1168

Code: 15EE-31T

Register				
Number				

III Semester Diploma Examination, April/May-2017

D.C. MACHINES AND ALTERNATORS

Tin	ne : 3 Hours	[Max. M	1arks : 100
Note	e: (i) Answer any six questions from Part-A. Each que	estion carries 5 mar	ks.
	(ii) Answer any seven questions from Part-B. Each of	question carries 10	marks.
1.	PART – A Deduce e.m.f. equation of D.C. generator.	ВE	TA CONSOLE!
2.	Explain with sketch, resistance commutation.		Diploma - [All Branches
3.	What is armature reaction? List it's effects.		2+3
4.	Illustrate the significance of back emf.		Diploma Question Papers [2015-
5.	Explain speed-load characteristics of shunt motor.		19] Beta Console Education E
6.	Explain hunting in alternators.		5
7.	Differentiate full pitch and fractional pitch windings of ale	ternator.	5
8.	A 3-phase star-connected alternator on open-circuit is voltage of 3600 volt at 50 Hz, when driven at 50 slots/pole/phase and 10 conductors/slot. Calculate: (i) number of poles	required to genera 00 rpm. The stat	ate a line or has 3
	(ii) useful flux/pole		

9. Explain construction and working of universal motor.

Assume full pitch winding.

3 + 2

3 + 2

1 of 2

[Turn over

PART – B

(b) Explain demagnetising and cross-magnetising effects of armature reaction. 2 + 2 2. (a) Explain the process of voltage build up of D.C. shunt generator. Also define critical resistance. 4 + 2 (b) List causes for the failure of voltage build up in D.C. generator. 4 3. (a) Explain speed control of shunt motor by field control method with the help of a neat circuit arrangement. 6 (b) Explain necessity of starter for D.C. motor. 4 4. (a) Explain external characteristics of D.C. shunt generator. 5 (i) Shunt generator 5 5. (a) Draw the vector diagrams of loaded alternator at different power factors such as (i) UPF (ii) Lag (iii) Lead (b) State the conditions for parallel operation of alternators. 5 6. (a) Explain the effects of armature reaction on terminal volume of alternator. 5 7. (a) Explain emf method of finding voltage regulation for an alternator. 6 (b) Explain effect of un-equal voltage on load sharing of alternators connected in parallel. 6 (c) Explain parallel operation of 3-phase alternators using synchroscope method. 6 (d) Define voltage regulation and list different methods to find regulation of alternators. 6 (e) Explain static excitation system. 6 (b) Explain construction and working of permanent magnet stepper motor. 5 5 (a) Explain construction and working of permanent magnet stepper motor. 5 (b) Explain construction and working of permanent magnet stepper motor. 5 (c) Explain construction and working of permanent magnet stepper motor. 5 (d) Explain construction and working of permanent magnet stepper motor. 5 (e) Explain construction and working of permanent magnet stepper motor. 5	l. (a	A 4 pole lap wound D.C. shunt generator has a useful flux/pole of 0.07 WI The armature winding consists of 220 turns, each of 0.04 Ω resistance Calculate the terminal voltage when running at 900 rpm, if armature current 50 A.	e.
critical resistance. (b) List causes for the failure of voltage build up in D.C. generator. 4 3. (a) Explain speed control of shunt motor by field control method with the help of a neat circuit arrangement. (b) Explain necessity of starter for D.C. motor. 4. (a) Explain external characteristics of D.C. shunt generator. (b) List the applications of: (i) Shunt generator (ii) Series generator 5. (a) Draw the vector diagrams of loaded alternator at different power factors such as (i) UPF (ii) Lag (iii) Lead (b) State the conditions for parallel operation of alternators. 6. (a) Explain the effects of armature reaction on terminal voltage of alternator. (b) Explain construction of non-salient pole rotor. 7. (a) Explain emf method of finding voltage regulation for an alternator. (b) Explain effect of un-equal voltage on load sharing of alternators connected in parallel. 8. (a) Explain parallel operation of 3-phase alternators using synchroscope method. (b) Define voltage regulation and list different methods to find regulation of alternators. 9. (a) Explain static excitation system. (b) Explain necessity of cooling of alternator. 5 4 10. (a) Explain construction and working of permanent magnet stepper motor. 5	(b		2+2
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