

# Certificate

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Class: 6th Sem

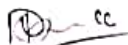
Roll No: L21030002003

Exam No:

Institution SCITM

This is certified to be the bonafide work of the student in the  
EVP Laboratory during the academic  
year 2022/2023

No. of practicals certified 7 out of 10 in the  
subject of EVP

  
Teacher In-charge

.....  
Examiner's Signature

.....  
Principal

Date: ..... 2023

Institution Rubber Stamp

(N.B. The candidate is expected to retain his/her journal till he/she passes in the subject.)

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BY H4 (SIVA MEENAKSHI) 48

## HOW TO USE LOGARITHMIC TABLES

Practical calculations need to be done by using Logarithmic tables. In order to do so, here are some important formulae:

$$\log (m^n) = n \log (m)$$
$$\log (m \times n) = \log (m) + \log (n)$$
$$\log (m/n) = \log (m) - \log (n)$$

All calculations can be divided into two separate exercises and a thorough understanding of the two parts will facilitate calculations with log tables. The parts are:

- (a) To find the Logarithm of a number
- (b) To find the Antilogarithm of a number

(a) The logarithm of any number contains two parts. One before the decimal is called Characteristic and other - the decimal term is called the Mantissa. It is only the mantissa which we get to know from the Logarithmic table. The characteristic is found by the rule that it is always less by 1 from the number of digits before the decimal of any number. Thus in 980, the number of digits are 3 and hence the characteristic is 2. In 0.486, the number of digits before decimal is 0 and hence the characteristic is -1 written as  $\bar{1}$ . As you see the characteristic can be negative in certain cases but the mantissa always remains positive.

To find the logarithms of 3.14 - the most common factor in this calculation, its characteristic is 0. Now for the mantissa - Put your finger on the first column of the logarithm table at 31 and then note the number in the fifth column of the row of 31. Why are we looking at the fifth column? Because that is the one with the digit 4 on top. Therefore  $\log 3.14 = 0.4969$

(b) Antilogarithm is the inverse of logarithm i.e. we are now to find the number whose logarithm is given. For the decimal part, the procedure is exactly as for the mantissa but by using the Antilogarithm table. The digits before decimal tell us about the position of decimal in the number. In this case, number of digits before the decimal will be more by 1 than the digit of the characteristic. Therefore for the antilog for 0.4969, look under row 49, and the column with the digit 6 on top and add the mean difference under the column 9. Place the decimal after 1 place. That gives you 3.14!

AIM OF THE EXPERIMENT

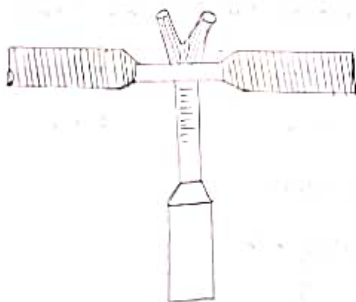
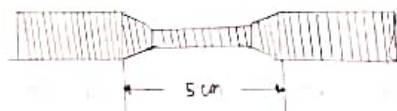
Identification of single core (SC) twin core (TC) Three core (3C) four core (4C) copper and aluminium PVC VIR & weather proof (WP) wire and Preface Britannia T joint and marcel joint

MATERIAL REQUIRED

Sl. No	Name of the material	Specification	Quantity
1	PVC wire	7/22SWG. 17cm	2 piece
2	Sand paper		10 cm
3	combinational pliers	15cm toparia	1
4	side cutting pliers	15cm toparia	1
5	steel rule	12 inch	1
6	Try square		1
7	Electrical rife		1

Single core cable are made up of a single conductor covered by a PVC insulation they are mainly used in power and lighting circuits both domestic and commercial application.

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Date \_\_\_\_\_

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They are also used in the internal wiring of appliance suitable for installation in conduits and trunking. Single core cables are a good conductor of electricity as well as heat. They cannot or burn easily.

A single core wire is a cylindrical strand of metal. In single core wire, there is only a single core of metal. It is present mostly copper or aluminium.

A range of flat strip wire twin core cables suitable for automotive use.

Thin wall low voltage cable suitable for use in automotive and marine application consists of conductor of ~~stranded~~ copper wire which are hard grade PVC insulated compared to stranded PVC cable. The reduced insulation thickness and higher current capacity greatly reduces weight and volume. For these reasons, this cable is today used in preference to stranded PVC cable by vehicle manufacturers.

These cables are used generally for a perfect balanced 3 phase system where the current on the 3 live wires of a 3 phase are equal and at an exact 120 degree phase angle. Thus the system is said to be balanced. The

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3 phase loads are identical in all respects with or need of a neutral conductor

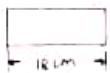
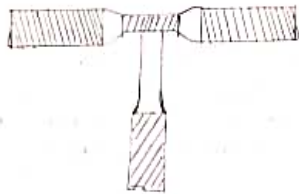
When there is reverse out of balance condition the amount of fault current will raise to a very high level generally in the case of motor loads the neutral only carries the current due to imbalance between the phase

These currents do not cancel at the star point of a three phase system as do normal frequency currents but add up so that the neutral carries very heavy third harmonic current

Procedure to prepare T joint in stranded PVC

1. Remove the insulation of main wire of the required length of nearly 5cm
2. Remove the insulation of branch wire of length nearly 7.5cm
3. Slightly untwisted the stranded wire of PVC cable leaving 2cm from the cable
4. Clean the wire with sand paper
5. Separate the strands on each side and centre one will be divided to form as base

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A STRANDED  
PVC cable



3 Remnants of insulation

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6. Fit the main wire in between the equally divided strands of the branch cable so that the middle part of the main wire will be situated at the centre point of the main wire in between the 2 equally divided branch wire.

7. Fold the joint normally in conductor.

8. Twist the strands with the help of the Pliers.

9. The finished joint is shown in the given figure.

#### Procedure to prepare a married joint

1. Remove the insulation of the PVC wire of length 1.5cm from in of both wire.

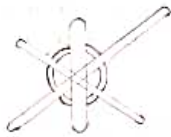
2. Clean the strands with sand paper.

3. Separately untwist the strands of the PVC cable wire.

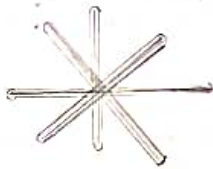
4. The strands of both the PVC wire was untwisted in such a way that it looks like an equally spaced star.

5. Then the 2 equally spaced stars are brought together and again a equally spaced star is formed.

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C SPREADING OF STRANDS



D Insertion of two stranded PVC cable in star pattern exp in system distribute load + system inter wiring advantage and disadvantage

6. Then the 2 PVC wire interlocked between the equally spaced stars in such a way that all the strands of 1 PVC wire is twisted in one direction and the other strands of other PVC wire is twisted in the other opposite direction

7. Then the finished joint is shown in the figure

CONCLUSION

We identified of single core (SC) twin core (TC) three core (3C) four cores copper and aluminium PVC, VIR and water proof (WP) wire Prepare Britania joint and married joint

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⑩  
10.3.23

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AIM of THE EXPERIMENT

Find out faults of DC generator repair and test it.

THEORY :-

An electrical machine is a mechanical device which converts mechanical energy into electrical energy. The energy conversion is based on the principle of production of dynamically induced e.m.f. A production machine consists of the following essential parts.

PARTS of a DC MACHINE

1. Pole core or pole shoe
2. Magnetic frame or yoke
3. Pole piece or field coil
4. Armature core
5. Armature winding or conductor
6. Commutator
7. Brushes

GENERATOR

A generator fails to build up voltage

Sl. No.	Reason	Remedies
1	Direction of rotation reverse	change the direction of rotation (rev)
2	No residual in armature	
3	open circuits in armature	
4	open circuit in field winding	check the field winding circuits
5	short circuit in field winding	
6	Brushes contact not proper with commutator	Keep the brushes at proper angle and contact should be proper

#### B. generator having heavy sparking at commutator

Sl. No.	Reason	Remedies
1	Brushes are not at M.N.A. position	set the brushes at M.N.A. position as per generator direction of rotation
2	not proper spring tension on brushes carbon arcing on	check and set the spring tension
3	carbon arcing on the surface of commutator	clean the commutator with fine sand paper
4	commutator surface is not proper	check the armature winding and remove the faults

4	cross in armature winding	check the direction of inter poles
6	wrong connection of inter pole	it should be the same in the case of generator and opposite case motor with respect to main poles
7	mica is not properly placed	check the mica surface between to segments side in surface properly
8	Brushes are not of proper size and grade	check the size and grade of brushes

c generator produces more heat and sound

S. No	Reason	Remedies
1	defective bearing	check and lubricate the bearings or replace the bearing <del>reduce the load</del>
2	more load on armature	Reduce the load
3	improper fitting on the end covers	find the bearing in covers properly and tight the screws
4	more sparking	check the reason explained in the above table
5	non properly fixed	check the function for not bolts

Finally to minimize failures, regular preventative maintenance inspection and tests should be carried out. Some power supply circuiting should include overload protection to remove transient voltage in Diodes.

### CONCLUSION :-

Identified the different faults of DC generator and its remedies.

### DISCUSSION QUESTION

1. What is DC generator?
2. What are the effects of armature reaction?
3. Write down main parts of DC generator.
4. Why the armature is commutated?
5. What are types of DC generator?

~~10~~ 16  
15-7-23

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