ReEdited BY

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ETHIOPIA

1. The sum of terminal voltage and voltage drop across internal resistance is known as

    A. Electromotive force   C. Energy

    B. Current   D. Equivalent resistance

2. _____ is an instrument which is used to measure small amount of current.

    A.   Shunt   B. Ohmmeter   C. Galvanometer   D, Ammeter

3. The resistivity of a certain material is 2×10^7 Ω m. If it is found in an electric field of strength $4\frac{r}{m}$ what is the value of current density?

    A. $2 \times 10^7 A/m^2$ B. $\frac{1}{2} \times 10^7 A/m^2$ C. $8 \times 10^{-7} A/m2$ D. $\frac{1}{8} \times 10^7 A/m^2$

4. The resistance of circular wire is 2 Ω. If its radius is tripled, what will be its resistance now?

    A.   4.5 Ω   B. $\frac{2}{9}$ Ω   C. 18 Ω   D. 6 Ω

5. Four resistors having 2Ω, 3Ω, 4Ω and 'y' are connected in parallel. If their resistance is 0.5 Ω, what is the value of 'y'?

    A. $\frac{13}{15}$ Ω   B. $\frac{3}{8}$ Ω   C. 5.4 Ω   D. $\frac{11}{12}$ Ω

6. A gawanometer of full scale 5mA is to be converted in to 0-10A ammeter. If has a resistance of 50 Ω

    A. $\frac{3998}{7}$ Ω   B. $\frac{4095}{8}$ Ω   C. $\frac{4}{885}$ Ω   D. $\frac{250}{9995}$ Ω

7.   The space where two or more than two charges exert a force with each other is said to be

A. Magnetic field

C. Electric field

B. Electric lines of force

D. Magnetic flux

8. A wire of 200m length and a 2mm diameter has $2\pi \times 10^{-8}\,\Omega$ resistivity what is the resistance of the wire?
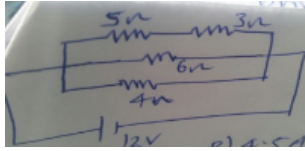

A. $2\,\Omega$ B. $4\,\Omega$ C. $6\,\Omega$ D. $10\,\Omega$

9. The current passing through $3\,\Omega$ will be

A. $\dfrac{3}{2}$ A   B. 4.5 A   C. 6.8 A   D. 2.1 A
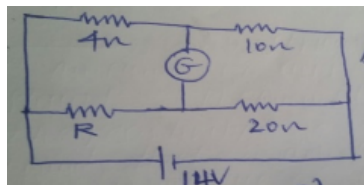
10. The SI unit of conductivity is called

A. $\dfrac{S}{m}$ B. S   C. $16\,\Omega$ D. $8\,\Omega$

11. If the wheat stone bridge is balanced, what is the value_____ of 'R' ?

A. $5\,\Omega$ B. $2\,\Omega$ C. $16\,\Omega$ D. $8\,\Omega$

12. Copper contains 8×10^{28} free electrons per m^3. If the wire made of copper has $1.2z10^{-6}\,m^2$ cross- sectional area and a current of 0.5A. What is the drift velocity of the free electrons?

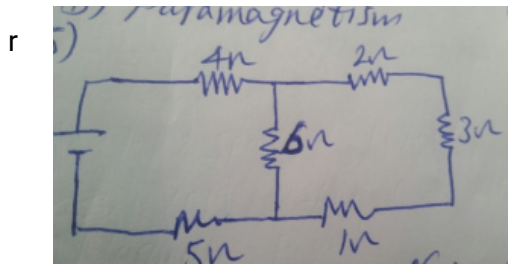A. $9.7\times10^{-7}\,\dfrac{m}{s\Omega}$ B. $4.9\times10^{-5}\,\dfrac{m}{1\Omega}$ c. $\dfrac{5}{96}\times10^{-3}\,\dfrac{m}{s\Omega}$ D. $\dfrac{4}{3}x^{-4}\,\dfrac{m}{s}$

13. The SI unit of magnetic flux is

A. Tesla   B/m2   C. Wb   D. seamen's

14. _____is the property of material to oppose the applied magnetic filed

    A. Loadstone   B. diamagnetism   C. Ferromagnetism   D. Para magnetism

15.   What is the equivalent esistance of the circuit?

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

16. _____is an instrument which is used to measuring of electric current in terms of magnetic field that produce ?

    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 &repel non-magnetic substance

    D. Attracts non-Magnetic & repel magnetic substance

18. Magnetic lines of force

    A. Cannot intersect at all   C. Intersect with in magnet

    B. Intersect at infinity   D. Intersect at the neutral point

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

    A. Small resitance 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 20cmfrom the same wire will be

   A.0.05t   B.0.25T   C.4×10^{-2}T   D.2×10^{-3}T

22. Abeam 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. A20 turn circular coil of radius2cm carries a current of 0.4A.What is the Magnitude of magnetic field?

   A.8π×10^{-5}T   B.6π×10^{-4}T   C.4.5π×10^{-5}T   D.7π×10^{-4}T

24. What is the value of magnetic field at the center solenoid of length 20cmhaving 100 turns if the current passing through the wound wire is

   A. $\frac{8\pi}{7}$×10^{-4}T   B. $\frac{8\pi}{5}$×10^{-9}T   C. $\frac{8\pi}{5}$×10^{-6}T   D. $\frac{3}{5\pi}$×10^{-5}T

25. An electron moving in a uniform magnetic field of 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}T? (9.11×10-31kg=me)

   A.$\frac{1822}{48}$ ×10^{-5}T   B.$\frac{49}{72}$ ×10^{-6}T   C.$\frac{28}{3}$ ×10^{-7}T   D.$\frac{26}{7}$ ×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?
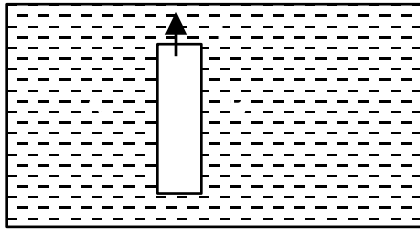
A.6×10^{-6} N/m   B.4×10^{-10}N/m   C.8×10^{-9}N/m   D.12×10^{-10}N/m

28. An electron moving in a uniform magnetic field of 4mT follows a circular path of radius25mm what is the speed on 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 sped of V.=(2i+4i-3km/s enters a magnetic field of B=(-i+3j+4k)T. what is the magnitude of ,=magnetic force this charge experience

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 thump 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 spines 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 centeral axis perpendicular to the plane. If a torque of .8N.m acting on it . what will be it 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/sec^2 B.3/20rad/sec^2 C.9/5rad/sec^2 D.$\frac{80}{10}$rad/sec^2
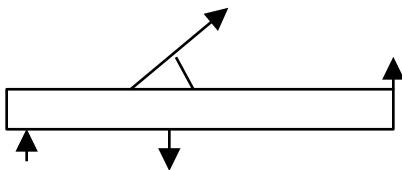
40. What is the not torque about axis "A"?($Sin30=\frac{1}{2}cos30=\frac{\sqrt{3}}{2}$)

   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 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 is revolutions?
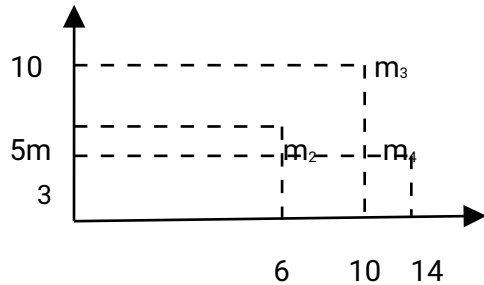
   A. 190rad/sec   B.210rad/sec   C.320 rad/sex   D. 140 rad/sec

43. What is the center of mass of the system about the origin? Where m1, m2 &m4 are 2k, 3kg &4kg repetitively.

   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 radiuses 1m rotating at angular speed of 2rad/sec about an axis acceleration of the particle?

   A. $\sqrt{17}$m/s2 B.$\sqrt{29}$m/sec2 C. $\sqrt{15}$m/sec2   D.$\sqrt{13}$m/sec2

45. The equation to find angular momentum is given by

   A. IW   BMR^2 C.mv   D.IW^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 speeds if a sticky mass of 500g is dropped vertically at r=5cm?

A. 88.89rad/sec   B. 49.7rad/sec   C28.7rad/sec   D128.58rad/sec

47. Which one of the following is correct?

$L=mv$ $BI=\dfrac{mc}{r^2}$ $\tau=I\delta$ $D.P=\dfrac{mv^2}{r}$

48. The rotational inertia of collapsing spinning drops to 1/3 ts 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 French of length 10cm if a force of 60N is applied perpendicularly to tighten it through 34.1radian?

A. 204.6J   B.119.7J   C88.7J   D.228.1J

50. Which one of the following is incorrect statement?

A. When a conservative force act on a body ,the work done is independent of the path

B. Spring and gravity are example of dissipative force

C. Friction is an example of dissipative force

D. A dissipative force causes mechanical energy to be lost

51. A weightlifter lifts 200kg through1.8m in2sec.what is the magnitude of the power of the weight lifter?(g=10m/s2)

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