CROSS RIVER UNIVERSITY OF TECHNOLOGY, CALABAR
DEPARTMENT OF PHYSICS
FIRST SEMESTER EXAMINATIONS 2014/2015

PHY 1201 General Physics II **Time allowed: 1:30 minutes**

Name: _____ **Reg. _____**

1. The force experienced by a current carrying conductor of length 100cm is 5.0N. Calculate the current in the conductor if it is flowing in a direction 45^0 with the field of I.OT _____

   _____

2. Two conductors carrying equal of 2.0 A in opposite direction are separated by 2.0m. Calculate the repulsive force per unit length between them, If $\mu_0 = 4 \mid \mid X\ 10^{-7}\ Am^{-1}$. _____

   _____

3. A galvanometer with full scale deflection 1.0m A and coil resistance 20 ohm is to be converted to an ammeter with full scale deflection 50mA. What value of resistance is required._____

   _____

4. A transformer has 200 turns in its primary coil and 50 turns in its secondary coil, what is the voltage in the secondary when 250V is applied to the primary? _____.

   _____

5. What is circuit impedance? _____

   _____

6. A series circuit contain R=300 ohm; L=600mH and C = 100f. Draw the circuit and write an expression for the impedance of the circuit. _____

   _____

7. Calculate the resistance of a piece of copper wire of length 1000m and diameter 0.15 if the resistivity of the wire is 2.0×10^{-6} – 2cm. _____

   _____

8. _____ is a low resistance wire connected in parallel to a galvanometer to make function as a ammeter.
9. Find the cost running a 60w lamp for 1287 seconds, if the electrical energy cost 10kobo per unit. _____.
10. Calculate the internal resistance of a cell if it can supply a current of 0.75A through a 3.0Ω Resistor and 0.5A through a 7.0 Ω resistor _____

    _____

11. A filament lamp is rated 2400V, 60W, what does this mean? _____
    _____
12. What is the relationship between resistivity and conductor? _____
13. A filament is rated 2400V, 60W. Calculate the resistance of the filament _____
    _____
14. Define field potential _____
    _____
15. What is capacitance of a capacitor _____.
16. The plates of a parallel plate capacitor in vacuum are 5.0mm apart and 2.00m^2 in area. A. P.d 10,000V is applied across the capacitor, Calculate:
17. The capacitance _____
18. The charge on each plate _____
19. List three (3) dielectric materials i_____ ii_____ iii_____
20. Calculate the magnitude of the required electric field to store 1.0J of electric potential energy in a volume of 1.0m^3.
21. If 3 capacitors 6μf, 3μf and 4μf respectively are connected in series to a 18V de supply. Calculate the equivalent capacitance _____
    _____
22. The nuclear reaction in which two or more atomic nucei combine together to form a new element with a higher atomic number is called _____
23. What is the name of the two isotopes of hydrogen that are fuse together in a hydrogen bomb
    _____
24. Complete the nuclear fission reaction ${}_{1}^{2}H + {}_{1}^{2}H \Rightarrow H + 4.03NeV$
25. Write the practical nuclear fusion reaction for power generation _____
26. Complete the nuclear fission reaction ${}_{92}^{235}U + {}_{0}^{1}n \rightarrow {}_{92}^{144}Ba + {}^{89}K + E$
27. The energy released when an atom is formed from its constituent particles is known as _____
    _____
28. _____ is a reaction in which a large nucleus breaks apart into two smaller nucei
29. A material that convert photon energy into an intermediate that can further be process into information is known as _____
30. State the equation that can be used to estimate the magnetic field strength II in free space _____
    _____
31. The process of energy formation in the sun is called _____
32. Name two types of radiation effects on human (i) _____ (ii) _____
33. Mention two dynamic properties of the nucleus (i) _____ (ii) _____

34. Determine the number of neutrons in an atom of uranium $^{235}_{92}U$

_____

35. A sample of radioactive materials has a half-life of 15 hours. How muc of the original radioactive nucei will remain after 30 hours? _____

A. 1.68 x 10^3ml B. 1.67 x 10^3ml C. 1.69 x 10^3ml D. 1.70 x 10^3ml

36. What volume will 1.216g of SO_2 gas (M 64.1kg/kmol) occupy at 18.0^{0}C and 755mmHg if it acts like an ideal gas. A. 456ml B. 452ml C. 457ml D. 455ml.
37. Compute the density of H^2S gas (M=34.1kg kmol) at 27^{0}C and 2.00 at m assuming it to be ideal gas. A. 2.76kg/m B. 2.80kg/m^3 C. 2.77kg/m D. 2.70kg/m^3
38. At what temperature will the molecules of an ideal gas have twice the (fms) speed they have at 20^{0}C A. 900^{0}C B. 800^{0}C C. 700^{0}C D. 1000^{0}C.
39.
40. Find the mass of a neon atom. The atomic mass of neon is 20.2kg/kmol. A. 3.36 x 10_^{26}kg B. 3.36 x 100^{-27}kgC, 3.36 c 10-^{28}kg D. 3.36 x 10^{-24}kg.
41. The following is the correct definition of a wave (a) a disturbance, which travels through a medium and transfer energy from one point to another, without any permanent displacement of the medium itself (c) a fast moving object (d)bright shining light.
42. One of these is not an example of a mechanical wave (a) microwave (b)string wave (c)sound wave (d)water waves.
43. Electromagnetic waves (a) do not require any medium of propagation (b)change state every second (c)are electronic waves (d)have no velocity.
44. For a wire kept under constant tension, the frequency of oscillation is (a)reverberation (b)total internal reflection (c)echo (d) deflection
45. The continuous reflection of sound is called (a)reverberation (b)total internal reflection (c)echo (d)deflection.
46. Interference occurs when? This is a pattern created when wave from different sources or which have been allowed to pass through different directions are made to super impose on each other. The (a) resultant pattern shows regions of maximum displacement and regions of no displacement (b)resultant pattern shows total annihilation (c)there is a clash of waves (d)resultant pattern shows conversion to other forms.
47. The velocity of a water wave is 6cm per second and the frequency is 10 KHz calculate. The distance between successive crests of the wave. (a) 6 x 10^{-6}m (b) 10 x 10^{-6}m (c) 6 x 10^6km (d) 6 x 10^{-6}cm
48. The phenomenon in which waves generally undergo change in direction when the density of the medium changes is called (a)refraction (b)diffraction (c)reflection (d)lateral inversion.
49. When are two sources of waves said to be coherent (a) if the phase difference between them is constant (b)if the waves maintain the same frequency (c)if the waves are of the same type (d)if the waves have the same velocity
50. A radio station broadcast at a frequency of 300KHz. If the speed of the wave is 3 x 10^8 m/s. calculate the period and wavelength of the wave 9a) 3.3 x 10^{-6}, 0.1km (b) 3.3 x 10^{-6}, 0.1km (c)3.3 x 10^{-6}, 0.1km (d)3.3 x 10^{-6}, 0.1km.