THIRUVANANTHAPURAM EDUCATIONAL DISTRICT

PHYSICS

STD: X ANSWER KEY

1) Chemical Effect (1)

2) Temporary magnet (1)

3) Electrical energy converted to heat energy (1)

4. watt (1)

5) North pole (1)

6. R = r/n = 2/10 = 0.2 Ω (2)

7. a. Alloy of Tin and Lead (1)

b. Fuse wire has a relatively low melting point. (1)

8. Low power consumption

High efficiency (2)

High longevity

Write any two

9. a. Tungston (2)

b. Vaporisation can be reduced

10. A – Force (2)

C – Magnetic Field

11. a. $H = I^2Rt = 0.2 \times 0.2 \times 100 \times 2 \times 60 = 480$ J (2)

b. H = 0.4 x0.4 x 100 x 2 x 60 = 1920 J. (1)

When current is doubled, the heat is increased by four times

12) a) Electrical energy converted to heat energy (1)

b) Heating coil (1)

c) Nichrome (1)

13) Increase the intensity of current (1)

Increase number of turns of solenoid (1)

Increase the area of cross section of the wire (1)

14. a) The magnetic needle get deflected. (2)

A magnetic field is developed around a current carrying conductor. The magnetic needle is deflected as a result of the mutual action of this magnetic field and that around the magnetic needle.

b) Right Hand Thumb Rule / Right Hand Screw (1)

15) a) P = VI

I = P/V = 500/200 = 2.5 A (1)

b) 2.5 A (1)

c) R = V/I = 200/2.5 = 80 Ω (1)

16.b. A high potential difference is applied to the gas molecules.

d. Gas molecules get excited (4)

a. Excited atoms come back to their original state for attaining stability.

c. Radiated as light

17. Excess electric current in a circuit is the cause of many problems.

a. Short circuit and overloading (4)

b. * The ends of the fuse wire must be connected firmly at appropriate points.

* The fuse wire should not project out of the carrier base.

18. a. Series. (4x1=4)

b. 300 Ω (R = R 1 +R 2)

c. 200 Ω (When resistors are connected in series more voltage is dropped across high resistor)

d. 200 Ω (When resistors are connected in series more heat is generated in high resistor)

19. a. Intensity of current, Resistance of the conducter and the time of flow of current (4x1=4)

b. Joule's Law

c. The heat generated (H) in a current carrying conductor is directly proportional to the product of the square of the current (I) in the conductor, the resistance of the conductor (R) and the time (t) of flow of current.

d. $H = I^2Rt$

20.

Series Connection	Parallel Connection
Same amount of current passes through all the resistors	When number of resistors increases effective resistance decreases.
Applied voltage will be split among the resistors.	Potential difference is same for all the resistors.