

Reg. No.:	-81					100

## Question Paper Code: 42439

## B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018 Third Semester Electronics and Communication Engineering EC 2201 – ELECTRICAL ENGINEERING (Regulations 2008)

Time: Three Hours

Maximum: 100 Marks

Answer ALL questions

PART - A

 $(10\times2=20 \text{ Marks})$ 

- 1. Define Critical Resistance.
- 2. Why DC series motors should never be started on no load?
- 3. At what load condition is the transformer operate at its maximum efficiency?
- 4. What is the purpose of performing short-circuit test on a transformer?
- 5. How can the direction of rotation of a three phase Induction Motor be reversed?
- 6. What are the different methods of speed control of 3φ squirrel cage induction motor?
  - 7. Name the types of Alternators based on their rotor construction.
  - 8. Define Hysteresis motor.
  - 9. Write the voltage levels at which the electric power is generated at the power station.
- 10. What are the limitations of HVDC systems?

## PART – B

(5×16=80 Marks)

11.	a)	i)	Derive the EMF equation of DC machines.	(8)
		ii)	Explain brake test with connection diagram and give its merits and demerits.	(8)
				(0)
	b)	:1	EC 2201 - FURCTRICAL RMON EREDMG	
	b)	1)	Explain the load characteristics of compound generators with neat sketch.	(8)
		in in		(0)
		11)	Derive from the first principles an expression for the torque developed in DC motor.	(8)
			end resep July rewards	(0)
12.	a)	i)	Derive the EMF equation of transformer.	(8)
	rah	ii)	A 100 KVA, 606 KV/415 V single phase transformer has an effective impedance of $(3+j8)\Omega$ referred to HV side. Estimate the full load voltage regulation at	
			i) 0.8 pf lagging and	(4)
			ii) 0.8 pf leading.	(4)
			(OR)	
	b)	i)	Explain the open circuit and short circuit test on transformer.	(12)
			Write the advantages of transformer tests.	(4)
13.			plain the principle, construction and operation of three phase induction	
		mo	otor. For any as tagatagas and to her hous being a far about one to enable addition to the form to the	<b>(16)</b>
	-		(OR)	
	b)	i)	The power input to the rotor of a 440 V, 50 Hz, 6 pole, $3\phi$ induction motor is 80 kW. The rotor electromotive force is observed to make 100 complete alternations per minute. Calculate:	
			, m	1½)
			1 Nimi November 1 and 1	1½)
			c) Mechanical power developed (1	1½)
			d) Rotor copper loss per phase	1½)
			e) Rotor resistance per phase if the rotor current is 65A.	(2)



		ii)	<ul> <li>A) Why single phase induction motors are not self starting?</li> <li>B) What are the types of single phase induction motor based on the starting methods used?</li> <li>C) Draw the Torque-slip characteristics of 3\$\phi\$ Induction Motor.</li> </ul>	
			D) What are the advantages of 3\phi Induction Motor. (4×2)	=8)
4.	a)	i)	Explain the MMF method of synchronous generator.	(8)
		ii)	Derive the EMF equation of alternator.	(8)
			(OR)	
	b)	i)	Explain the construction, operation, characteristic and applications of hysteresis motors.	(12)
		ii)	Define step angle and resolution.	(4)
5.	a)	i)	Compare HVDC and EHVAC systems.	(8)
		ii)	What are the characteristics of insulators? Explain suspension type insulator.	(8)
			(OR)	
	h)	Ex	mlain the structure of a typical electric nower systems	(16)

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	ii) Dolino grop gruph and republika.
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n logici (8)	ii) What are the characteristics of impulators ? Explain suspension institutors