PHYSICS

BOOKS - BINA LIBRARY PHYSICS (ASSAMESE ENGLISH)

QUESTION PAPER 2014

Exercise

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1. Give the dimensions of Tesla.

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2. Show that Weber = Volt Second

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3. State Ampere's circuital law.

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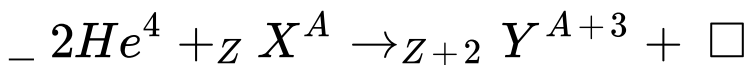**4.** Why are infrared waves called heat waves?

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5. State Snell's law of refraction of light.

6. Complete the nuclear reaction -

$$_- 2He^4 +_Z X^A \rightarrow_{Z+2} Y^{A+3} + \square$$

7. Write down the truth table on NAND gate.

8. Give one use of solar cell.

9. State Coulomb's law of electrostatics. Express it in vector form.

10. What is electric polarisation vector? Define the electric susceptibility.

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11. State Ohm's law of current electricity Define One Ohm resistance.

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12. What do you mean by specific resistance of conductor? What is its S.J Unit?

13. What is potentiometer?Would you prefer a voltmeter or a potentiometer to measure the e.m.f of a battery?

14. Differentiate between step up and step down transformer.

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15. What is displacement current?

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16. How does a charge 'q' oscillating at certain frequency produce electromagnetic waves?

17. State two important differences between interference and diffraction.

18. Two lenses of powers +5D and 3D are in contact.Find the focal length of combination.

19. Explain Einstein's photo electric equation.

20. Workfunctionof caesium is 2.14 eV.

find the threshold frequency.

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Find its threshold frequency.

$h = 6.63 \times 10^{-34} Js, 1eV = 1.6 \times 10^{-19}$J

22. Find the wavelength of an electron acelerated through a potential difference of 1 volt.

23. Define 1 curie unit of radio-activity. What do you mean by 'half life'?

24. Draw a labelled block diagram of a radio transmitter.

25. Apply Gauss's theorem to calculate electric field due to an infinite plane sheet of charge.

26. Deduce the expression for the capacity of a parallel plate condenser.

27. If $\overline{E} = \left(3\hat{i} + 6\hat{j} + 4\hat{k}\right)\dfrac{N}{C}$,calculate the elctric flux through a surface area $20cm^2$ in Y-X plane .

28. Apply Kirchoff's laws of current electricity to establish the condition of a balanced Wheatstone's bridge.

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29. Using Ampere's circuital law, find the magnetic flux density at the centre of a long solenoid carrying current.

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30. Write the working of a moving coil galvenometer.

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31. Deduce the expression for torque on a rectangular current loop in a uniform magnetic field.

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32. Distinguish among paramagnetic ,
ferromagnetic and diamagnetic materials
qualitatively.

33. Deduce the relation $\dfrac{1}{v} - \dfrac{1}{u} = \dfrac{1}{f}$ for a
concave lens.

34. An object is placed 30cm away from a concave lens of focal length 15cm. Find the position, size and nature of the image.

35. Find the expression of fringe-width $\beta = \dfrac{\lambda D}{d}$ for Young's double slit interference pattern, where d is the separation between the two coherent sources.

36. Explain mass defect and binding energy.

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37. What is demodulation? Why is satellite communication necessary for TV signal?

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38. What is demodulation? Why is satellite communication necessary for TV signal?

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39. What is nibble?

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40. What is the basic difference between amplitude modulation and frequency

modulation?

41. Discuss the role of inosphere in radio-wave

communication

42. An inductor of self inductance L = 50 mH is

connected in series with a non inductive

resistor of resistance R = 10Ω. A source of e.m.f

$\varepsilon = (100\sin 50\pi t)$ Volt is connected in the circuit. Find the reactance of the coil

43. An inductor of self inductance L = 50 mH is connected in series with a non inductive resistor of resistance R = 10Ω. A source of e.m.f $\varepsilon = (100\sin 50\pi t)$ Volt is connected in the circuit. Find the impedance of the circuit

44. An inductor of self inductance L = 50 mH is connected in series with a non inductive resistor of resistance R = 10Ω. A source of e.m.f $\varepsilon = (100 \sin 50\pi r)$ Volt is connected in the circuit. Find the rms voltage drop across the inductor.

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45. AC generator works on the principle of ?

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46. Establish the following relation

$$\frac{n_2}{V} - \frac{n_1}{U} = \frac{n_2 - n_1}{R}$$

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47. What is a photodiode? Explain its working

principle.

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48. What is a solar cell?

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