

Date: 07/07/2024

AVM INSTITUTE

MODEL FIRST MIDTERM EXAMINATION-JULY-2024

12TH STANDARD

PHYSICS

REDUCE, REUSE AND RECYCLE!!

USE ELECTRICITY EFFICIENTLY!!!

Time: 1.5 hours

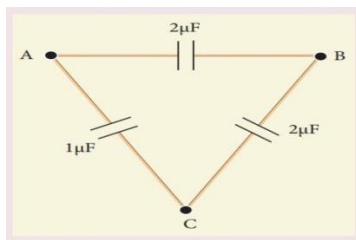
Max Marks: 35

Part-1

5 x 1 = 5

I. Choose the correct answer

- 1) Three capacitors are connected in triangle as shown in the figure. The equivalent capacitance between the points A and C is



- a) $1 \mu\text{F}$ b) $2 \mu\text{F}$ c) $3 \mu\text{F}$ d) $\frac{1}{4} \mu\text{F}$

- 2) If a voltage applied on the capacitor is increased from V to $2V$, choose the correct conclusion
 a) Q remains the same, C is doubled b) Q is doubled, C doubled c) C remains same, Q doubled
 d) Both Q and C remain same
- 3) A toaster operating at $240V$ has a resistance of 60Ω . Its power is
 a) $400W$ b) $2W$ c) $480W$ d) $960W$
- 4) The vertical component of Earth's Magnetic field at a place is equal to the Horizontal component. What is the value of angle of dip at this place?
 a) 30° b) 60° c) 45° d) 90°
- 5) The ratio of magnetic length to geometrical length is
 a) $5/6$ b) $1/6$ c) $3/6$ d) $6/5$

Part-2

ii. Answer any 3 questions (Question no 9 is compulsory)

3 x 2 = 6

- 6) Define Electric dipole. Give the expression for the magnitude of its Electric dipole moment and the direction.
 7) Write a note on superconductors?
 8) Define Magnetic permeability.
 9) Which wire is used as a suspension wire in Moving coil Galvanometer? Give Reason.

Part-3

iii. Answer any 3 questions (Question no 13 is compulsory)

3 x 3 = 9

- 10) What is capacitor? Give its Applications.
 11) State Kirchhoff laws.
 12) Discuss the motion of charged particle in a uniform magnetic field.
 13) Two cells each of $5V$ are connected in series with an 8Ω resistor and three parallel resistors of 4Ω , 6Ω and 12Ω . Draw a circuit diagram for the above arrangement. Calculate i) the current drawn from the cells (ii) current through each resistor

Part-3

iii. Answer all the Questions

3 x 5 = 15

14) a) Explain in detail the construction and working of a Van de Graff generator.

(OR)

b) How the emf of two cells are compared using potentiometer?

15) a) Explain the determination of internal resistance using voltmeter.

(OR)

b) Derive the expression for the force on a current carrying conductor in a magnetic field.

16) a) Obtain the relation for magnetic field at a point along the axis of a circular coil carrying current using Biot Savart law

(OR)

b) Obtain the expression for electric field due to an infinitely long charged wire

ALL THE BEST!!!

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Prepared by
Viswanthan G
Co-Founder
-AVM Institute.