SIDDHARTH GROUP OF INSTITUTIO Siddharth Nagar, Narayanavanam Roa	
QUESTION BANK (DESCRIP	TIVE)
Subject with Code : EMT(15A01301)	Course & Branch: B.Tech-CE
Year & Sem: II-B.Tech & I-Sem	Regulation: R15
<u>UNIT – III</u>	
AC Machines	
1. a) Derive EMF equation of a transformer.[L4]	5M
b) What are the various losses in the transformer? Explain	briefly.[L1,L2] 5M
2. a) What is meant by slip speed and slip in an induction more	tor?[L1] 5M
b) Explain constructional details of alternators?[L2]	5M
3. Explain OC and SC test of a single phase transformer?[L2]] 10M
4. a) Define and explain efficiency, and losses in a transforme	er?[L1,L2] 5M
b) A 2000/200 V, 20 KVA transformer has 66 turns in the	secondary. Calculate the primary
turns and secondary full load currents, neglecting losses.	[L3] 5M
5. Explain the torque-slip characteristics of three phase induc	tion motor?[L2] 10M
6. Describe the constructional details of transformer?[L2]	10M
7. a) Derive the torque equation for three phase induction mo	otor?[L4] 5M
b) A 3 phase, 4 pole $50H_Z$ induction motor at stands	till has 180V induced across its star
connected terminals. The rotor resistance and standstill re-	eactance per phase are 0.6Ω and 0.3Ω
respectively. Calculate the speed when the rotor is drawing	ng a current of 6A at a particular load.
Also calculate the speed at which the torque is maximum	m and the corresponding value of the
rotor.[L3]	5M
8. a) Explain the principle operation of transformer?[L2]	5M
b) Obtain the condition for maximum efficiency of a transf	former?[L4] 5M
9. a) Explain principle operation of alternator?[L2]	5M
b) Derive EMF equation for an alternator?[L4]	5M
10. a) Why Dc-supply is not given to transformer?[L1]	2M
b) What are the advantages of salient pole type of construct	tion used for
Synchronous machines?[L1]	2M
c) Write down the equation for frequency of emf induced in	n an alternator.[L1] 2M

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d) What is meant by transformations ratio?[L1]	21	M
e) What is rotating magnetic field?[L1]	21	Ν

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	QUESTION BANK (O)	<u>BJECTIVE)</u>	
	Subject with Code : EMT(15A01301)	Course & Branch: B.Tech - C	E
	Year & Sem: II-B.Tech & I-Sem	Regulation: R15	
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	<u>UNIT – II</u>	[
	AC MACHIN	IES	
1.	The principle of operation of a transformer is	[]
	A) electromagnetic induction	B) mutual induction	
	C) varying a conductor in a magnetic field	D) thermionic emission	
2.	The no-load current of a transformer is generally of the	e order of []
	A) less than 5% of the full-load current	B) more than 5% of the full-load current	nt
	C) almost equal to the full-load current	D) zero	
3.	The efficiency of a transformer is maximum when	[]
	A) copper loss is zero	B) iron losses are zero	
	C) copper losses are equal to the iron losses	D) copper losses are maximum	
4.	The performance of a transformer is better, if its	[]
	A) regulation is lower	B) regulation is very high	
	C) power factor is zero	D) all the above	
5.	When the primary of a transformer is connected to a d	c supply []
	A) primary draws small current	B) core losses are increased	
	C) primary leakage reactance is increased	D) primary may burn out	
6.	The most suitable material for transformer core is	[]
	A) hot rolled grain oriented steel	B) cold rolled grain oriented steel	
	C) aluminium	D) copper	
7.	The primary and secondary of a transformer are	coupled []
	A) electrically	B) magnetically	
	C) electrically and magnetically	D) none	
8.	An ideal transformer is one which	[]
	A) has no losses and leakage reactance	B) does not work	
_	C) has same number of primary and secondary turns	D) none of the above	
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9. A transformer has full-load copper loss of 400	W. the copper loss at half full-load will be	[]
A) 50W	B) 200W		
C) 400W	D) 100W		
10. The efficiency of a power transformer can be o	letermined indirectly by	[]
A) open-circuit test alone	B) short circuit test alone		
C) open circuit and short circuit test	D) back-to-back test		
11. A 12-pole, 3-phase induction motor runs at a	speed of 485 rpm on a 50 Hz supply. The sl	lip of	the
motor is		[]
A) 3%	B) 0.3%		
C) 4%	D) 0.4%		
12. When the stator supply voltage frequency is f,	then the frequency of the rotor current is	[]
A) sf	B) f		
C) zero	D) 2f		
13. The synchronous speed of a 3-phase induction	motor having 6-poles and running at 970 rpd	m	
when connected to a 50Hz supply is		[]
A) 1500rpm	B) 1000rpm		
C) 1200rpm	D) 3000rpm		
14. The maximum torque developed by an induction	on motor depends upon the	[]
A) rotor reactance	B) rotor resistance		
C) length of the rotor	D) size of the rotor		
15. The 3-phase induction motor is so designed the	at the rotor should haveunder		
running conditions		[]
A) high resistance	B) high reactance		
C) low resistance	D) large slip		
16. The phase sequence of an alternator is RBY. T	The direction of its rotor rotation is reversed.		
The phase sequence will be		[]
A) RYB	B) YRB		
C) BRY	D) both a & c		
17. The type of rotor preferred for alternator drive	n by steam turbine is	[]
A) Cylindrical rotors	B) slip ring rotor		
C) Salient pole rotor	D) squirrel cage rotor		
18. For a P-pole machine, the relation between ele	ectrical degrees is	[]
A) $\theta_{\text{elec}} = 2/P \ \theta_{\text{mech}}$	B) $\theta_{\text{elec}} = 4/P \ \theta_{\text{mech}}$		

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C) $\theta_{\text{elec}} = \theta_{\text{mech}}$	D) $\theta_{\text{elec}} = p/2 \ \theta_{\text{mech}}$		
19. To reduce the harmonics in the emf generated in an	alternator	[]
A) slots are skewed	B) salient pole tips are chamfered		
C) winding is well distributed	D) all of the above		
20. For a uniformly distributed winding with phase s	pread of 'g' the distribution factor for	r'r'	the
harmonic		[-
A) $\sin(g/2)/(g/2)$	B) $\sin(rg/2)/(rg/2)$		
C) $\sin q / q$	D) $\sin(rq)/(rq)$		
21. Which of the following does not change in transform	ner	[
A) Voltage	B) Current		
C) Power	D) Frequency		
22. Silicon steel used for laminating the core to reduce		[
A) Hysteresis loss	B) Eddy current loss		
C) Copper loss	D) All		
23. Open circuit test on transformer is conducted to dete	ermine	[
A) Current loss	B) Copper loss		
C) Voltage loss	D) Iron loss		
24. Short circuit test on transformer is conducted to dete	ermine	[
A) Current loss	B) Copper loss		
C) Voltage loss	D) Iron loss		
25. Induction motor will not run if slip(S)=		[-
A) 1	B) 2		
C) 0	D) 10		
26. Which of the following machine converts mechanic	al energy into electrical energy	[
A) Motor	B) Induction motor		
C) Battery	D) Alternator		
27. Electromotive force is also known as		[
A) Voltage	B) Power		
C) Energy	D) All		
28. Which of the following is step up transformer		[
A) If K<1	B) If K>1		
C) If K=1	D) All		
29. Which of the following is step down transformer		ſ	-

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A) If K<1	B) If K>1		
C) If K=1	D) All		
30. Transformation ratio is denoted by a letter of	. [
A) V	B) I		
C) K	D) P		
31. Ac generator is also called as	[
A) Induction motor	B)Alternator		
C)Turbine	D)All		
32. Rotating magnetic field is produced in which	of the following motor [•
A) dc motor	B) 1-phase induction motor		
C) 3-phase induction motor	D) All		
33. Speed is zero when	[
A) S=0	B)S=1		
C) S=2	D) None		
34. The principle of operation of 3-phase inducti	on motor is most similar to that of a [
A) Synchronous motors	B) transformer with a shorted secondar	ry	
C) d.c generator	D) none		
35. In case of synchronous generators the rotor is	S [
A)armature winding	B)poles		
C)both	D)None		
36. In Ns is the synchronous speed and s the slip	, then actual running speed of an induction motor		
will be]		
A) Ns	B) S*Ns		
C) (1-S)Ns	D) (Ns-l)S		
37. Find the number of poles required, when the	frequency is 50Hz and speed of the motor is 500	rpr	m
	[]		
A) 5	B) 10		
C) 12	D) 24		
38. The synchronous speed of an alternator havin			
A) 1500rpm	B) 1800rpm		
C) 3000rpm	D) 6000rpm		

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will be		[]
A)120	B)110		
C) 100	D) 50		
40. Which winding in a transformer has more number of turns?		[]
A) Low voltage winding	B) High voltage winding		
C) Primary winding	D) Secondary winding		

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