

## MHTCET 2024 Answer Key May 10 Shift 1

1. What is the Instructument for structure binding?

Ans. Binds the specified names to subobjects or elements of the initializer. Like a reference, a structured binding is an alias to an existing object.

2. Which element is completely filled f orbital in expected e configuration?

Ans: Actinoids transition elements c Lanthanoids halogens.

3. What is the oxidation state?

Ans: An oxidation state is a number that is assigned to an element in a chemical combination. This number represents the number of electrons that an atom can gain, lose, or share when chemically bonding with an atom of another element.

4. Scoop is a mixture of?

Ans: A mixture of sodium chlorate and nitrobenzene used in making improvised bombs during The Troubles in Northern Ireland.

5. What is the moment of Interia ( Sphere and Disc)?

Ans: The moment of inertia of a sphere is given by the formula  $I = (\frac{2}{5})MR^2$ , where R is the radius and M is the mass of the sphere

6. What is Terminal Velocity?

Ans: The constant speed that a freely falling object eventually reaches when the resistance of the medium through which it is falling prevents acceleration.

7. What is wavelength and absolute temperature?

Ans: Varies inversely as the square root of absolute temperature.

8. How many times a coin should be tossed so that atleast one head lands 99% times?

Ans: 7

9. If Y is a function of x and  $\log(x+y) = 2xy$  then value of y(o) is?

Ans. 1

10. If the function of f(x) is continuous in  $0 < x < 22$  then the value of  $2a+3b$  is?

Ans: 4

11. If X Y Z are in A.P. and  $\tan^{-1}x$ ,  $\tan^{-1}y$  and  $\tan^{-1}z$  are also in A.P. then<

Ans:  $6X=4Y=3Z$

12. M aqueous solution of glucose has osmotic pressure 4.9 atm at 300 K. What is the concentration of glucose if it has osmotic pressure 1.5 atm at same temperature?

Ans: 0.05 M

13. Identify the reaction in which carbonyl group of aldehydes and ketones is reduced to methylene group on treatment with hydrazine followed by heating with sodium hydroxide in ethylene glycol?

Ans: Stephen Reaction

14. Calculate the pH buffer solution containing 0.01M salt and 0.004 M weak acid.

Ans: 4.76

15. What is the concentration of OH<sup>-</sup> ion in a solution containing 0.05 M H<sup>+</sup> ions?

Ans:  $2.0 \times 10^{-13}$

16. What is the oxidation state of carbon in CaC<sub>2</sub> and K<sub>2</sub>C<sub>2</sub>O<sub>4</sub> respectively?

Ans: +2 and +2

17. Oxidation state of manganese in potassium permanganate is?

Ans: +7

18. Identify neutral ligand from the following:

Ans: Nitrate

19. Identify monodentate ligand from the following:

Ans: Oxalate ion

20. Which from the following is coordinate complexes contains anionic and neutral ligands in it?

Ans: Hexacyanoferrate

21. What is the formal charge of on sulfur in the following Lewis Structure?

Ans: 0

22. Which of the following compounds exhibits +2 oxidation state of oxygen?

Ans: OF<sub>2</sub>

23. What is the position of transition elements from Sc to Zn in long form of periodic table?

Ans: Group 3 to 12

24. Identify the product obtained when isopropyl bromide is reacted with metallic sodium in dry ether?

Ans: Isohexane