

RAVI MATHS TUITION CENTER , WHATSAPP - 8056206308**10TH SCIENCE 2ND MID TERM**

10th Standard

Science

Multiple Choice Question

75 x 1 = 75

- 1) When a sound wave travels through air, the air particles
 - (a) vibrate along the direction of the wave motion
 - (b) vibrate but not in any fixed direction
 - (c) vibrate perpendicular to the direction of the wave motion
 - (d) do not vibrate
- 2) Velocity of sound in a gaseous medium is 330 ms^{-1} . If the pressure is increased by 4 times without causing a change in the temperature, the velocity of sound in the gas is
 - (a) 330 ms^{-1}
 - (b) 660 ms^{-1}
 - (c) 165 ms^{-1}
 - (d) 990 ms^{-1}
- 3) The frequency, which is audible to the human ear is
 - (a) 50 kHz
 - (b) 20 kHz
 - (c) 15000 kHz
 - (d) 10000 kHz
- 4) The velocity of sound in air at a particular temperature is 330 ms^{-1} . What will be its value when temperature is doubled and the pressure is halved?
 - (a) 330 ms^{-1}
 - (b) 165 ms^{-1}
 - (c) $330 \times \sqrt{2} \text{ ms}^{-1}$
 - (d) $330/\sqrt{2} \text{ ms}^{-1}$
- 5) If a sound wave travels with a frequency of $1.25 \times 10^4 \text{ Hz}$ and 344 ms^{-1} , the wavelength will be
 - (a) 27.52 m
 - (b) 275.2 m
 - (c) 0.02752 m
 - (d) 2.752 m
- 6) The sound waves are reflected from an obstacle into the same medium from which they were incident. Which of the following changes?
 - (a) speed
 - (b) frequency
 - (c) wavelength
 - (d) none of these
- 7) Velocity of sound in the atmosphere of a planet is 500 ms^{-1} . The minimum distance between the sources of sound and the obstacle to hear the echo, should be
 - (a) 17 m
 - (b) 20 m
 - (c) 25 m
 - (d) 50 m
- 8) Man-made radioactivity is also known as _____.
 - (a) Induced radioactivity
 - (b) Spontaneous radioactivity
 - (c) Artificial radioactivity
 - (d) a & c
- 9) Unit of radioactivity is _____.
 - (a) roentgen
 - (b) curie
 - (c) becquerel
 - (d) all the above
- 10) Artificial radioactivity was discovered by _____.
 - (a) Becquerel
 - (b) Irene Curie
 - (c) Roentgen
 - (d) Neils Bohr
- 11) In which of the following, no change in mass number of the daughter nuclei takes place

- (i) α decay,
(ii) β decay,
(iii) γ decay,
(iv) neutron decay
- (a) (i) is correct (b) (ii) and (iii) are correct (c) (i) & (iv) are correct
(d) (ii) & (iv) are correct
- 12) _____ isotope is used for the treatment of cancer.
(a) Radio Iodine (b) Radio Cobalt (c) Radio Carbon (d) Radio Nickel
- 13) Gamma radiations are dangerous because
(a) it affects eyes & bones (b) it affects tissues (c) it produces genetic disorder
(d) it produces enormous amount of heat
- 14) _____ aprons are used to protect us from gamma radiations
(a) Lead oxide (b) Iron (c) Lead (d) Aluminium
- 15) Which of the following statements is/are correct?
i. α particles are photons
ii. Penetrating power of γ radiation is very low
iii. Ionization power is maximum for α rays
iv. Penetrating power of γ radiation is very high
(a) (i) & (ii) are correct (b) (ii) & (iii) are correct (c) (iv) only correct
(d) (iii) & (iv) are correct
- 16) Proton - Proton chain reaction is an example of _____
(a) Nuclear fission (b) α - decay (c) Nuclear fusion (d) β - decay
- 17) In the nuclear reaction ${}_6\text{X}^{12} \xrightarrow{\alpha \text{ decay}} {}_Z\text{Y}^A$ the value of A & Z.
(a) 8, 6 (b) 8, 4 (c) 4, 8 (d) cannot be determined with the given data
- 18) Kamini reactor is located at _____
(a) Kalpakkam (b) Koodankulam (c) Mumbai (d) Rajasthan
- 19) Which of the following is/are correct?
i. Chain reaction takes place in a nuclear reactor and an atomic bomb.
ii. The chain reaction in a nuclear reactor is controlled
iii. The chain reaction in a nuclear reactor is not controlled
iv. No chain reaction takes place in an atom bomb
(a) (i) only correct (b) (i) & (ii) are correct (c) (iv) only correct
(d) (iii) & (iv) are correct
- 20) $\text{H}_{2(g)} + \text{Cl}_{2(g)} \rightarrow 2\text{HCl}_{(g)}$ is a
(a) Decomposition Reaction (b) Combination Reaction

(c) Single Displacement Reaction (d) Double Displacement Reaction

21) Photolysis is a decomposition reaction caused by _____

(a) heat (b) electricity (c) light (d) mechanical energy

22) The reaction between carbon and oxygen is represented by $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)} + \text{Heat}$. In which of the type(s), the above reaction can be classified?

(i) Combination Reaction

(ii) Combustion Reaction

(iii) Decomposition Reaction

(iv) Irreversible Reaction

(a) i and ii (b) i and iv (c) i, ii and iii (d) i, ii and iv

23) The chemical equation $Na_2SO_{4(aq)} + BaCl_{2(aq)} \rightarrow BaSO_{4(s)} \downarrow + 2NaCl_{(aq)}$ represents which of the following types of reaction?

(a) Neutralisation (b) Combustion (c) Precipitation (d) Single displacement

24) Which of the following statements are correct about a chemical equilibrium?

(i) It is dynamic in nature

(ii) The rate of the forward and backward reactions are equal at equilibrium

(iii) Irreversible reactions do not attain chemical equilibrium

(iv) The concentration of reactants and products may be different

(a) i, ii and iii (b) i, ii and iv (c) ii, iii and iv (d) i, iii and iv

25) A single displacement reaction is represented by $X_{(s)} + 2HCl_{(aq)} \rightarrow XC_{12(aq)} + H_{2(g)}$.

Which of the following(s) could be X. (i) Zn (ii) Ag (iii) Cu (iv) Mg. Choose the best pair.

(a) i and ii (b) ii and iii (c) iii and iv (d) i and iv

26) Which of the following is not an "element + element \rightarrow compound" type reaction?

(a) $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)}$ (b) $2K_{(s)} + Br_{2(l)} \rightarrow 2KBr_{(s)}$ (c) $2CO_{(g)} + O_{2(g)} \rightarrow 2CO_{2(g)}$

(d) $4Fe_{(s)} + 3O_{2(g)} \rightarrow 2Fe_2O_{3(s)}$

27) Which of the following represents a precipitation reaction?

(a) $A_{(s)} + B_{(s)} \rightarrow C_{(s)} + D_{(s)}$ (b) $A_{(s)} + B_{(aq)} \rightarrow C_{(aq)} + D_{(l)}$ (c) $A_{(aq)} + B_{(aq)} \rightarrow C_{(s)} + D_{(aq)}$

(d) $A_{(aq)} + B_{(s)} \rightarrow C_{(aq)} + D_{(l)}$

28) The pH of a solution is 3. Its $[OH^-]$ concentration is

(a) $1 \times 10^{-3} M$ (b) $3M$ (c) $1 \times 10^{-11} M$ (d) $11 M$

29) Powdered $CaCO_3$ reacts more rapidly than flaky $CaCO_3$ because of _____.

(a) large surface area (b) high pressure (c) high concentration

(d) high temperature

30) The molecular formula of an open chain organic compound is C_3H_6 . The class of the compound is

- (a) alkane (b) alkene (c) alkyne (d) alcohol
- 31) The IUPAC name of an organic compound is 3-Methyl butan-1-ol. What type compound it is?
(a) Aldehyde (b) Carboxylic acid (c) Ketone (d) Alcohol
- 32) The secondary suffix used in IUPAC nomenclature of an aldehyde is ____
(a) - ol (b) - oic acid (c) - al (d) - one
- 33) Which of the following pairs can be the successive members of a homologous series?
(a) C_3H_8 and C_4H_{10} (b) C_2H_2 and C_2H_4 (c) CH_4 and C_3H_6
(d) C_2H_5OH and C_4H_8OH
- 34) $C_2H_5OH + 3O_2 \rightarrow 2CO_2 + 3H_2O$ is a
(a) Reduction of ethanol (b) Combustion of ethanol
(c) Oxidation of ethanoic acid (d) Oxidation of ethanal
- 35) Rectified spirit is an aqueous solution which contains about _____ of ethanol
(a) 95.5 % (b) 75.5 % (c) 55.5 % (d) 45.5 %
- 36) Which of the following are used as anaesthetics?
(a) Carboxylic acids (b) Ethers (c) Esters (d) Aldehydes
- 37) TFM in soaps represents _____ content in soap
(a) mineral (b) vitamin (c) fatty acid (d) carbohydrate
- 38) Which of the following statements is wrong about detergents?
(a) It is a sodium salt of long chain fatty acids
(b) It is sodium salts of sulphonic acids
(c) The ionic part in a detergent is $-SO_3^-Na^+$ (d) It is effective even in hard water.
- 39) Biogenetic law states that _____
(a) Ontogeny and phylogeny go together (b) Ontogeny recapitulates phylogeny
(c) Phylogeny recapitulates ontogeny
(d) There is no relationship between phylogeny and ontogeny
- 40) The 'use and disuse theory' was proposed by _____.
(a) Charles Darwin (b) Ernst Haeckel (c) Jean Baptiste Lamarck
(d) Gregor Mendel
- 41) Paleontologists deal with
(a) Embryological evidences (b) Fossil evidences (c) Vestigial organ evidences
(d) All the above
- 42) The best way of direct dating fossils of recent origin is by

- (a) Radio-carbon method (b) Uranium lead method (c) Potassium-argon method
(d) Both (a) and (c)
- 43) The term Ethnobotany was coined by
(a) Khorana (b) J.W. Harsbberger (c) Ronald Ross (d) Hugo de Vries
- 44) Which method of crop improvement can be practised by a farmer if he is inexperienced?
(a) clonal selection (b) mass selection (c) pureline selection (d) hybridisation
- 45) Pusa Komal is a disease resistant variety of _____.
(a) sugarcane (b) rice (c) cow pea (d) maize
- 46) Himgiri developed by hybridisation and selection for disease resistance against rust pathogens is a variety of _____.
(a) chilli (b) maize (c) sugarcane (d) wheat
- 47) The miracle rice which saved millions of lives and celebrated its 50th birthday is _____.
(a) IR 8 (b) IR 24 (c) Atomita 2 (d) Ponni
- 48) Which of the following is used to produce products useful to humans by biotechnology techniques?
(a) enzyme from organism (b) live organism (c) vitamins (d) both (a) and (b)
- 49) We can cut the DNA with the help of
(a) scissors (b) restriction endonucleases (c) knife (d) RNAase
- 50) rDNA is a
(a) vector DNA (b) circular DNA (c) recombinant of vector DNA and desired DNA
(d) satellite DNA
- 51) DNA fingerprinting is based on the principle of identifying _____ sequences of DNA
(a) single stranded (b) mutated (c) polymorphic (d) repetitive
- 52) Organisms with modified endogenous gene or a foreign gene are also known as
(a) transgenic organisms (b) genetically modified (c) mutated (d) both a and b
- 53) In a hexaploid wheat ($2n = 6x = 42$) the haploid (n) and the basic(x) number of chromosomes respectively are
(a) $n = 7$ and $x = 21$ (b) $n = 21$ and $x = 21$ (c) $n = 7$ and $x = 7$
(d) $n = 21$ and $x = 7$
- 54) Tobacco consumption is known to stimulate secretion of adrenaline. The component causing this could be
(a) Nicotine (b) Tannic acid (c) Curcumin (d) Leptin

- 55) World 'No Tobacco Day' is observed on
(a) May 31 (b) June 6 (c) April 22 (d) October 2
- 56) Cancer cells are more easily damaged by radiations than normal cells because they are
(a) Different in structure (b) Non dividing (c) Starved mutation
(d) Undergoing rapid division
- 57) Which type of cancer affects lymph nodes and spleen?
(a) Carcinoma (b) Sarcoma (c) Leukemia (d) Lymphoma
- 58) Excessive consumption of alcohol leads to
(a) Loss of memory (b) Cirrhosis of liver (c) State of hallucination
(d) Suppression of brain function
- 59) Coronary heart disease is due to
(a) Streptococci bacteria (b) Inflammation of pericardium
(c) Weakening of heart valves (d) Insufficient blood supply to heart muscles
- 60) Cancer of the epithelial cells is called
(a) Leukemia (b) Sarcoma (c) Carcinoma (d) Lipoma
- 61) Metastasis is associated with
(a) Malignant tumour (b) Benign tumour (c) Both (a) and (b)
(d) Crown gall tumour
- 62) Polyphagia is a condition seen in
(a) Obesity (b) Diabetes mellitus (c) Diabetes insipidus (d) AIDS
- 63) Where does alcohol effect immediately after drinking?
(a) eyes (b) auditory region (c) liver (d) central nervous system
- 64) Which of the following is / are a fossil fuel?
i. Tar
ii. Coal
iii. Petroleum
(a) i only (b) i only ii (c) ii and iii (d) i, ii and iii
- 65) What are the steps will you adopt for better waste management?
(a) reduce the amount of waste formed (b) reuse the waste (c) recycle the waste
(d) all of the above
- 66) The gas released from vehicles exhaust are
i. carbon monoxide

ii. Sulphur dioxide

iii. Oxides of nitrogen

(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii

67) Soil erosion can be prevented by

(a) deforestation (b) afforestation (c) over growing (d) removal of vegetation

68) A renewable source of energy is

(a) petroleum (b) coal (c) nuclear fuel (d) trees

69) Soil erosion is more where there is

(a) no rain fall (b) low rainfall (c) rain fall is high (d) none of these

70) An inexhaustible resources is

(a) wind power (b) soil fertility (c) wild life (d) all of the above

71) Common energy source in village is

(a) electricity (b) coal (c) biogas (d) wood and animal dung

72) Green house effect refers to

(a) cooling of earth (b) trapping of UV rays (c) cultivation of plants
(d) warming of earth

73) A cheap, conventional, commercial and inexhaustible source of energy is

(a) hydropower (b) solar energy (c) wind energy (d) thermal energy

74) Global warming will cause

(a) raise in level of oceans (b) melting of glaciers (c) sinking of islands
(d) all of these

75) Which of the following statement is wrong with respect to wind energy

(a) wind energy is a renewable energy
(b) the blades of wind mill are operated with the help of electric motor
(c) production of wind energy is pollution free
(d) usage of wind energy can reduce the consumption of fossil fuels.

30 x 2 = 60

76) What is a longitudinal wave?

77) What is the audible range of frequency?

78) Name three animals, which can hear ultrasonic vibrations.

79) Who discovered natural radioactivity?

80) Write any two elements which are used for inducing radioactivity?

81) If A is a radioactive element which emits an α - particle and produces ${}_{104}\text{Rf}^{259}$. Write the atomic number and mass number of the element A.

- 82) What is the average energy released from a single fission process?
- 83) Which hazardous radiation is the cause for the genetic disease?
- 84) When and where was the first nuclear reactor built?
- 85) Give the SI unit of radioactivity
- 86) Why does the reaction rate of a reaction increase on raising the temperature?
- 87) Define combination reaction. Give one example for an exothermic combination reaction.
- 88) Differentiate reversible and irreversible reactions.
- 89) Name the simplest ketone and give its structural formula.
- 90) How is ethanoic acid prepared from ethanol? Give the chemical equation.
- 91) How do detergents cause water pollution? Suggest remedial measures to prevent this pollution?
- 92) Differentiate soaps and detergents.
- 93) Which organism is considered to be the fossil bird?
- 94) What is the study of fossils called?
- 95) Define genetic engineering.
- 96) Name the types of stem cells.
- 97) What are transgenic organisms?
- 98) State the importance of biofertiliser.
- 99) What are psychotropic drugs?
- 100) What are the contributing factors for obesity?
- 101) What is metastasis?
- 102) How does insulin deficiency occur?
- 103) What will happen if trees are cut down?
- 104) What are the agents of soil erosion?
- 105) Solar energy is a renewable energy. How?
- 40 x 4 = 160
- 106) Why does sound travel faster on a rainy day than on a dry day?
- 107) Why does an empty vessel produce more sound than a filled one?
- 108) Explain why, the ceilings of concert halls are curved.
- 109) Mention two cases in which there is no Doppler effect in sound?
- 110) A sound wave has a frequency of 200 Hz and a speed of 400 m s^{-1} in a medium. Find the wavelength of the sound wave.
- 111) The thunder of cloud is heard 9.8 seconds later than the flash of lightning. If the speed of sound in air is 330 m s^{-1} , what will be the height of the cloud?

- 112) Two observers are stationed in two boats 4.5 km apart. A sound signal sent by one, under water, reaches the other after 3 seconds. What is the speed of sound in the water?
- 113) A strong sound signal is sent from a ship towards the bottom of the sea. It is received back after 1s. What is the depth of sea given that the speed of sound in water 1450 m s^{-1} ?
- 114) Write any three features of natural and artificial radioactivity.
- 115) Define critical mass.
- 116) Define one roentgen.
- 117) State Soddy and Fajan's displacement law.
- 118) Give the function of control rods in a nuclear reactor.
- 119) In Japan, some of the new born children are having congenital diseases. Why?
- 120) What is stellar energy?
- 121) Give any two uses of radio isotopes in the field of agriculture?
- 122) What are called thermolysis reactions?
- 123) Explain the types of double displacement reactions with examples.
- 124) Explain the factors influencing the rate of a reaction
- 125) How does pH play an important role in everyday life?
- 126) What is called homologous series? Give any three of its characteristics?
- 127) Arrive at, systematically, the IUPAC name of the compound: $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-OH}$.
- 128) How is ethanol manufactured from sugarcane?
- 129) Explain the mechanism of cleansing action of soap.
- 130) The degenerated wing of a kiwi is an acquired character. Why is it an acquired character?
- 131) Why is Archaeopteryx considered to be a connecting link?
- 132) Define Ethnobotany and write its importance.
- 133) Discuss the method of breeding for disease resistance.
- 134) Name two maize hybrids rich in amino acid lysine.
- 135) State the applications of DNA fingerprinting technique.
- 136) How are stem cells useful in regenerative process?
- 137) Differentiate between outbreeding and inbreeding.
- 138) How is a cancer cell different from a normal cell?
- 139) Differentiate between Type-1 and Type-2 diabetes mellitus
- 140) Why is a dietary restriction recommended for an obese individual?
- 141) What precautions can be taken for preventing heart diseases?
- 142) What is the importance of rainwater harvesting?

- 143) What are the advantages of using biogas?
- 144) What are the environmental effect caused by sewage?
- 145) What are the consequences of deforestation?
- 7 Marks 30 x 7 = 210
- 146) What are the factors that affect the speed of sound in gases?
- 147) What is mean by reflection of sound? Explain:
- reflection at the boundary of a rarer medium
 - reflection at the boundary of a denser medium
 - Reflection at curved surfaces
- 148) a) What do you understand by the term 'ultrasonic vibration'?
- State three uses of ultrasonic vibrations.
 - Name three animals which can hear ultrasonic vibrations.
- 149) What is an echo?
- State two conditions necessary for hearing an echo.
 - What are the medical applications of echo?
 - How can you calculate the speed of sound using echo?
- 150) Explain the process of controlled and uncontrolled chain reactions.
- 151) Compare the properties of alpha, beta and gamma radiations.
- 152) What is a nuclear reactor? Explain its essential parts with their functions.
- 153) 'X – rays should not be taken often'. Give the reason.
- 154) Cell phone towers should be placed far away from the residential area – why?
- 155) A solid compound 'A' decomposes on heating into 'B' and a gas 'C'. On passing the gas 'C' through water, it becomes acidic. Identify A, B and C.
- 156) Can a nickel spatula be used to stir copper sulphate solution? Justify your answer.
- 157) The molecular formula of an alcohol is $C_4H_{10}O$. The locant number of its $-OH$ group is 2.
- Draw its structural formula.
 - Give its IUPAC name.
 - Is it saturated or unsaturated?
- 158) An organic compound 'A' is widely used as a preservative and has the molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet smelling compound 'B'.
- Identify the compound 'A'.
 - Write the chemical equation for its reaction with ethanol to form compound 'B'.
 - Name the process.
- 159) Natural selection is a driving force for evolution-How?
- 160) How do you differentiate homologous organs from analogous organs?
- 161) How does fossilization occur in plants?

- 162) What are the effects of hybrid vigour in animals?
- 163) Describe mutation breeding with an example.
- 164) Biofortification may help in removing hidden hunger. How?
- 165) With a neat labelled diagram explain the techniques involved in gene cloning.
- 166) Discuss the importance of biotechnology in the field of medicine.
- 167) A breeder wishes to incorporate desirable characters into the crop plants. Prepare a list of characters he will incorporate.
- 168) Suggest measures to overcome the problems of an alcoholic.
- 169) Changes in lifestyle is a risk factor for occurrence of cardiovascular diseases. Can it be modified? If yes, suggest measures for prevention.
- 170) What is the role of fat in the cause of atherosclerosis?
- 171) How does rainwater harvesting structures recharge ground water?
- 172) How will you prevent soil erosion?
- 173) What are the sources of solid wastes? How are solid wastes managed?
- 174) Enumerate the importance of forest.
- 175) What are the consequences of soil erosion?

7 Marks Problems

10 x 7 = 70

- 176) A source producing a sound of frequency 90 Hz is approaching a stationary listener with a speed equal to $(1/10)$ of the speed of sound. What will be the frequency heard by the listener?
- 177) Source producing a sound of frequency 500 Hz is moving towards a listener with a velocity of 30 m s^{-1} . The speed of the sound is 330 m s^{-1} . What will be the frequency heard by listener?
- 178) A source of sound is moving with a velocity of 50 m s^{-1} towards a stationary listener. The listener measures the frequency of the source as 1000 Hz. what will be the apparent frequency of the source when it is moving away from the listener after crossing him? (velocity of sound in the medium is 330 m s^{-1})
- 179) A radon specimen emits radiation of 3.7×10^3 GBq per second. Convert this disintegration in terms of curie. (one curie = 3.7×10^{10} disintegration per second).
- 180) ${}_{92}\text{U}^{235}$ experiences one α - decay and one β - decay. Find number of neutrons in the final daughter nucleus that is formed.
- 181) Calculate the amount of energy released when a radioactive substance undergoes fusion and results in a mass defect of 2 kg.
- 182) Calculate the pH of 0.001 molar solution of HCl.
- 183) Calculate the pH of 1×10^{-4} molar solution of NaOH.
- 184) Lemon juice has a pH 2, what is the concentration of H^+ ions?
- 185) Calculate the pH of 1.0×10^{-4} molar solution of HNO_3 .

