Federal Board HSSC-II Examination
Physics Model Question Paper

SECTION – A

Time allowed: 25 minutes Marks: 17

Note: Section-A is compulsory and comprises pages 1-5. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q.1 Insert the correct option i.e. A/B/C/D in the empty box opposite each part. Each part carries one mark.

i. Which of the following is the unit of electric intensity?

A. Nm
B. NC
C. NC^{-1}
D. NS^{-1}

ii. Two point charges -10µc and +10µc are placed 10cm apart. What is the potential at the centre of the line joining the two charge

A. -2V
B. -1V
C. Zero
D. 2V

iii. For which of the following AC can NOT be used?

A. Heating
B. Lighting
C. Transforming voltage
D. Electroplating

DO NOT WRITE ANYTHING HERE

iii. A square sheet of side 'a' is held perpendicular to a uniform electric field of strength E. What is the electric flux linked with the surface?

A. Zero
B. Ea
C. Ea^2
D. 4Ea

v. A cylindrical metal wire of length '*l*' and cross-sectional area 'A' has resistance 'R', conductance 'G', resistivity 'ρ' and conductivity 'σ'. Which of the following expressions for 'σ' is valid?

A. GR/ρ
B. R*l*/A
C. ρR/G
D. GA/*l*

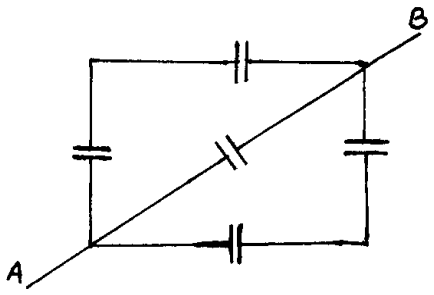
vi. If a charge of 1μC experiences a force of 10^{-6}N at a point, what will be the electric intensity at that point?

A. $10^{-12}NC^{-1}$
B. $10^{-6}NC^{-1}$
C. $1NC^{-1}$
D. $10^{6}NC^{-1}$

vii. What will be the magnitude of gain of an inverting op-amp having resistances R_1= 5kΩ and R_2 = 20kΩ?

A. -5
B. -4
C. 4
D. 5

viii. A number of capacitors each of 2μF are connected as shown in the figure given below:



What is the net capacitance between A & B?

A. 2μF
B. 4μF
C. 6μF
D. 10μF

ix. Two copper wires A and B of lengths 1m and 9m respectively are found to have same resistance. What is the ratio $\frac{d_A}{d_B}$ between their diameters?

A. 1:9
B. 1:3
C. 3:1
D. 9:1

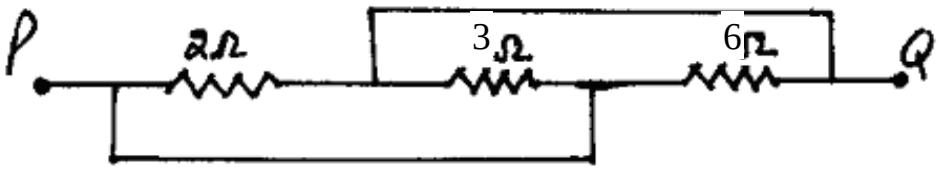
x. What is the rest mass energy of an object of mass 0.1g?

A. 3×10^8J
B. 3×10^{13}J
C. 9×10^{13}J
D. 9×10^{16}J

xi. A current flows in a wire of circular cross-section with the free electrons traveling with a mean drift velocity 'v'. If an equal current flows in a wire of the same material but of twice the radius, what is the new drift velocity?

A. v/4
B. v/2
C. v
D. 2v

xii. Three resistors are connected as shown in the diagram using connecting wires of negligible resistance.



What is the resistance between points P and Q?

A. 1.0 Ω
B. 1.6 Ω
C. 3.7 Ω
D. 11 Ω

xiii. The half life of a radioactive element is such that 7/8 of a given quantity decays in 12 days. What fraction remains un-decayed after 24 days?

A. 1/128
B. 1/64
C. 1/16
D. 1/8

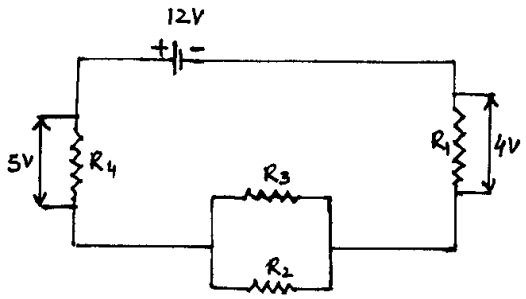
xiv. Which one of the following bulbs has the least resistance?

A. 100 w
B. 200 w
C. 300 w
D. 400 w

xv. The peak value of an AC is 2 $\sqrt{2}$ A. What will be its RMS value?

A. zero
B. $\sqrt{2}$ A
C. 2A
D. 2 $\sqrt{2}$ A

xvi. In the figure given below, what is the potential drop across the resistor R_3?



A. 3V
B. 4V
C. 9V
D. 12V

xvii. In a transformer, laminated sheets with insulation in between are used to minimize:

A. Hysteresis loss
B. Voltage loss
C. Eddy currents
D. Magnetic flux

For Examiner's use only

Q. No.1: Total Marks: 17

Marks Obtained: