1 : Average value of active power A2 : Average value of reactive power A3 : Peak value of active power A4 : Peak value of reactive power	4.0	1.00

Objective Question

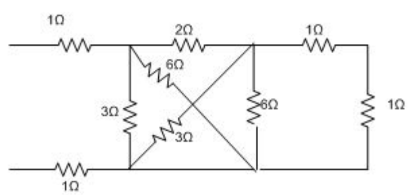
77	77	An ammeter has a current range of 00-5A and its internal resistance is 0.2Ω. In order to change the range to 00-25A we need to add a resistance of	4.0	1.00

		A1: 0.8 Ω in series with the meter A2: 1.0 Ω in series with the meter A3: 0.04 Ω in series with the meter A4: 0.05 Ω in series with the meter		

Objective Question

78	78	A moving coil galvanometer is made into a d.c. ammeter by connecting A1: A low resistance across the meter A2: A high resistance in series with the meter A3: A pure inductance across the meter A4: A capacitor in series with the meter	4.0	1.00

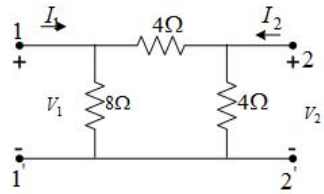
Objective Question

79	79	The equivalent resistance between the terminals A and B is ____________Ω  A1: 1 Ω A2: 4 Ω A3: 3 Ω A4: 1.5 Ω	4.0	1.00

Objective Question

80	80		4.0	1.00

What is the driving point impedance of the two-port network shown in Figure below with output port open?



A1: 8 Ω

A2: 16 Ω

A3: 2 Ω

A4: 4 Ω

Objective Question

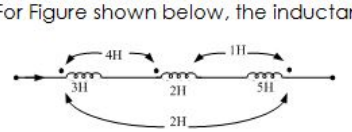
81	81	If the z-parameters of a two-port network are z_{11}=6Ω, z_{22}=8Ω, z_{12}=z_{21}=4Ω, then the *ABCD*-parameters are respectively given by A1: $\frac{3}{2}, 8, \frac{1}{4}, 2$ A2: $2, \frac{1}{4}, 6, 3$ A3: $\frac{1}{6}, \frac{1}{4}, \frac{1}{4}, \frac{1}{8}$ A4: 8,4,4,6	4.0	1.00

Objective Question

82	82	If a network contains *b* branches and *n* nodes, then the number of mesh current equations would be A1: *b-(n-1)* A2: *n-(b-1)* A3: *b-n-1* A4: *n-b-1*	4.0	1.00

Objective Question

83	83	For Figure shown below, the inductance matrix is	4.0	1.00



		A1 : $\begin{bmatrix} 3 & 4 & -2 \\ 4 & 2 & -1 \\ -2 & -1 & 5 \end{bmatrix}$ A2 : $\begin{bmatrix} 3 & -4 & -2 \\ 4 & 2 & -1 \\ -2 & 1 & 5 \end{bmatrix}$ A3 : $\begin{bmatrix} 3 & 4 & 2 \\ 4 & 2 & -1 \\ -2 & 1 & 5 \end{bmatrix}$ A4 : $\begin{bmatrix} 3 & 4 & -2 \\ -4 & 2 & 1 \\ 2 & -1 & 5 \end{bmatrix}$		
Objective Question				
84	84	Dot convention in coupled circuits is used A1 : to measure the mutual inductance A2 : to determine the polarity of mutually induced voltages in coils A3 : to determine the polarity of the self induced voltages in coils A4 : none of these	4.0	1.00
Objective Question				
85	85	A series resonant circuit has R=10Ω, L=100mH, C=100μF. At what frequency does it resonate? A1 : 503.3 Hz A2 : 203.3 Hz A3 : 853.3Hz A4 : 103.3Hz	4.0	1.00
Objective Question				
86	86	If f_r is the resonance frequency and BW is the bandwidth, the Q factor of the circuit is given by A1 : f_r /BW A2 : f_r x BW A3 : BW/f_r	4.0	1.00

		A4: $1/BW \times f_r$		

Objective Question

87	87	In a three-phase balanced, star-connected system, the phase relation between the line voltages and their respective phase voltages is A1: the line voltages lead their respective phase voltages by 30^o A2: the phase voltages lead their respective line voltages by 30^o A3: the line voltages lead their respective phase voltages by 120^o A4: the line voltages are in phase with phase voltages	4.0	1.00

Objective Question

88	88	Three equal impedances are first connected in star across a three-phase balanced supply. If the same impedances are connected in delta across the same supply, then A1: phase current will be one third A2: line current will be 3 times A3: power consumed will be one third A4: power consumed will be 3 times	4.0	1.00

Objective Question

89	89	Thevenin's equivalent of a circuit, operating at ω = 5 rad/s, has V_{OC}= 3.71 $\angle$-15.9° V Z_O= 2.38 – j 0.667 Ω At this frequency, the minimal realization of the thevenin's impedance will have A1: A resistor, a capacitor and an inductor A2: A resistor and a capacitor A3: A resistor and an inductor A4: A capacitor and an inductor	4.0	1.00

Objective Question

90	90	Assertion (A): A unit current impulse applied to a capacitor of C farads instantly inserts ½ C joules of energy in it. Reason (R): A unit current impulse has infinite current for zero duration and encloses a charge of one coulomb in it. A1: Both A and R are true and R is the correct explanation of A	4.0	1.00

A2: Both A and R are true but R is NOT the correct explanation of A

A3: A is true but R is false

A4: A is false but R is true

Objective Question

91	91	Two bulbs of 100 W/250 V and 150 W/250 V are connected in series across a supply of 250 V. The power consumed by the circuit is	4.0	1.00

A1: 30 W

A2: 60 W

A3: 100 W

A4: 250 W

Objective Question

92	92	The average power delivered to an impedance (4−j3) Ω by a current 5cos(100πt+100)A is	4.0	1.00

A1: 44.2 W

A2: 50 W

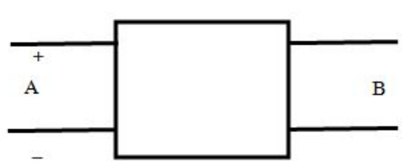
A3: 62.5 W

A4: 125 W

Objective Question

93	93	With 10 V dc connected at port A in the linear nonreciprocal two-port network shown below, the following were observed:	4.0	1.00

(i) 1 Ω connected at port B draws a current of 3 A
(ii) 2.5 Ω connected at port B draws a current of 2 A



With 10 V dc connected at port A, the current drawn by 7 Ω connected at port B is

A1: 3/7 A

		A2 : 5/7 A A3 : 1 A A4 : 9/7 A		
Objective Question				
94	94	In a uniform electric field, field lines and equipotentials A1 : Are parallel to one another A2 : Intersect at 45^o A3 : Intersect at 30^o A4 : Are orthogonal	4.0	1.00
Objective Question				
95	95	A solid iron cylinder is placed in a region containing a uniform magnetic field such that the cylinder axis is parallel to the magnetic field direction. The magnetic field lines inside the cylinder will A1 : Bend closer to the cylinder axis A2 : Bend farther away from the axis A3 : Remain uniform as before A4 : Cease to exist inside the cylinder	4.0	1.00
Objective Question				
96	96	The concept of an electrically short, medium, and long line is primarily based on the A1 : Nominal voltage of the line A2 : Physical length of the line A3 : Wavelength of the line A4 : Power transmitted over the line	4.0	1.00
Objective Question				
97	97		4.0	1.00

		Consider the following statements with reference to the equation $\nabla \vec{j} = -\frac{\partial \rho}{\partial t}$ 1.This is a point from the continuity equation 2. Divergence of current density is equal to the decrease of charge per unit volume per unit time at every point. 3. This is Maxwell's divergence equation 4. This represents the conservation of charge. A1: Only 2 and 4 are true A2: 1, 2 and 3 are true A3: 2, 3 and 4 are true A4: 1, 2 and 4 are true		
Objective Question				
98	98	Two electric charges q and -2q are placed at (0,0) and (6,0) on the x-y plane. The equation of the zero equipotential curve in the x-y plane is A1: X= -2 A2: Y=2 A3: $X^2+Y^2=2$ A4: $(X-2)^2+Y^2=16$	4.0	1.00
Objective Question				
99	99	A 50 Hz, 4-pole, 500 MVA, 22 kV turbo-generator is delivering rated megavolt-amperes at 0.8 power factor. Suddenly a fault occurs reducing is electric power output by 40%. Neglect losses and assume constant power input to the shaft. The accelerating torque in the generator in MNm at the time of fault will be A1: 1.528 A2: 1.018 A3: 0.840 A4: 0.509	4.0	1.00
Objective Question				
100	100	The transmission line distance protection relay having the property of being inherently directional is A1: Impedance relay A2: MHO relay	4.0	1.00

		A3: OHM relay A4: Reactance relay		