



AEMCMJ 2013-14

FOR EVALUATOR'S USE ONLY

Sub. Code : **57**

Optional Paper

Electrical Engineering : Paper-I

Time : 3 Hours / Maximum Marks : 200 / Total Pages : 32

Evaluation Table												(For Evaluator's Use Only)	
PART-A				PART-B				PART-C				Grand Total	
QN	E-1	E-2	AC	QN	E-1	E-2	AC	QN	E-1	E-2	AC	PART-A	
1				21				33				PART-B	
2				22				34				PART-C	
3				23				35				Total	
4				24				36				(-) Marks	
5				25				37				Final Total	
6				26				38				Marks in Words	
7				27				39				Remarks of Evaluator/Chief Evaluator	
8				28									
9				29									
10				30									
11				31									
12				32									
13													
14													
15												Remarks of Scrutiniser	
16													
17													
18													
19													
20													
Total													
Evalu ator's Sign													



BLANK PAGE

PART - A

Marks : 40

Note : Attempt all the twenty questions. Each question carries 2 marks. Answer should not exceed 15 words.

1 What type of motor is used in ceiling fans ?

2 What is piezoelectric effect ?

3 What is the principle of superposition ?

4 Define Potential and explain potential difference.

5 What do you understand by the term CORONA ?

6 What is the basic difference between circuit breaker and relay ?

7 What is the function of a starter in a 3- ϕ Induction Motor ?

8 Three phase induction motor is called a generalized transformer, why ?

9 Why the Core flux in a transformer is almost independent of load current ?

10 Write expression for Coulomb's law and define electric field intensity.

11 What do you understand by passive filters ?

12 Define %-ge slip in an Induction motor.



13 What are energy storing elements in an electrical circuit ? Also give the medium of storage.

14 Write the Gauss's law in differential form.

15 Give Biot - Savart law in mathematical form.



16 Which type of charge is carried by a donor atom in an N-type of semiconductor at normal temperature ?

17 What material is preferred for making core of a transformer ?

18 Name, unsymmetrical faults in a power system.

19 Classify Hydel power plant on the basis of Head.

20 What are the disadvantages of poor power factor ?

PART – B

Marks : 60

Note : Attempt all the twelve questions. Each question carries 5 marks. Answer should not exceed 50 words.

21 When an electron jumps from a higher level to lower level, what is the form of energy released ?

22 If in a circuit two impedances viz. $z_1 = 10 + j15 \Omega$ and $z_2 = 6 - j8 \Omega$ are connected in parallel across a source and draws a current of 15 A. What would be the power consumed by each branch ?

23 What information is provided by open circuit and short circuit tests of a transformer?

24 Give the energy band description of a Conductor, Semiconductor and Insulator.

- 25 Derive the expression for maximum torque in a 3 - phase induction motor and prove that maximum torque is independent of the rotor circuit resistance.

- 26 What do you understand by the term hysteresis loss ? Draw and explain the hysteresis loop for a magnetic material.

- 27 Give Torque-slip characteristic of a 3-phase Induction motor and discuss its various zones of operation.

- 28 For the circuit given in Fig. 2, find the Thevenin's equivalent :

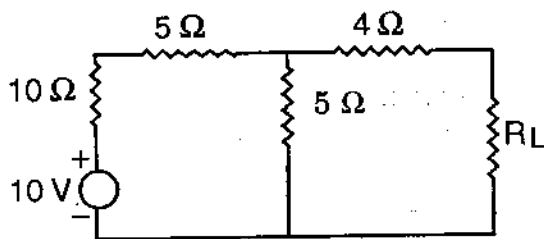


Fig. 2

29 Obtain an equivalent circuit for a single phase transformer on load. Also give its phasor diagram.

30 What are the properties of an extrinsic semiconductor ?



31 What are the advantages of HVDC ?

32 List various methods of starting a single phase induction motor and the application of single phase induction motor.

Note : Attempt any 5 questions. Each question carries 20 marks. Answer should not exceed 200 words.

33 What are pumped storage plants ? How and when are they used ?

Lined writing area with 25 horizontal lines.

34 Why is earthing necessary in power systems ? Give different neutral earthing methods.

A series of horizontal lines for writing, approximately 25 lines in total, spanning the width of the page.



35 What are the types of 3- ϕ Induction motor ? Explain its working along with characteristics and applications. Also draw its equivalent circuit.

Blank lined area for writing the answer to question 35.

Blank lined page for notes or text.

Table with multiple rows and columns, mostly blank or containing faint text.

37 What type of test is performed to determine Cu-losses in a transformer ? Explain the test on a 1- ϕ transformer.

Lined writing area with 25 horizontal lines.

- 38 Draw the block diagram of the layout of a thermal power plant. Give the criteria of selection of site for such a plant.



Lined writing area with 25 horizontal lines.

Blank lined page for notes or calculations.



SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK





SPACE FOR ROUGH WORK



57_I]

32

