नाम
Name : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

अनुक्रमांक
Roll No : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

पाठ्यक्रम
Course : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

दिनांक
Date : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

प्राप्तांक
Marks Awarded :

अनुदेशक के आद्यक्षर
Instructor's Initial :

Study of FM Block instrument for faults and external wiring

I. LINE FAULT

Keep the instruments at Line Closed & Interchange the Line Terminal. No: 25 & 26 at Stn.A.

Press PB1 at Stn.A and observe the following

a) Relay energized at Stn.B **BLR/NR**

b) Whether the bell beat is heard at Stn.B **Yes/No**

Press PB1 & PB2 at Stn.A and observe the following

c) Relay energized at Stn.A **PBPR/TRSR**

d) Relay energized at Stn.B when Block handle at 'Y' position **BLR/NR/CR1/CR2**

e) Whether the bell beat is heard at Stn.B **Yes/No**

f) Whether the frequency modulate code is transmitted from Stn.A? **Yes/No**

g) Whether Block handle at Stn.B can be turned to TGT or TCF position. **Yes/No**

Inference:

When Line Terminal connections are interchanged at one end and PB1 & PB2 are pressed the Block handle is not released at other end since the relay _____is energized instead of relay ____, which is required for releasing the block handle along with the coding relay CR1 & CR2.

II. BATTERY FAULT

Keep the instruments at Line Closed condition. Interchange the Line battery T.No: 2 & 3 at Station 'A'

Press PB1 at 'A' and observe the following

a) Relay energized at 'A' **BLR/NR**

b) Relay energized at 'B' **BLR/NR**

Press PB1 & PB2 at A and observe the following

c) Relay energized at 'A' **PBPR/TRSR**

d) Relay energized at 'B' when Block handle at 'Y' position **BLR/NR/CR1/CR2**

e) Whether the bell beat is heard at 'B'

f) Whether the frequency modulated code is transmitted from 'A'? **Yes/No**

g) Whether Block handle at 'B' can be turned to TGT or TCF position at 'B' **Yes/No**

Inference

1) When the Battery terminals are interchanged and PB1 is pressed _____ relay tries to pickup **(BLR, NR)**

2) Block handle is not released at 'B' when PB1 & PB2 are pressed at 'A' since the ___ is energised at 'B' instead of _____ which is required for releasing the Block handle

(CR1, NR, BLR)

III. Answer the following questions

1) Why different carrier frequencies are adopted?

2) How many Line wires are required to connect a pair of Instruments?

3) What is the line current required to be maintained?

4) Can this instrument be used in RE area?

IV. Check the voltages of Transmitter and Receiver at different terminals.

Tx Transmitter (Approximately)

+0 to 24V U/REG	+0 to 12 REG	65Hz	85Hz	Carrier frequency	Output
		F2	F1	2700 Hz Or 1800 Hz	------V(AC)

Rx Receiver (Approximately)

+0 to 24 U/REG	+0 to 12 REG		DEN	CR1	CR2
		-------V(AC)	-------(AC)	------V (DC)	- -----V (DC)

S.No:	Description of Battery	Type of Cells	Voltage required	Relays energized
1	Line			
2	Local			
3	Location			HSR / ASR

No. of Relays in Instrument = External Relays =

V. Note the T. No: to which the following Circuits are connected & Check the Voltages.

Any one i.e., +ve or –ve is disconnected from the following Terminals.

S.No:	Circuit	T.No	Voltage	Observation
1)	Line Battery	+ - 2 - 3	24+ Line Drop	
2)	Local Battery	48-21	24V	
3)	Lines	25 -26		
4)	Telephone Battery	63 – 23	24V	
5)	ITPR	15 – 55	24V	
6)	1R	16 – 56	24V	
7)	2R	47 – 21	24V	
8)	ASR	43 – 60	12V	
9)	HSR	44 - 60	12V	

VI. Draw the external circuits for familiarizing the wiring of Block Instruments:

a) 1TPR:

b) 1R:

c) TAR:

d) ASR:

e) HSR:

Signature of Trainee