FBQ1: The lowest energy level E1 of an atom is called_____ state energy.
Answer: ground

FBQ2: The positively charged nucleus and the negatively charged electrons combined to give a neutral atom of radius _____.
Answer: 10-10 m

FBQ3: Charge quantization is also referred to as _____.
Answer: Discrete form of charge

FBQ4: In Bainbridge mass spectrometer, when charged particles move in the straight horizontal line through both electrical and magnetic fields, the velocity is ____
Answer: V = E/B

FBQ5: ____measures the different isotopes of anion.
Answer: Mass Spectrometer

FBQ6: Elements of the same atomic number that have different neutrons number are known as _____.
Answer: Isotopes

FBQ7: J. J Thomson model of an atom can also be referred as _____
Answer: Plum pudding model

FBQ8: Which model visualises an atom just like planets move around the sun?
Answer: Rutherford’s model

FBQ9: The atomic model which presents the atom as consisting of positively charged nucleus at the centre of an atom and negatively charged electrons moving round the nucleus in circular orbits is _____.
Answer: Rutherford’s model

FBQ10: An electron jump from the orbit of energy E2 to and orbit of energy E1 leads to emission of _____
Answer: Radiation

FBQ11: An electron jump from the orbit of energy E2 to and orbit of energy E1 leads to emission of _____
Answer: Radiation

FBQ12: The lowest lying energy level Eo in the hydrogen spectra is the _____
Answer: Ground state

FBQ13: The wavelength of the photon emitted when an electron falls from energy level of 0.56 eV to -1.54 eV is _____.
Answer: 5.93 x 10-7 m

Fill in the Blank (FBQs) 13: The arrangement of a negative charge and a positive charge of equal magnitudes a distance r apart from one another is called _____.
Answer: an electric dipole

FBQ14: The arrangement of a negative charge and a positive charge of equal magnitudes a distance r apart from one another is called _____.
Answer: an electric dipole

FBQ15: Dipole moment, μ is calculated from the following relation _____
Answer: μ = q x r

FBQ16: The product of linear momentum, mv and the distance of the electron from the nucleus of an atom r is called _____.
Answer: Angular momentum

FBQ17: In Rutherford Nuclear atom model, electron distribution gives _____to the atom
Answer: stability

FBQ18: The possible values of the spin quantum number ms are _____.
Answer: +1/2 and -1/2

FBQ19: _____ is the property of an electron which is responsible for its angular momentum about an axis within the electron.
Answer: Electronic spin

FBQ20: Two possible directions which the electron spin can point at are _____.
Answer: Up, down

FBQ21: “It is impossible for two electrons with the same spin quantum number to be in the same orbit “, is a statement of _____ principle.
Answer: Pauli exclusion

FBQ22: Orbital and spin arrangement of electrons in the atom follow the _____ method.
Answer: Aufbau

FBQ23: ___ is the orbital and spin arrangement of electrons in the atom, specifying the quantum numbers of the electrons in the atom in a given state.
Answer: Electronic Configuration

FBQ24: _____ states that electrons will fill a set of degenerate orbitals by keeping their spin parallel.
Answer: Hund’s rule

FBQ25: The electronic structure of Nickel, atomic number 28, is ----------
Answer: 1S2, 2S2, 2P6, 3S2, 3P6, 4S2, 3d8

FBQ26: In the X-ray spectra, K-series X-ray are produced when an electron is knocked out of the _____ K-shell.
Answer: Lowest

FBQ27: _____ are produced when fast moving electrons are stopped by a metal target.
Answer: X-rays

FBQ28: The quality and energy of X-rays produced depend on the _____ at which the electron transition takes place.
Answer: energy level

FBQ29: When electrons from L-Shell move in to fill a gap in K-Shell, _____ are produced.
Answer: Kα X-rays

FBQ30: The electronic configuration of Zinc, atomic number 30, is _____.
Answer: 1S2, 2S2, 2P6, 3S2, 3P6, 4S2, 3d10

FBQ31: X – rays is produced when _____ are stopped by a metal target.
Answer: fast electrons

FBQ32: _____occurs when free electrons of high energy penetrate deep into atoms and knock out electrons from deep energy levels.
Answer: Photoelectric effect

FBQ33: _____ of high-energy photons are produced when electrons jump from one atomic orbit to another
Answer: X-ray

FBQ34: When electrons undergo series of transitions between K, L, M and N – shells is known as ---
Answer: X – ray spectra

FBQ35: The orbital and spin arrangement of electrons in the atom is called_____ configuration
Answer: electronic

MCQ1: The energy and quality of X-rays produced depends on the _____ which the electrons transition takes place.
Answer: Energy level

MCQ2: The property of an electron which gives rise to its angular momentum about an axis within the electron defines one of the following;
Answer: electronic spin

MCQ3: Which of the following is quantized according to Bohr's theory of atom?
Answer: Angular momentum of electron

MCQ4: All but one are the properties of waves.
Answer: Excitation

MCQ5: Einstein's energy mass equation is related by E=mc2. What is C?
Answer: Speed

Multiple Choice Questions (MCQs) For PHY202 5: If unstable nuclide undergo beta decay, this will lead to an increase in the number of one of these particles
Answer: Proton

MCQ6: If unstable nuclide undergo beta decay, this will lead to an increase in the number of one of these particles
Answer: Proton

MCQ7: Which nuclides require more neutrons than protons?
Answer: heaviest nuclides

MCQ8: The principal quantum number is normally represented by one of these symbols
Answer: L

MCQ9: The potential energy acquired by an electron is attributable to one of the following;
Answer: attraction of the nucleus

MCQ10: Which of these scientists visualized an atom as consisting of positively charged nucleus at the centre of an atom?
Answer: Rutherford

MCQ11: The negative electric charges are usually called ____.
Answer: Electrons

MCQ12: If the emitted radiation should increase in wavelength, the electron continuously loses one of the following as it spirals inward toward the nucleus.
Answer: Energy

MCQ13: X-ray wavelength can be measured quite precisely by one of these methods
Answer: crystal diffraction techniques

MCQ14: Electrons in an X-ray tube are accelerated by a potential difference of 10.0kv. If an electron produces one proton on impact with the target, what is the minimum wavelength of the resulting x-rays?
Answer: 0.124nm

MCQ15: X-rays have many practical application in medicine and industry because x-ray photons are of;
Answer: high energy

MCQ16: Which of the following is not a model of atom?
Answer: Albert Einstein model

MCQ17: The energy emitted during excitation is accompanied by _____.
Answer: Gamma rays

MCQ18: The X-rays in the same series, say K or L produced from an element of higher atomic weight is _____ that produced from an element of low atomic weight
Answer: less than

MCQ19: The key properties of the nucleus include the following except one:
Answer: Heat energy

MCQ20: The following points hold for a stable nuclides except one
Answer: Binding energy is small

MCQ21: The following are types of detectors except one
Answer: infra-red

MCQ22: The following are the component of mass spectrometer except one
Answer: magnetic plate

MCQ23: In Bainbridge mass spectrometer, when charged particles move in the straight horizontal line through both electrical and magnetic fields, the velocity is _____.
Answer:

MCQ24: _____ measures the different isotopes of anion.
Answer: mass spectrometer

MCQ25: Kα are x-ray produced when electron from (L) shell move in to fill the gap in one of these shells.
Answer: L

MCQ26: Who suggested that the orbital angular momentum experienced by an electron in allowed orbit is equal to an integral multiple of ? (Where h is the Planck's constant. L = mvr = n ħ where n = 1, 2, _____ and n is called principal quantum number).
Answer: Bohr's model

MCQ27: Which of the following is not a Bohr's postulate?
Answer: An atom or ion emits radiation when an electron makes a transition from an initial allowed orbit with a quantum ni to a final allowed orbit with quantum number, nf for ni>nf.

MCQ28: X-ray emission is the inverse effect of one of these process:
Answer: photoelectric effect

MCQ29: Which of these is formed as a consequence of transformation of the kinetic energy of an electron into the energy of a proton?
Answer: X-ray

MCQ30: The transformation of energy of a photon into kinetic energy of an electron is called _____.
Answer: photoelectric emission

MCQ31: When an electron jumps from higher orbit to a lower orbit, it _____energy.
Answer: Absorbs

MCQ32: An electron can move in an orbit of certain radius. This is a statement of which of these great scientists?
Answer: Bohr's theory of atom

MCQ33: The frequency of electromagnetic radiation emitted by a hydrogen atom which undergoes a transition between energy levels of -1.36 X 10-19 J and -5.45 X 10-19 J, is _____ (Use Planck’s constant h = 6.6 X 10-34 Js)
Answer: 102.6 Hz

MCQ34: The wavelength of the radiation associated with a transition from energy levels (-4.0 eV) to (-1.8 eV) is ____.
Answer: 5.625 x 10-7 m

MCQ35: An unstable nuclide can undergo a decay so that its proton number
Answer: decreases