



ABUNE GORGORIOS SCHOOLS

NAME _____

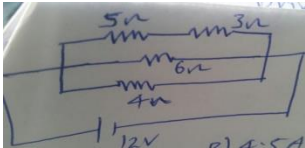
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SUBJECT:- PHYSICS

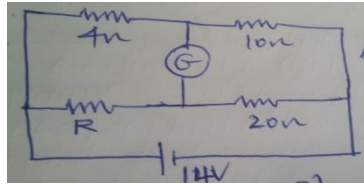
2012 E.C. SECOND SEMESTER

GRADE 12 SECTION _____

2012EC SECOND SEMESTER PHYSICS MODEL FOR GRADE 12

- The sum of terminal voltage and voltage drop across internal resistance is known as
 - Electromotive force
 - Current
 - Energy
 - Equivalent resistance
- _____ is an instrument which is used to measure small amount of current.
 - Shunt
 - Ohmmeter
 - Galvanometer
 - Ammeter
- The resistivity of a certain material is $2 \times 10^{-7} \Omega \text{ m}$. If it is found in an electric field of strength $4 \frac{\text{r}}{\text{m}}$ what is the value of current density?
 - $2 \times 10^7 \text{ A/m}^2$
 - $\frac{1}{2} \times 10^{-7} \text{ A/m}^2$
 - $8 \times 10^{-7} \text{ A/m}^2$
 - $\frac{1}{8} \times 10^{-7} \text{ A/m}^2$
- The resistance of circular wire is 2Ω . If its radius is tripled, what will be its resistance now?
 - 4.5Ω
 - $2/9 \Omega$
 - 18Ω
 - 6Ω
- Four resistors having 2Ω , 3Ω , 4Ω and 'y' are connected in parallel. If their resistance is 0.5Ω , what is the value of 'y'?
 - $\frac{13}{15} \Omega$
 - $3/8 \Omega$
 - 5.4Ω
 - $\frac{11}{12} \Omega$
- A galvanometer of full scale 5mA is to be converted into $0-10\text{A}$ ammeter. If it has a resistance of 50Ω
 - $\frac{3998}{7} \Omega$
 - $\frac{4095}{8} \Omega$
 - $\frac{4}{885} \Omega$
 - $\frac{250}{9995} \Omega$
- The space where two or more than two charges exert a force with each other is said to be
 - Magnetic field
 - Electric lines of force
 - Electric field
 - Magnetic flux
- A wire of 200m length and a 2mm diameter has $2\pi \times 10^{-8} \Omega$ resistivity what is the resistance of the wire?
 - 2Ω
 - 4Ω
 - 6Ω
 - 10Ω
- The current passing through 3Ω will be
 - $3/2 \text{ A}$
 - 4.5 A
 - 6.8 A
 - 2.1 A
- The SI unit of conductivity is called
 - S/m
 - S
 - 16Ω
 - 8Ω

11.



If the wheat stone bridge is balanced, what is the value _____ of 'R' ?

- A. 5 Ω B. 2 Ω C. 16 Ω D. 8 Ω

12. Copper contains 8×10^{28} free electrons per m^3 . If the wire made of copper has $1.2 \times 10^{-6} \text{ m}^2$ cross-sectional area and a current of 0.5A. What is the drift velocity of the free electrons?

- A. $9.7 \times 10^{-7} \text{ m/s}$ B. $4.9 \times 10^{-5} \text{ m/s}$ C. $\frac{5}{96} \times 10^{-3} \text{ m/s}$ D. $\frac{4}{3} \times 10^{-4} \text{ m/s}$

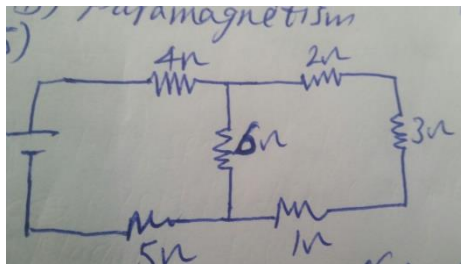
13. The SI unit of magnetic flux is

- A. Tesla B. Wb/m^2 C. Wb D. weber's

14. _____ is the property of material to oppose the applied magnetic field

- A. Loadstone B. diamagnetism C. Ferromagnetism D. Paramagnetism

15. What is the equivalent resistance of the circuit?



- A. 12 Ω B. 9.5 Ω C. $\frac{1}{3} \Omega$ D. 7.6 Ω

16. _____ is an instrument which is used to measure electric current in terms of magnetic field that produces

- A. Torrid B. Tangent Galvanometer C. Ammeter D. Dollenoid

17. A permanent magnet

- A. Attract all substance
B. Attracts only magnetic substance
C. Attracts magnetic substance & repels non-magnetic substance
D. Attracts non-magnetic & repels magnetic substance

18. Magnetic lines of force

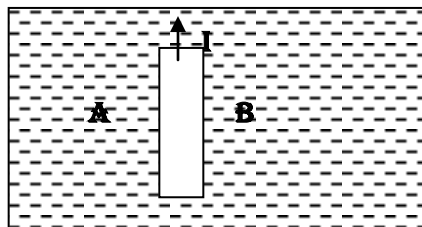
- A. Cannot intersect at all C. Intersect within magnet
B. Intersect at infinity D. Intersect at the neutral point

19. To convert a galvanometer into an ammeter, we have to connect

- A. Small resistance in parallel C. A small resistor in series
B. A high resistance in series D. A high resistor in parallel

20. Tesla meter ampere is equivalent to
 A. Newton B. weber C. Joule D. voltage
21. The magnetic field induction at a distance of 4cm from the wire is 10-2T. The magnetic field induced at a distance of 20cm from the same wire will be
 A. 0.05T B. 0.25T C. 4×10^{-2} T D. 2×10^{-3} T
22. A beam of charged particle is passing through a magnetic. The work done on the beam by the magnetic field is
 A. Zero
 B. Will depend on velocity of beam
 C. Will depend on the strength of the field
 D. B&C
23. A 20 turn circular coil of radius 2cm carries a current of 0.4A. What is the Magnitude of magnetic field?
 A. $8\pi \times 10^{-5}$ T B. $6\pi \times 10^{-4}$ T C. $4.5\pi \times 10^{-5}$ T D. $7\pi \times 10^{-4}$ T
24. What is the value of magnetic field at the center solenoid of length 20cm having 100 turns if the current passing through the wound wire is
 A. $\frac{8\pi}{7} \times 10^{-4}$ T B. $\frac{8\pi}{5} \times 10^{-9}$ T C. $\frac{8\pi}{5} \times 10^{-6}$ T D. $\frac{3}{5\pi} \times 10^{-5}$ T
25. An electron moving in a uniform magnetic field of $\vec{B}$ follows a circular path of radius 30mm. What is the strength of magnetic field if the speed of the electron is 2×10^6 m/s? (9.11×10^{-31} kg = m_e)
 A. $\frac{1822}{48} \times 10^{-5}$ T B. $\frac{49}{72} \times 10^{-6}$ T C. $\frac{28}{3} \times 10^{-7}$ T D. $\frac{26}{7} \times 10^{-5}$ T
26. A proton moving horizontally to the right in a uniform magnetic field which is acting into the page. What could be the direction of the magnetic force acting on it?
 A. downward B. upward C. into the page D. out of page
27. What is the magnitude of the force per unit length between two current carrying 2mA each wire if their separation is 1m?
 A. 6×10^{-6} N/m B. 4×10^{-10} N/m C. 8×10^{-9} N/m D. 12×10^{-10} N/m
28. An electron moving in a uniform magnetic field of 4mT follows a circular path of radius 25mm. What is the speed of an electron?
 A. 3.14×10^6 m/s B. 4.27×10^7 m/s C. 2.54×10^7 m/s D. 1.72×10^6 m/s
29. An electron travelling with a speed of $\vec{V} = (2\hat{i} + 4\hat{j} - 3\hat{k})$ m/s enters a magnetic field of $\vec{B} = (-\hat{i} + 3\hat{j} + 4\hat{k})$ T. What is the magnitude of magnetic force this charge experiences?

30.



Based on the given fig the magnetic field will act _____ & _____ on A & B respectively.

A. Up &down B. Left &Right C. Into the page &out of page

31. On the second right hand rule our thumb shows

- A. North pole C. Magnetic field strength
B. Current D. Force

32. Which one of the following is incorrect statement?

- A. When a body spins faster, the radial force is higher
B. Radian is the SI unit of angular displacement
C. For a body which in rotation, its force depends on the velocity
D. One radian is fifty seven points three degree

33. Torque is

- A. A vector quantity C. the total moment of force
B. The turning effect of force d. all

34. A fly wheel of mass 3kg consists of flat uniform disk of radius 0.4m. Its pivot is about central axis perpendicular to the plane. If a torque of .8N.m acting on it . what will be its angular acceleration?

35. A wheel which is moving with 2rad/sec accelerates at 5Rda/sec². what angle is covered after 10seconds?

- A. 270rad B.230rad C.420rad D480rad

36. The momentum inertia of a uniform solid sphere about one end of the sphere is

37. The moment of inertia of a body depends on

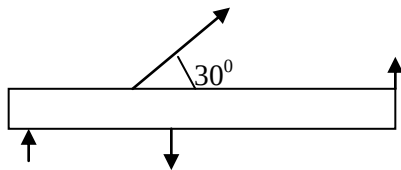
- A. The axis of rotation C. the mass of the body
B. The shape of the body D. all

38. The rotational counter part of mass is

- A. Momentum c. Moment of inertia
B. Angular momentum D. rotational KE

39. A hard drive in a computer accelerated from rest to 36rad/sec in 4min. What is angular acceleration?

- A. 9rad/sec² B.3/20rad/sec² C.9/5rad/sec² D. $\frac{80}{10}$ rad/sec²



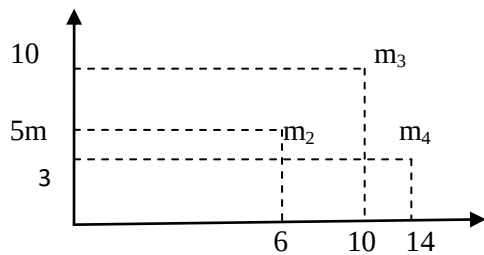
40. What is the net torque about axis "A"? ($\sin 30 = \frac{1}{2}$, $\cos 30 = \frac{\sqrt{3}}{2}$)

- A. 3.8Nm B.2.4Nm C.1.6Nm D.4.8Nm

41. A fly wheel is rotating with an angular velocity of 8rad/sec and is acted on by accelerating 2rad/sec². How long will it take to complete 5 cycles?

- A. 16πsec B.2.4N.m C. 1.6Nm D. 4.8Nm

42. A constant torque of 25Nm is applied to a stationary whose moment of inertia is 0.13kgm². What is the angular speed after the grindstone has made 10 revolutions?



- A. 190rad/sec B. 210rad/sec C. 320 rad/sec D. 140 rad/sec
43. What is the center of mass of the system about the origin? Where m_1 , m_2 & m_4 are 2k, 3kg & 4kg respectively.
- A. $\left(\frac{19}{8}, \frac{125}{7}\right)$ B. $\left(\frac{62}{7}, \frac{137}{14}\right)$ C. $\left(\frac{94}{9}, \frac{183}{5}\right)$ D. $\left(\frac{21}{6}, \frac{115}{7}\right)$
44. A sphere of radius 1m rotating at angular speed of 2rad/sec about an axis. What is the acceleration of the particle?
- A. $\sqrt{17}\text{m/s}^2$ B. $\sqrt{29}\text{m/s}^2$ C. $\sqrt{15}\text{m/s}^2$ D. $\sqrt{13}\text{m/s}^2$
45. The equation to find angular momentum is given by
- A. $I\omega$ B. $mR^2\omega$ C. $m\omega$ D. $I\omega^2$
46. A wheel of moment of inertia 0.1kgm² rotates on horizontal plane through a fixed axis at a uniform angular speed of 100rad/sec. What would be its final angular speed if a sticky mass of 500g is dropped vertically at $r=5\text{cm}$?
- A. 88.89rad/sec B. 49.7rad/sec C. 28.7rad/sec D. 128.58rad/sec
47. Which one of the following is correct?
- A. $L=mv$ B. $I=\frac{m}{r^2}$ C. $\tau=I\alpha$ D. $P=\frac{mv^2}{r}$
48. The rotational inertia of a collapsing spinning drop to 1/3 its initial value. What is the ratio of new rotational KE to final KE?
- A. 3:1 B. 1:3 C. 9:1 D. 1:9
49. What is the total work done on a bolt with a length 10cm if a force of 60N is applied perpendicularly to tighten it through 34.1radian?
- A. 204.6J B. 119.7J C. 88.7J D. 228.1J
50. Which one of the following is an incorrect statement?
- A. When a conservative force acts on a body, the work done is independent of the path.
- B. Spring and gravity are examples of dissipative forces.
- C. Friction is an example of a dissipative force.
- D. A dissipative force causes mechanical energy to be lost.

51. A weightlifter lifts 200kg through 1.8m in 2sec. what is the magnitude of the power of the weightlifter? ($g=10\text{m/s}^2$)

- A. 2580W B. 4200W C. 3600W D. 1800W