Sample Questions APPLIED SCIENCE (22211)

(For Term End Online Examination, there will be 25 (15 x 1Mark questions + 10 x 2Marks questions = 35 Marks) questions each on Physics and Chemistry.)

Topic 1

1) Question: - Two capacitance 4µF and 8µF are first connected in series and then parallel their equivalent capacitance are _____ and _______ respectively.
   Option A: - 2.66µF, 12 µF                      Option B: - 12µF, 2.66 µF
   Option C: - 4µF, 12µF                        Option D: - 12µF, 4µF

2) Question: - Three capacitors each of capacity C are connected. The resultant capacity (2C/3) can be obtained by connecting __________.
   Option A: - all of them in series
   Option B: - all of them in parallel
   Option C: - Two of them in parallel and third in series with this combination
   Option D: - Two of them in series and third in parallel across this

3) Question: - If the area of metal plates of capacitor with capacitance C is doubled, then capacitance will become _____.
   Option A: - C                                   Option B: - 2C
   Option C: - 4C                                  Option D: - C/2

4) Question: - A capacitor of capacity 50µF is connected across a supply of 5V. Find the energy stored in the capacitor.
   Option A: - 625 µJ                                   Option B: - 6.25 J
   Option C: - 62.5 J                                   Option D: - 125 µJ
5) Question: - When condensers are connected in parallel, ________ gets divided into a number of parts.

Option A: - charge          Option B: - current
Option C: - Both (A) and (B) Option D: - potential

6) Question: - The algebraic sum of voltages around any closed path in network is equal to ________.

Option A: - Infinity          Option B: - -1
Option C: - 0                  Option D: - +1

Topic 2

7) Question: - Who of the following is associated with radioactivity?

Option A: - Henry Becquerel    Option B: - Issac Newton
Option C: - Albert Einstein    Option D: - C. V. Raman

8) Question: - The half-life period of a radioactive element is 5 years. If the number of atoms present initially (at t=0 years) is 20,000; how many atoms would remain after 20 years?

Option A: - 10,000             Option B: - 7,500
Option C: - 5,000              Option D: - 20,000

9) Question: - Half-life period of a radioactive element is given by T = ________ where all symbols have usual meanings.

Option A: - 0.693/λ            Option B: - 0.693 λ
Option C: - 0.693/N            Option D: - 0.693 N
10) Question: - Which wave has same frequency and periodic time as wave A

Option A: - Wave B  
Option B: - Wave C  
Option C: - Wave D  
Option D: - Both (B) and (C)

11) Question: - Which of the following statement is not true?

Option A: - When the observer moves away from the stationary source, then the pitch of sound decreases  
Option B: - When the observer moves towards the stationary source, then the pitch of sound increases  
Option C: - When the source moves away from stationary observer then the pitch of the sound decreases  
Option D: - When the source moves towards the stationary observer then the pitch of the sound decreases

12) Question: - A siren of police car emits pure tone at a frequency of 640 Hz. Find the frequency that a stationary person would hear when the car approaches him. The police car is moving towards him at 20 m/s. (Velocity of sound in air =340 m/s)

Option A: - 680 Hz  
Option B: - 604.45 Hz  
Option C: - 1360 Hz  
Option D: - 1208.89 Hz
13) Question: In photoelectric effect, by increasing the intensity of incident light on the surface of the metal, _______ increases.

Option A: - photoelectric current  
Option B: - penetration power  
Option C: - ionizing power  
Option D: - stopping potential

14) Question: The photoelectric work function of the metal is 3.3eV. Then the threshold frequency of the metal will be ________.

Option A: - $7.96 \times 10^{14}$Hz  
Option B: - $8.96 \times 10^{14}$Hz  
Option C: - $7.96 \times 10^{15}$Hz  
Option D: - $8.96 \times 10^{15}$Hz

15) Question: Which of the following are properties of the photon?

Option A: - indivisible entity  
Option B: - travels with speed of light  
Option C: - Does not get deflected by electric or magnetic field  
Option D: - All of the above

16) Question: The wavelength of 1 keV photon is $1.24 \times 10^{-9}$m, then frequency of 1 MeV photon is ________.

Option A: - $1.24 \times 10^{15}$Hz  
Option B: - $2.4 \times 10^{15}$Hz  
Option C: - $1.24 \times 10^{20}$Hz  
Option D: - $2.4 \times 10^{20}$Hz

17) Question: In He-Ne laser, He atom transfer their energy to Ne atom through ________.

Option A: - elastic collision  
Option B: - inelastic collision  
Option C: - absorption  
Option D: - emission

18) Question: A laser consists of active medium of collection of ________.

Option A: - atoms  
Option B: - molecule  
Option C: - ions  
Option D: - All of these
19) Question: - Chlorides should be removed from potable water as they render __________

Option A: - carcinogenic       Option B: - teratogenic
Option C: - unaesthetic and peculiar taste       Option D: - highly toxic

20) Question: - Corrosion of boiler occurs due to dissolved carbon dioxide can be removed by addition of calculated quantity of __________

Option A: - Hydrochloric acid       Option B: - sulphuric acid
Option C: - Nitric acid       Option D: - Ammonia

21) Question: - Pollution of water bodies can be controlled by __________

Option A: - Releasing industrial effluents into water bodies.       Option B: - dumping waste in water bodies.
Option C: - throwing plastic into water bodies.       Option D: - Treatment of sewage waste before disposal

22) Question: - Disinfection of water, during water treatment helps in removal of __________

Option A: - salts from water       Option B: - pathogenic bacteria from water
Option C: - hardness from water       Option D: - dissolved oxygen from water

23) Question: - Soap is a mixture of fatty acids like __________

Option A: - hydrochloric acid       Option B: - nitric acid
Option C: - oxalic acid       Option D: - stearic acid

24) Question: - Which of the given dissolved salts in water will cause the maximum hardness in water sample.

Option A: - 10 ppm of CaCO₃       Option B: - 10 ppm of CaSO₄
Option C: - 10 ppm of MgCl₂       Option D: - 10 ppm of Mg(OH)₂
25) Question: During Titration of acetic acid with sodium hydroxide, the conductivity of solution increases after equivalence point is due to______

Option A: increase in number Hydroxide ions
Option B: Neutralisation of acetic acid
Option C: formation of water
Option D: Removal of sodium hydroxide

26) Question: The resistance (R) of a conductor of uniform cross section is directly proportional to______

Option A: Length
Option B: Depth
Option C: Width
Option D: breadth

27) Question: Hydrogen electrode is used to determine which of the given property of solution.

Option A: conductivity
Option B: Density
Option C: Resistivity
Option D: none of these

28) Question: The Volumetric analysis, which is based on change in conductance of solution at equivalence point during titration is known as______

Option A: Gravimetric analysis
Option B: Iodometry
Option C: Conductometric titrations
Option D: Complexometric titrations

29) Question: In an electrolytic cell, Cathode is the electrode which is______

Option A: connected to Negative pole of battery
Option B: connected to Positive pole of battery
Option C: Positive terminal
Option D: Negative terminal
30) Question: - Match the following: The type of Battery & their applications

1] Lead acid cell  
2] Ni-cd cell  
3] Fuel cell  
4] Lithium-Lithium ion battery  
A] Laptop, Digital Camera  
B] Hospitals, laboratories  
c] Cordless appliances  
d] Communication system, airborne equipment in space  

Option A: - 1-B  2-C  3-D  4-A  
Option B: - 1-C  2-D  3-A  4-B  
Option C: - 1-A  2-B  3-C  4-D  
Option D: - 1-D  2-A  3-B  4-C  

Topic 6

31) Question: - Copper Constantan is which type of thermocouple?

Option A: - Type-E  
Option C: - Type-T  
Option B: - Type-K  
Option D: - Type-B  

32) Question: - Name the super-cooled liquid consisting of mixture of silicates, phosphates, borates and other material with 50-80% of silica.

Option A: - Mica  
Option C: - Asbestos  
Option B: - Ceramics  
Option D: - Glass  

33) Question: - The process used to improve the drawback of crude rubber is...............

Option A: - Vulcanization  
Option C: - Heating  
Option B: - Polymerization  
Option D: - None of these  

34) Question: - Mass can neither be produced nor destroyed i.e. mass is conserved, this law is called

Option A: - Law of conservation of energy  
Option C: - Faradys first law  
Option B: - Law of conservation of mass  
Option D: - Hooks law
35) Question: - Which among the following is/ are correct?

Graphene is:

1) A three dimensional network material  
2) Used in nanotechnology  
3) One of the strongest isotope of carbon

Option A: - Only 1 and 2  
Option B: - Only 2 and 3  
Option C: - Only 3  
Option D: - None of them

36) Question: - A hot liquid kept in a thermos is an example of which type of system.

Option A: - open system  
Option B: - closed system  
Option C: - isolated system  
Option D: - None of these

*______________________END______________________*