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312315 - Elements of Electrical Engg. (Sem II)

As per MSBTE's K Scheme

EJ / ET / AO / DE / EX / IC / IE / IS / MU / TE

Unit II A.C fundamentals for single phase and polyphase circuits Marks - 18

S. N.	MSBTE Board Asked Questions	Exam Year	Marks
1.	Write any two advantages of AC over DC.	W-2018	2M
2.	Draw the waveform representation of a three phase AC supply with neat labels.	W-2018	2M
3.	Draw the waveform representation of a three phase AC supply with neat labels.	W-2018	2M
4.	Explain the generation of single phase AC supply by an elementary alternator with neat sketch.	W-2018	4M
5.	State four advantages of poly-phase circuit over single phase circuit.	W-2018	4M
6.	An alternating current given by equation i = 142.14 sin 628 t. find - (i) Maximum value (ii) Time period (iii) RMS value (iv) Average value (v) Form factor (vi) Peak factor	W-2018	4M
7.	Three impedance, each of 10Ω resistance and 5Ω inductive reactance in series, are connected in star across a 3 phase, 400V, 50Hz AC supply. Determine - (i) Phase current (ii) Line current (iii) Phase voltage (iv) Line voltage (v) Power factor (vi) Total line power	W-2018	6M
8.	Define: (i) Form factor (ii) Peak factor	S-2018	2M

9.	Draw 3-phase voltage waveform of a.c. supply with respect to time.	S-2018	2M
10.	Explain the concept of lagging and leading phase angle by waveform.	S-2018	4M
11.	Draw delta connected load. Sate relation between: (i) Line voltage and phase voltage (ii) Line current and phase current	S-2018	4M
12.	Find relactance, flux, mmf, required and exciting current for an iron ring with 200 turns having diameter of 15 cm and 10 Mcm2 cross sectional area if flux density 1 wb/m2 and permeability of 500	S-2018	4M
13.	An alternating voltage is represented by V = 50.5 sin(314 t + 90). Calculate frequency, amplitude, RMS value and phase difference.	S-2018	6M
14.	A balanced 3-f star connected load consist of three resistances each of four Ohm's connected to 400 V, 3 phase 50 Hz supply, find: (i) Phase voltage (ii) Phase current (iii) Line current (iv) Power consumed	S-2018	6M
15.	State value of power factor for purely resistive and purely capacitive circuit.	S-2019	2M
16.	Write meaning of the term "balanced load" in case of 3f system.	S-2019	2M
17.	Find : (i) RMS value (ii) Average value (iii) Form factor and (iv) Frequency of the waveform shown	S-2019	4M
18.	Write any four advantages of 3f system over 1f system	S-2019	4M
19.	Compare auto transformer and two winding transformer on any four points	S-2019	4M
20.	For a transformer, give (i) Any two main parts (ii) Any two ratios (iii) Any two types and (iv) Any two losses	S-2019	4M
21.	For a purley resistive circuit- (i) Draw neat sketch (ii) Draw waveforms of voltage and current (iii) Write equation of current and (iv) Draw phasor diag	S-2019	
22.	Calculate- (i) Z (ii) I (iii) VR (iv) VL (v) Phase angle And draw voltage triangle for the circuit shown in Fig. No. 2	S-2019	6M

23.	A 3f balanced load contains R = 12W and XC= 15W in each phase. It is connected in star across a 230V, 50Hz, 3f AC. Calculate - (i) Vph (ii) Zph (iii) I ph (iv) I L (v) pf (vi) P	S-2019	6M
24.	Define following terms with respect to A.C. quantity. (i) Time period (ii) Frequency	W-2019	2M
25.	State the relationship between line current and phase current for star and delta connection.	W-2019	2M
26.	Draw purely capacitive circuit. Show vector diagram and waveform and write formula for capacitive reactance.	W-2019	4M
27.	Compare star and delta connection on basis (i) Connection diagram (ii) Neutral (iii) Line and phase current (iv) Line and phase voltage.	W-2019	4M
28.	A sinusoidal voltage with equation V = 200 sin (314 t + π/ 3) volt is applied to a load. Calculate (i) Maximum voltage (ii) RMS voltage (iii) Frequency (iv) Time period (v) Phase angle (vi) Angular frequency	W-2019	6M
29.	Three similar coils each of resistance 20 Ω and on inductance 0.1 H are connected in delta to a 3φ 440V, 50 Hz supply system. Calculate the phase current, line current, phase voltage, line voltage, active power and reactive power	W-2019	6M
30.	Define form factor and peak factor for a Sinusoidal waveform.	S-2022	2M
31.	Define phase sequence in 3 phase a.c. supply system.	S-2022	2M
32.	Define : (i) Time period (ii) Frequency (iii) Power factor (iv) Phase difference	S-2022	4M
33.	Draw star connected Load. State the relation between (i) Line voltage and Phase voltage. (ii) Line current and Phase current.	S-2022	4M
34.	Compare between 1 phase Auto-transformer and two winding transformer	S-2022	4M

35.	10 kVA, 2200/200 V, 50 Hz single phase transformer has 100 turns on secondary winding. Calculate : (i) Primary number of turns (ii) Full load primary current (iii) Full load secondary current (iv) Maximum value of flux in the core	S-2022	4M
36.	If a 3 phase, 400 V, 50 Hz supply is connected to a balanced 3 phase star connected load of impedance [3+j6] ohm per phase. Calculate (i) Phase current (ii) Phase voltage (iii) Power factor (iv) Total Active power (v) Reactive power	S-2022	6M
37.	State the significance of power factor.	W-2022	2M
38.	State the relationship between line and phase value for 3 phase star connection.	W-2022	2M
39.	State the concept of lagging and leading phase difference with the help of waveforms.	W-2022	4M
40.	Draw a balanced 3-phase star connected load. Show various line and phase quantities on it.	W-2022	4M
41.	10 kVA, 2200/200 V, 50 Hz single phase transformer has 80 turns on secondary winding. Calculate number of primary winding turns, full load primary and secondary currents and maximum value of flux in the core.	W-2022	4M
42.	Three similar coils each of resistance 20 Ω are connected in delta to a 3-phase 415 V, 50 Hz supply. Calculate phase current, phase voltage, line current, line voltage, total line and phase power.	W-2022	6M
43.	c) A single phase 2 kVA, 200V/100V transformer used in a laboratory. Calculate : (i) Primary winding current (ii) Secondary winding current (iii) Turn ratio (iv) Voltage ratio (v) Current ratio (vi) Transformation ratio	W-2022	6M
44.	Draw impedance triangle and show various quantities on it.	Sample Paper	2M
45.	Define phase sequence RYB and RBY.	Sample Paper	2M
46.	Write standard formula for each of the following and state its	Sample Paper	4M

	unit. (i) Active Power (ii) Reactive Power (iii) Apparent Power and (iv) Copper Loss.		
47.	Draw a balanced 3-phase delta connected load. Show various line and phase quantities on it. Also write relationship between line and phase values of voltages and currents	Sample Paper	4M
48.	A sinusoidal voltage with equation v=173 sin (314 t - 300) Volt is applied to a load. Calculate: (i) Maximum Voltage (ii) RMS Voltage (iii) Frequency (iv) Time Period (v) Phase and (vi) Angular Frequency.	Sample Paper	6M
49	A sinusoidal voltage with equation v=173 sin (314 t - 300) Volt is applied to a load. Calculate: (i) Maximum Voltage (ii) RMS Voltage (iii) Frequency (iv) Time Period (v) Phase and (vi) Angular Frequency.	Sample Paper	6M
50.	Define: (i) Form factor (ii) Peak factor	W-2023	2M
51.	Draw 3-phase voltage waveform of a.c. supply with respect to time.	W-2023	2M
52.	Explain the concept of lagging and leading phase	W-2023	4M
53.	Write any four advantages of 3f system over 1f system	W-2023	4M
54.	For a purley resistive circuit- (i) Draw neat sketch (ii) Draw waveforms of voltage and current (iii) Write equation of current and (iv) Draw phasor diag	W-2023	4M
55.	An alternating voltage is represented by V = 50.5 sin(314 t + 90). Calculate frequency, amplitude, RMS value and phase difference	W-2023	6M
56.	A 3f balanced load contains R = 12W and XC= 15 ohm in each phase. It is connected in star across a 440V, 50Hz, 3f AC. Calculate - (i) Vph (ii) Zph (iii) I ph (iv) I L (v) pf (vi) Total Line power.	W-2023	6M

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