

Guess Paper – 2014
Class – XII
Subject –Physics

Time:3 hrs

M.M.-70

Note : all figures are given at the end of paper refer them for attempting questions

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|----|---|----|
| 1 | A charge particle enters into a magnetic field with kinetic energy E_k . if during its motion magnetic field is doubled then what would the effect on its KE | 1 |
| 2 | What is the value of dip angle at poles of earth? | 1 |
| 3 | Name the sides along which emf will be induced in the following figure | 1* |
| 4 | What is the phase difference between electric and magnetic vector of an EM wave? | 1 |
| 5 | Why there is no change in KE of emitted electrons from a photosensitive surface when intensity of incident light is increases? | 1 |
| 6 | Which property of nuclear force can explain the constancy of binding energy per nucleon for moderate sized nuclei ? | 1 |
| 7 | Optical and radio telescopes are built on ground but X-ray astronomy is possible only from satellites orbiting around earth. Why? | 1 |
| 8 | Can we use sky waves for TV transmission .give reason to explain your answer | 1 |
| 9 | Obtain the expression for potential energy of an electric dipole placed in a uniform electric field | 2 |
| 10 | Define mobility. We have 'n' identical resistors each of value 'R'. first they are joined in series to provide a resistance X and then in parallel to provide resistance Y. find R in terms of X and Y only | 2 |
| 11 | Define EMF of a cell. Two identical bulbs are arranged as shown. How will their brightness be affected if R_h is increased? Give reasons to support your answers | 2 |
| 12 | Which has a greater resistance ammeter or a milli ammeter? Explain your answer | 2 |
| OR | | |
| | A charge particle passes through a region without any deviation. Can we say that magnetic field in the region is zero necessarily? Explain your answer | |
| 13 | A radio can tune over a frequency range of 800khz to 1200khz. If the effective inductance of $200\mu\text{H}$ is available then what must be the range of variable capacitance needed for it? | 2 |
| 14 | Define displacement current. How is it caused? How the concept of displacement current modifies ampere's circuital law? | 2 |
| 15 | What is total internal reflection? Explain any one application of this phenomenon | 2 |
| 16 | Which is a better semiconductor Si or Ge ? give reason | 2 |
| | The band gap of a photodiode is found to be 1.2eV can it detect a wavelength of 800nm ? | |
| 17 | Define electric potential energy and find its expression. What is the significance of sign (+ or -) of potential energy | 3 |
| 18 | What is dielectric strength? If it is 10^7 SI unit for air then what can be the maximum energy that a parallel plate capacitor can store if its plate area is 5cm^2 and plate separation is 2mm | 3 |

OR

- What will be the effect on the force on a point charge placed near a plane charged distribution if its separation from it is doubled
- Determine the electric fields At A b and C if three charge plates are kept as shown
- 19 State ohms law. Give its limitations (any two) 3
 Draw the V-I graph for (1) a normal heating element (2) semiconductor
- 20 What is polarization? Explain the production and detection of polarized light. Can we polarize sound? 3
- 21 A compound microscope has an objective of focal length 1 cm and eyepiece of focal length 2.5cm. an object is to be placed at 1.2 cm from objective to form final image at least distance of distinct vision . find the length of tube and magnifying power produced by the microscope 3
- 22 Explain YDSE . find the formula for fringe width. What is the shape of interference fringes in YDSE 3
- 23 State laws of reflection. Using mirror formula show that a convex mirror always forms a virtual image. 3
 What will be the effect on focal length of a mirror when kept inside water?
- 24 What is de Broglie's hypotheses? Derive the formula for de Broglie's wavelength of a charge particle accelerated through a potential. 3
- 25 What is an antenna? Find the expression for coverage distance between two antenna of heights h_1 and h_2 3
- 26 Anshika wanted to be a scientist so she use to use to do experiments at home with easily available material in the market and home . one day she noticed that CBSE has announced science exhibition for all CBSE schools in india. She decided to participate in it. So she requested her principal to allow her to use the school lab for making a project for participation on which principle agreed happily. She convinced two of her classmates to make a project in which she needed to make a 10cm of wire float in air .her friend sunaina measured the weight of wire and found it to be 2.5 gm ,vinay a member of their tem suggested that it can be done by using a magnet and flow of current through wire. If they can manage a current of 100mA in the wire than how much should be the magnetic field required by them to make the wire float
 What are the values displayed by anshika sunaina and vinay
- 27 Explain the principle construction and working of an AC generator. Draw suitable diagram. 5
 Deduce the formula to prove that the it produces an AC output.
- OR
- State Lenz's law. show that it is in accordance with energy conservation principle.
 The power factor for the transmission line in power transmission should be high or low ? explain.
- 28 Give the laws of radioactive decay. What is mean life ,derive its expression 5*
 How come a nucleus emit beta rays if electrons are not present inside the nucleus?
 The half life of a radioactive sample is T in how much time only 3.125% of sample will remain undecayed?

OR

Draw and explain binding energy curve.

Explain using it why heavier nuclei undergo nuclear fission.

Which of the following transitions will give rise to a photon of wavelength 275nm

29 In only one of the circuits lamp will glow. Which circuit is it? Give reason for your answer.

Explain the use of a transistor as a switch.

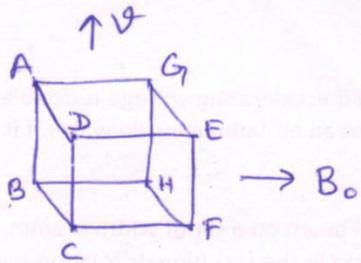
How can we obtain the AND operation using NOR gates only

What is an oscillator? Draw the circuit diagram of a transistor oscillator and explain its working.

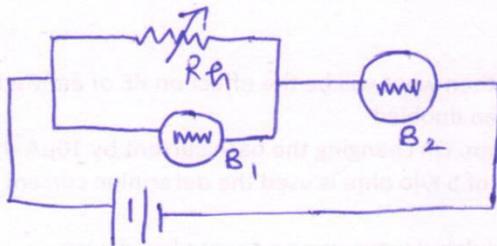
Draw a block diagram to show how an amplifier can be used as an oscillator

5*

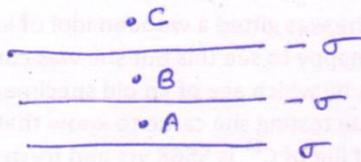
Q.3



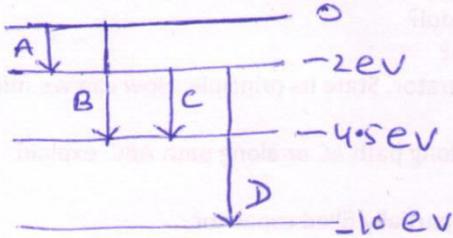
Q.11



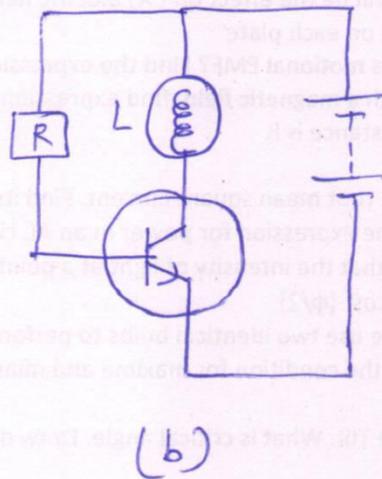
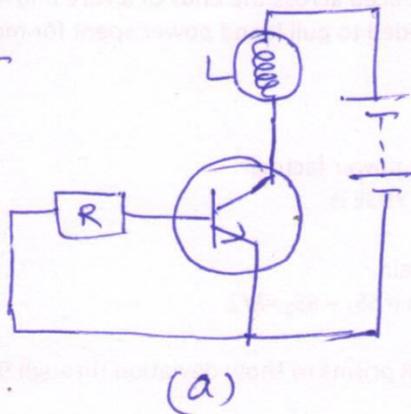
Q.18



Q.28



Q.29



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