

Graded Assignment  
Summer vacation- 2020  
Class-XII(Physics)

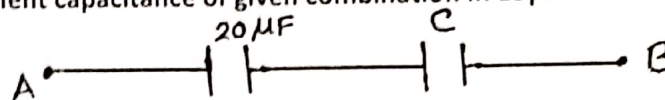
(1)

### Level –A

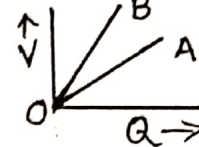
1. Write the S.I. unit of electric flux?
2. Which physical quantity has the unit N/C? It is scalar or vector?
3. Find the electric field between two metal plates 3mm apart connected to a battery of 12 V.
4. Two point charges  $q_1$  and  $q_2$  are placed close to each other. What is the nature of force between two charges when  $q_1 \cdot q_2 < 0$ ?
5. In a region, the electric field is given by  $\vec{E} = 8\hat{i} + 4\hat{j} + \hat{k}$ . Calculate the flux through the surface  $S = 100\hat{k}$ .

### Level – B

1. Sketch lines of force due to (a)  $q < 0$  (b)  $q_1 \cdot q_2 > 0$ .
2. Find the value of C, if equivalent capacitance of given combination is  $15\mu\text{f}$ .



3. The graph between voltage (V) and charge (Q) of two capacitors A and B is shown. Which of the two capacitors has higher capacitance and why?

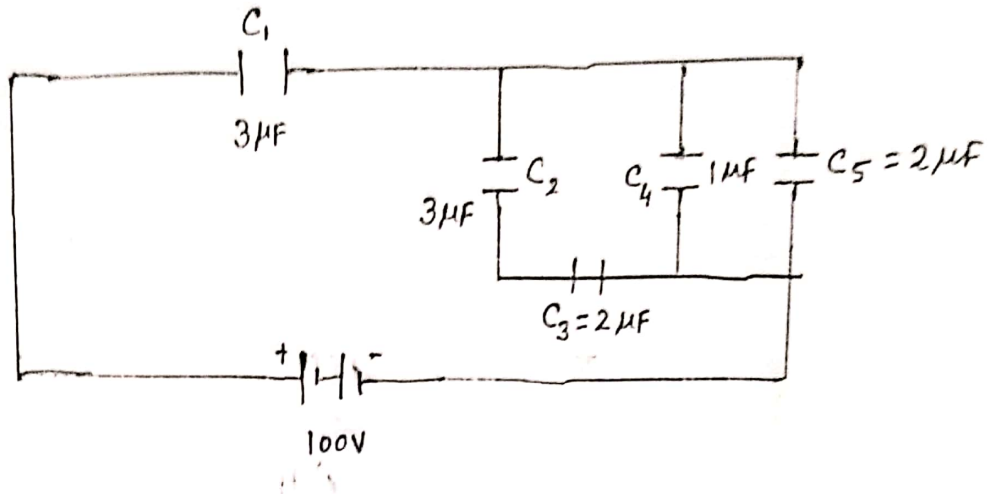


4. Show that no electric field intensity exist inside a hollow charged spherical conductor.
5. The sequence of colour bands marked on a carbon resistor are Red, Green, Blue and Gold. Find resistance and tolerance of the resistor.

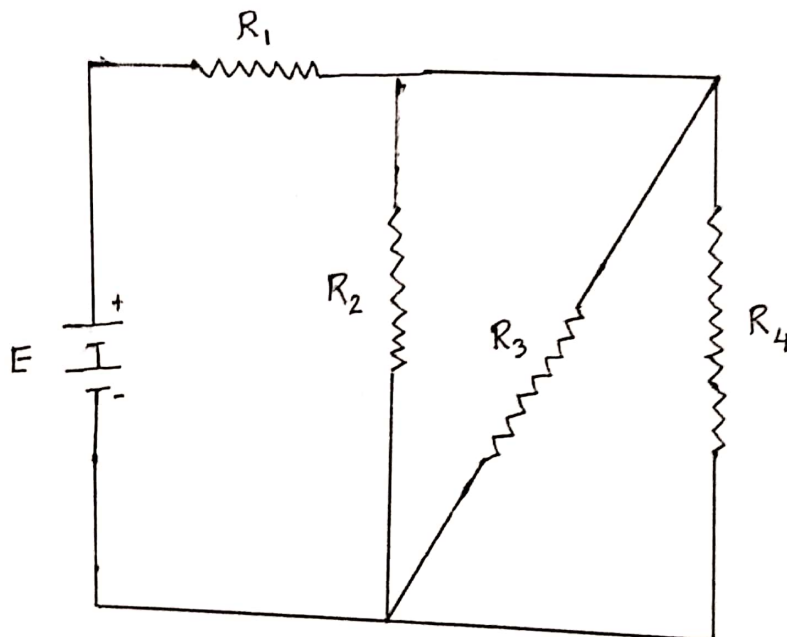
### Level- C

1. Define dielectric Constant (K) in terms of (a) Force (b) Capacitance (c) Electric field
2. Write the expression of Torque experienced by an electric dipole placed in an uniform electric field.
  - i) What is the net force acting on dipole?
  - ii) Write two pairs of perpendicular vectors?
  - iii) When the torque will be maximum and minimum?
3. Two point charge of  $10 \times 10^{-8}\text{C}$  and  $-4 \times 10^{-8}\text{C}$  are separated by a distance of 70 cm in air. Find - i) at what distance from charge  $10 \times 10^{-8}\text{C}$  would the electric potential is zero.
  - ii) Calculate the potential energy of the system.

4. Find the equivalent capacitance, total charge and energy stored in the following network. Also find the charge on capacitor  $C_1$



5. In fig. shown  $R_1 = 100\Omega$ ,  $R_2 = R_3 = 50\Omega$ ,  $R_4 = 75\Omega$ . The emf of battery is  $E = 4.75\text{ V}$ . Find the equivalent resistance and current passing through the each resistor.



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**Level – A**

1. Which mirror is called converging mirror?
2. What is the radius of curvature of a plane mirror?
3. The angle of incidence of an incident light is  $60^\circ$ . What is the angle of reflection?
4. The refractive index of water w.r.t. air  $\mu_w = 4/3$ . What is the refractive index of air w.r.t. water ( ${}_w\mu_a$ ) ?
5. Which glass slab displace the ray more, thicker slab or thinner slab?

**Level –B**

- 1- Write the laws of reflection of mirror.
- 2- Write two uses each of (a) Concave mirror (b) convex mirror
- 3- What is magnification (m) in a mirror?  
The magnification (m) of a mirror is  $-ve$ , what is the nature of image formed by it.
- 4- Define focus with diagram in a mirror.
- 5- A ray of light entering from air in a glass slab, what will happen to the (a) refracted ray (b) emergent ray.

**Level –C**

1. How will you distinguish between concave and convex lens  
(a) on basis of touching it (b) on basis of image formation by it.
2. Draw ray diagram for formation of image in a concave mirror, when object is ---  
(a) at infinity (b) at center of curvature (c) at focus (d) between pole and focus.
3. Draw ray diagram for formation of image in a convex lens, when object is ---  
(a) at infinity (b) at  $2f$  (C) at focus (d) between optical center and focus
4. Draw ray diagram when light passes from medium  $\mu_1$  to  $\mu_2$  in following cases  
(i) When  $\mu_1 = \mu_2$  (ii) When  $\mu_1 > \mu_2$  (iii) When  $\mu_1 < \mu_2$ .
- 5- What is the power of a lens? Write its S.I unit.  
The power of a lens is  $+2.5D$ . What kind of lens it is and what is its focal length?

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