

## 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  $4\mu\text{F}$  and  $8\mu\text{F}$  are first connected in series and then parallel their equivalent capacitance are \_\_\_\_\_ and \_\_\_\_\_ respectively.

Option A: -  $2.66\mu\text{F}$ ,  $12\mu\text{F}$

Option B: -  $12\mu\text{F}$ ,  $2.66\mu\text{F}$

Option C: -  $4\mu\text{F}$ ,  $12\mu\text{F}$

Option D: -  $12\mu\text{F}$ ,  $4\mu\text{F}$

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  $50\mu\text{F}$  is connected across a supply of  $5\text{V}$ . Find the energy stored in the capacitor.

Option A: -  $625\mu\text{J}$

Option B: -  $6.25\text{J}$

Option C: -  $62.5\text{J}$

Option D: -  $125\mu\text{J}$

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  $T = \frac{0.693}{\lambda}$  where all symbols have usual meanings.

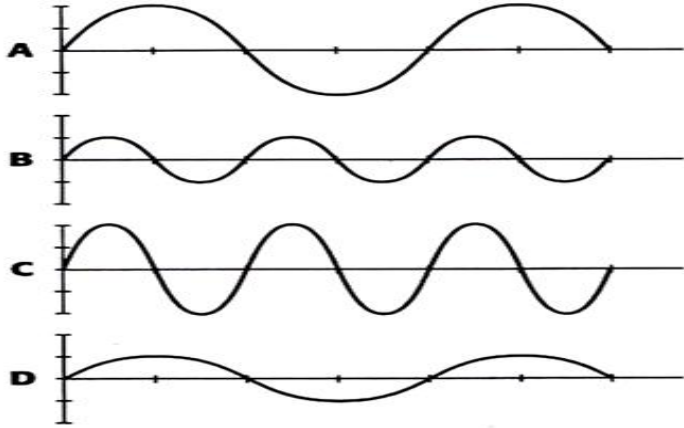
Option A: -  $0.693/\lambda$

Option B: -  $0.693 \lambda$

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

## Topic 3

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

## Topic 4

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  $\text{CaCO}_3$

Option B: - 10 ppm of  $\text{CaSO}_4$

Option C: - 10 ppm of  $\text{MgCl}_2$

Option D: - 10 ppm of  $\text{Mg(OH)}_2$

## Topic 5

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

A] Laptop, Digital Camera

2] Ni-cd cell

B] Hospitals, laboratories

3] Fuel cell

c] Cordless appliances

4] Lithium-Lithium ion battery

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 B: - Type-K

Option C: - Type-T

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 B: - Ceramics

Option C: - Asbestos

Option D: - Glass

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

Option A: - Vulcanization

Option B: - Polymerization

Option C: - Heating

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 B: - Law of conservation of mass

Option C: - Faradays first law

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

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