

GATITU SECONDARY SCHOOL, P.O. BOX 327 – 01030, GATUNDU.
FORM 3 PHYSICS MID TERM EXAMINATION. TERM 3 2015.

1. Define an electric field.

(1mk)

2. Draw electric field pattern between the following points.

(2mks)

i)

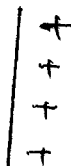


ii)



(2mks)

iii)

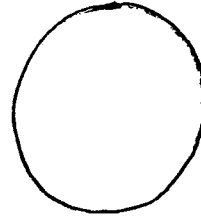
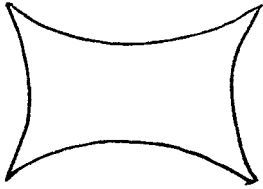


(2mks)

3. State the properties of electric field lines.

(3mks)

4. The following are two conductors charged with equal amount of charge. Show charge distribution on each. When both are positively charged, (4mks)



5. Explain the following, it is dangerous to carry sharp pointed umbrella when it is raining. (2mks)

i) Define capacitance of a capacitor.

(1mk)

ii) Name the factors which affect the capacitance of a capacitor.

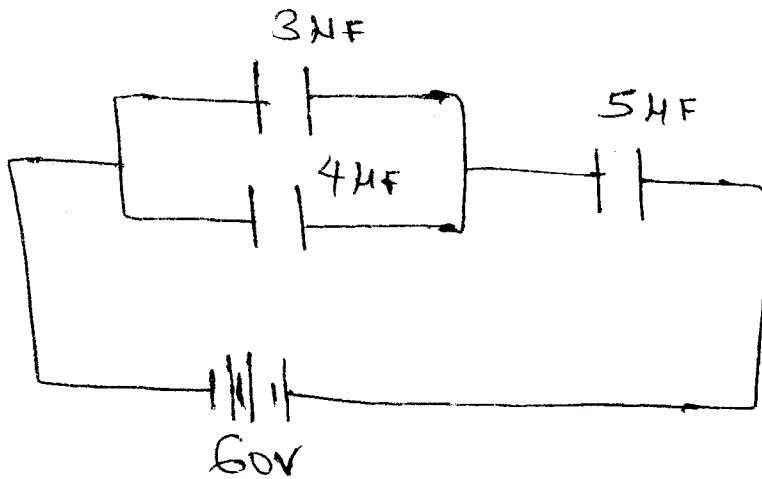
(3mks)

iii) Name three uses of capacitors.

(3mks)

6. Find the separation distance between two plates if the capacitance between them is $4 \times 10^{-12} \text{F}$ and the enclosed area is 2.0cm^2 (Take $\epsilon_0 = 8.85 \times 10^{-12}$). (3mks)

7. Three capacitors $3 \mu\text{F}$, $4 \mu\text{F}$ and $5 \mu\text{F}$ are arranged as shown below.



a) Calculate the effective capacitance in the circuit. (3mks

b) Calculate the total charge. (2mks

c) Calculate the voltage across $5 \mu\text{F}$ capacitor. (2mks

8. A $5 \mu\text{F}$ capacitor is charged to a potential difference of 200V. Find the energy stored in the capacitor. (3mks

9. State the factors which affect heat produced by an electric current. (3mks

10. An iron has a resistance coil of 30Ω and takes a current of 10A. Calculate the heat in kJ developed in 1 minute. (3mks)

11. How many joules of electrical energy are changed to heat when a charge of 5 coulombs passes through a bulb at a potential difference of 12 volts. (3mks)

12. Define power and state its SI Units. (2mks)

13. How much electric energy in joules does a 150 watt lamp convert to heat and light in
a) 2 seconds (4mks)
b) 1 minutes

14. A bulb has a filament of resistance 470Ω . The cables connecting the bulb to a 240V mains have a total resistance of 10Ω . Find the power dissipated by the bulb and the cables. (3mks)

15. A motor powered by a 240V mains supply requires a current of 30A to lift a load of mass 3 tonnes at the rate of 5m per minute. Calculate.

a) the power input (3mks)

b) the power out put (3mks)

c) Efficiency (3mks)

6. Give a reason why fluorescent tubes are preferred to filament bulbs for domestic lighting. (2mks

17. What property do the following electric devices have that make them suitable for their work. (i) Fuse (2mks

ii) Bulb filament (2mks

18. State the main energy changes that take place in
a) a filament bulb (2mks

b) an electric motor (2mks

19. What do you understand by the label 150w, 240 V indicated on an electric bulb (1mk)

b) Two light bulbs are labeled 40W, 240V, and 100W, 240 V.

i) What current does each draw from the main when working normally. (2mks)

ii) Which of the two bulbs is most suitable for security light and why. (2mks)