ANSWER KEY
PHYSICS
E-1006

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STD X FIRST TERMINAL EXAMINATION 2022

1.Nichrome

2.b Direction of Current

3.Series

4. 500 W

5. Circuit.(a)

6. An electrical fuse is a safety device that operates to provide protection against the overflow of current in an electrical circuit. An important component of an electrical fuse is a metal wire or strip that melts when excess current flows through it..

7. $1/R = 1/R_1 + 1/R_2 + 1/R_3 =$

   $1/2 + 1/12 + 1/4 = 10/12$ $1/R = 10/12$
   $R = 12/10 = 1.2\ \Omega$

8 a. Into the magnet OR towards P
   b. Direction of current and direction of magnetic field.

9.2 resistors.

current,I = 4A,Voltage V = 220
Then R = 220/4 = 55Ω
If two 110 Ω resistors are connected in parallel, then the effective resistance will be 55 Ω

10

Series	Parallel
a	b
d	c

11

A	B	C
LED	low power	Heat sink
Incandescent lamp	Glowing with heat	Filament
Discharge lamp	Mercury	Electrodes

12. a.

I = P/V = 115/230 = 0.5 A

b. Quantity of charge Q = I x t = 0.5 x 10x60 = 300 C

13.a. Clockwise

b. The Magnetic field formed by the current carrying conductor which influence the magnetic field around the magnetic needle.

c.Change the direction of current or place the needle above the conductor.

14.Electric power means the rate of work done by an electric appliance or consumption of electricity in one second.

b. P=800x1/4=200W

15.a. Permanent magnet./ Horse shoe magnet / U shaped magnet

b. Fleming's Left Hand Rule

c. Fleming's Left Hand Rule states that if we arrange our thumb, forefinger and middle finger of the left hand in mutually perpendicular to each other, if the forefinger points towards the direction of the magnetic field and the middle finger points towards the direction current then the thumb points towards the direction of the force or motion of conductor.

16.a Series

b.R= 4+2 =6 Ω

c. I = V/R

= 6/6

=1 A,

potential difference across 4 Ω = IR = 1x4 = 4 V.

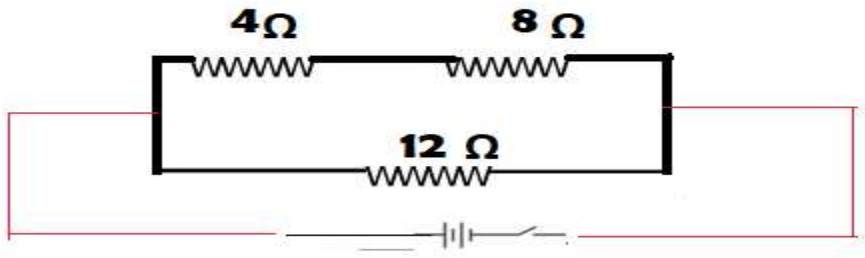
17. a. 1/R = 1/4 +1/8 + 1/12

= (6+3+2)/24 = 11/24R

= 24/11

= 2.18 Ω

b.



18. a.Moving coil loudspeaker

b.Motor principle

c. An electric motor (dc motor) works on the principle that when an electric current is passed through a conductor placed normally in a magnetic field. a force acts on the conductor as a result of which the conductor begins to move and mechanical energy is obtained.

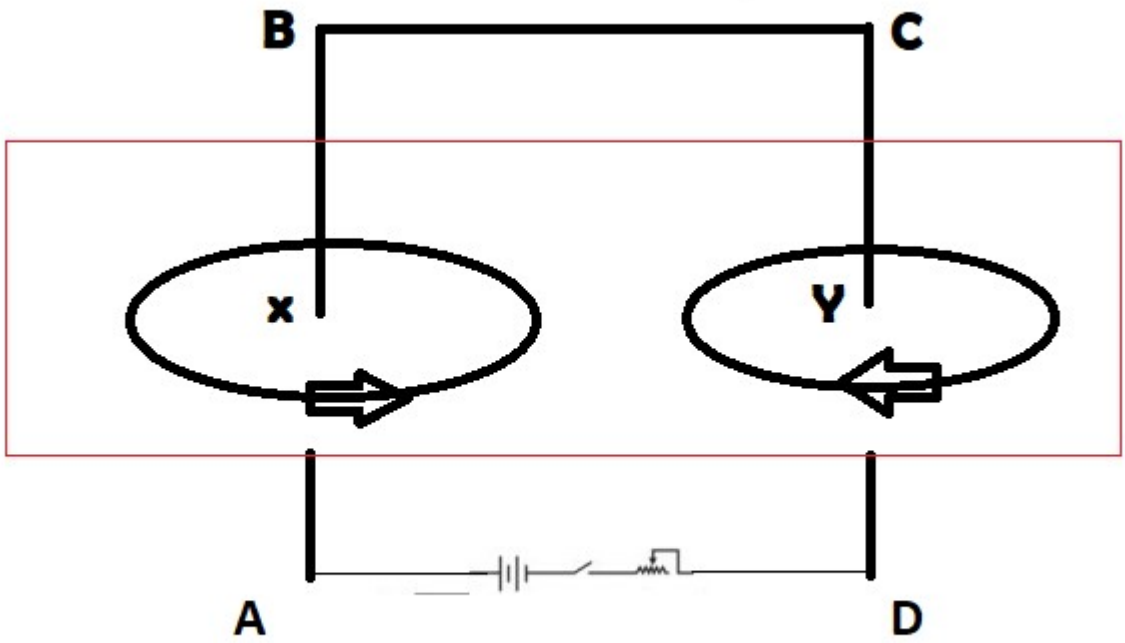
19.a Electrical energy is converted to heat energy

b.Joule's law

c. c. $H = V^2t / R$ V=230V , R= 1000 Ω t=3hr =10800s

$= (230^2 \times 10800)/1000 = 571320$ J

20. a.



b. Right Hand Thumb Rule- Imagine you are holding a current carrying conductor with your right hand , if thumb of the right hand points along direction of current, then the remaining curled , fingers of same hand gives the direction of the magnetic field due to the current.