PHYSICS

BOOKS - OSWAAL PUBLICATION PHYSICS (KANNADA ENGLISH)

Sample Paper 2

Exercise

1. Two point charges are separated by some distance, repel each other with a force F. What

will be the force if distance between them is halved?

2. In a Wheat stone.s network four resistors with resistances P,Q,R and S are connected in a cyclic order. Write the balancing condition of the network.

3. A current flows in a conductor from west to east. What is the direction of the magnetic field at a point below the conductor?

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4. State and explain Gauss's law in magnetism.

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5. Name the phenomenon in which an emf is induced in a coil due to the change of current in the same coil.

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6. What is dispersion of light?

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7. How does the de-Broglie wavelength of a charged particle changes when accelerating potential increases ?

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8. What is the significance of the negative total energy of an electron orbiting round the nucleus?

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9. A radioactive element ${}_{92}X^{238}$ emits one α-particle and one β' particle in succession.

What is the mass number of new element formed?

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10. What are sky waves ?

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11. Mention and five properties of electric field lines.

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12. What are the limitatons of ohm.s law?

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13. Give the expression for period of oscillation of a magnctic dipole (magnetic needle) in an

uniform magnetic field and the meaning of the symbols.

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14. Mention any three application of eddy currents.

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15. What is displacement current? Mention its need.

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16. Define critical angle. Write two conditions for total internal reflection.

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17. Give the circuit symbol and truth table for OR gate

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18. Draw block diagram of a reciever

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19. Derive an expression for the electric potential energy of a system of two point charges in the absence of an external electric field.

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20. Obtain an expression for the magnetic force on a current carrying conductor.

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21. Write three properties of paramagnetic substance.

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22. (a) Obtain the expression for the magnetic energy stored in a solenoid in terms of magnetic field B, area A and length l of the solenoid. (b) How does this magnetic energy compare with the electrostatic energy stored in a capacitor?

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23. What is resonance in series LCR circuit? Derive the expression for resonant angular

frequency.

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24. Derive the expression for resultant displacement and amplitude when two waves having same amplitude and a phase difference $\frac{0}{-}$ superpose.

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25. Given de- Broglie's explanation of quantisation of angular momentum as proposed by Bohr.

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26. Give three differences between intrinsic and extrinsic semiconductors

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27. Obtain an expression for the electric field intenstiy at a point on the equatorial line of an electric dipole.

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28. Derive an expression for electrical conductivity.

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29. Derive the expression for magnetic field at a point on the axis of a circular current loop.

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30. Arrive at Snell's law of refraction, using Huygen's principle for refraction of a plane wave.

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31. Write the experimental observations of photoelectric effect.

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32. Explain the working of a forward biased p-n junction diode.

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33. A 600pF capacitor is charged by a 200V supply. It is then disconnected from the supply and is connected to another uncharged 600 pF capacitor. How much electrostatic energy is lost in the process?

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34. Two cells of emf 3 V and 2 V and internal resistances 1.5Ω and 1Ω respectively are connected in parallel across 3Ω resistor such

that they tend to send current through resistor in the same direction. Calculate potential difference across 3Ω resistor.

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35. A 60 V, 10 W lamp is to be run on 100 V, 60 Hz a.c. mains. Calculate the inductance of a chock required to be connected in series with it to work the bulb.

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36. A convex lens of focal length 0.24 m and of refractive index 1.5 is completely immersed in water of refractive 1.33. Find the changes in the focal length of the lens.

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37. A given coin has a mass of 3.0g . Calculate the nuclear energy that would be required to separate all the neutrons and protons from each other . For simplicity, assume that the

coin is entirely made of $._{29}^{63}Cu$ atoms (of mass 62.92960 u)

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