**Mar Thoma Residential School ,Thiruvalla**

**STD XII PHYSICS Time: 30minutes**

**Mark: 20**

**PART 1**

**Answer all questions**

**Q 1 .** State Ohm’s law . Write the vector equation (2)

**Q 2**. Name the device used to compare the emf of two cells.

State the principle of the above named device (2)

**Q 3**. Define temperature coefficient of resistance of the material

of a conductor. (2)

**Q4.** a) Write down the relationship between current flowing through a conductor and drift velocity of free electrons in the wire . (1)

b)When a current I flows through a wire of radius r , the free electrons drift with a velocity Vd . calculate the drift velocity of the free electrons through the wire of the same material having double the radius ,when the same current flows through it . (1)

**Q5.** A 10m long potentiometer wire carries a steady current . A standard cell of emf 1.8V is balanced against 256cm of the wire . find the potential gradient . Hence define it. (2)

**Q6**. Three cells having emf’s E1 , E2 and E3 , internal resistances r1 , r2 and r3 respectively are connected in series across an external resistance R. Draw a circuit showing this and derive the expression for total current in the circuit .(3)

**Q7.** State Kirchoff’s laws . What are the conservations obeyed. (2)

**Q8.** With the help of a neat labelled diagram , derive the condition for balance in wheatstone’s bridge (3)

**Q9**. Maximum power dissipated in a 10,000 ohm resistor is 1 watt. What is the maximum current in it. (2)

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