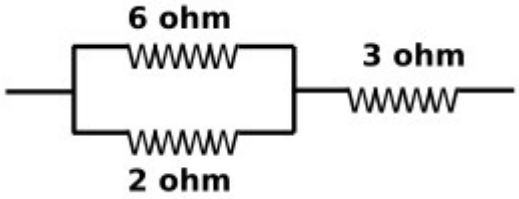
ANSWER KEY

SECOND TERMINAL EXAMINATION: 2019-20
PHYSICS

1. B – Watt hour metre D - MCB
2. 11 kV
3. 2
4. Fig.3
5. Fig.B
6. a. Concave mirror. b. For concentrating solar radiation into the solar cooker.(Solar concentrator)
   c. Convex mirror d. Rear view mirror
7. a. $1/f = 1/v + 1/u$
   b. u = -40 cm f = -80 cm
   $1/v = 1/f – 1/u = 1/-80 – 1/-40 = 1/-80 + 1/40 = - 40/ -80x\ 40 = 1/80$
   v = 80 cm
8. Never handle or operate electrical appliance when the hands are wet.
   Insert or withdraw the plug only after switching off.
   Do not operate high power devices using ordinary socket.
   Ensure that main switch and ELCB are switched off when maintenance work is being carried out.
9. 1.Total internal reflection – Endoscope
   2. Rear view mirror – Convex mirror.
10. a. For increasing longevity of lamp by avoiding oxidation and evapouration of filament.
    b. i. Ability to release white light when it is being heated.
    ii. High melting point/high resistivity.
11. Magnetic flux will be induced in both the circuit. But variable magnetic flux will be induced only in the circuit.2
    b. In circuit.2. It is called self induction.
    The change in magnetic flux due to the flow of an AC (Or a variable current) in a solenoid will generate a back emf in the same sole*noid in the direction opposite to that applied to it. This phenomenon is known as self induction*.
12. a. $R = 2+3+6 = 11\Omega$
    b.



13. a.A – North pole B – South pole.
    b. Permanent magnet: Poles cannot be interchanged, Strength can’t be varied.
    Electromagnet: Poles can be changed by changing direction of current, Strength can be varied.

14. a. Angle of incidence = 90- 30 = 60°
b.i.The angle of incidence and angle of reflection are equal.
ii. The incident ray, reflected ray and normal to the reflecting surface at the point of incidence are in the same plane.

15. a. Glass
b. $n_{gw} = n_g/n_w = (c/v_g)/(c/v_w) = v_w/v_g = 2.25x10^8/2x10^8 = 2.25/2 = 1.125$

16. a. P – DC Generator Q – DC motor.
b. In DC generator, split ring helps to make available direct current (DC) in the external circuit. But in a DC motor, the split ring helps to rotate the armature in the same direction during every half rotation.

17. a. Step down transformer.
b. Ip = 0.1 A Is = 10A Vp = 1100 V
We have Vs/Vp = Ip/Is
Vs/1100 = 0.1/10
Or Vs = 1100x0.1/10 = 11V
c. Output power P_{out} = VsxIs =11x10 = 110W

18. a. u = -20 cm v = -30 cm
b. i.Magnification is the ratio of size of the image to the size of the object.
Magnification,m = -v/u = -(-30)/-20 = -3/2 = -1.5
c. Height of the image = magnification x height of the object = 1.5 x 4.5 = 6.75 cm

19. a. 42°
b. Fig.R
c. When light travels from an optically denser medium to a less denser medium, if the angle of incidence exceeds critical angle, the light will be reflected back to the same medium.
In the figure R, light travels from glass to water. Here the angle of incidence is 45, which is greater than critical angle of glass. So total internal reflection takes place.

20. a.Due to electromagnetic induction.
b.In experiments I and II
c. i. Increase speed of motion of the magnet.
ii. Increase the number of turns of the solenoid.
iii. Use powerful magnet.