TELANGANA UNIVERSITY
S.S.R. DEGREE COLLEGE, NIZAMABAD (C.C:5029)
V SEMESTER INTERNAL ASSESSMENT II EXAMINATIONS
PHYSICS (MODERN PHYSICS) QUESTION BANK

I. Multiple choice questions.

1. The nuclear mass is given by M = [c]

a. zmp b. Nm_n c. $zm_p + Nm_n$ d. None

2. The nuclear radius r_0 = _____ [d]

a. $1.5m^3$ b. $1.5m^2$ c. 1.5m d. 1.5Fm

3. Nuclear forces are _____ range [b]

a. Long b. Short c. Medium d. None

4. α - particle is _____ nucleus [a]

a. He b. H c. Li d. B

5. Range R is proportional to [c]

a. 1/V b. V^2 c. V^3 d. V

6. β -particle is an _____ particle [d]

a. n & p b. n c. p d. $-1e^0$

7. Coordination number of FCC is [b]

a. 3 b. 12 c. 8 d. 4

8. Bravais showed _____ classes of space lattice [a]

a. 14 b. 7 c. 20 d. 4

9. The distance between crystal plane is d = [c]

a. $\frac{1}{\sqrt{h^2 + h^2 pl^2}}$ b. $\frac{2a}{\sqrt{h^2 pk^2 + l^2}}$ c. $\frac{a}{\sqrt{h^2 + k^2 + l^2}}$ d. $\frac{1}{h^2 + k^2 + l^2}$

10. Example of Ionic crystal [d]

a. HCl b. N_2 c. Cl_2 d. NaCl

11. Nuclear radius R = _____ [c]

a. $R = R_0AV_3$ b. $R = R_0A^{1/2}$ c. $R = R_0A^{1/3}$ d. None

12. Magnetic diapolemoment of nucleus _____ [b]

a. $up = H/2M_P$ b. up = e $\overline{h}$ /2Mp c. up = e^{π} /2mp d. None

13. Columb Energy is (E_c) = _____ [a]

a. $E_C = \frac{-CZ(Z-1)}{AV^3}$ b. $E_C = \frac{-C(Z-1)}{AV^3}$ c. $E_C = \frac{(Z-1)}{AV^3}$ d. None

14. $_{92}U^{235} \underrightarrow{\alpha}$ _____ + _____ [a]

a. $_{\infty}Th^{235}$, $_2He^4$ b. $_6B^5$, $_4He^5$ c. $_{36}Kr^{72}$, $_2He^4$ d. None

15. Geigares-newtan's law = _____ [a]

a. $\log \lambda = A + B \log R$ b. $\log \alpha = A - B$ c. $\log \beta = A / B$ d. None

16. In Gomow's theory of α -decay $\log_{e^{\lambda}}$ = _____ [b]

a. $\log_B \frac{V}{2} + \log_e p$ b. $\log_e \frac{V}{2r_0} + \log_e p$ c. $\log \frac{U}{2r}$ d. None

17. Shell model was suggested by _____ [c]

a. N.Bohr b. Rutharford c. M.Mayer d. Einstein

18. The miller indicates of (2,3,4) _____ [c]

a. (6,2,3) b. (2,3,4) c. (6,4,2) d. None

19. Bragg's law _____ [b]

a. $2\sin\theta = n\lambda$ b. $2d\sin\theta = n\lambda$ c. $\sin\theta = n\lambda$ d. None

20. Solid are classified into _____ types [a]

a. 2 b. 3 c. 4 d. 6

II. Fill in the blanks.

1. 1 fermion = 10^{-15} M
2. Deuteron is isotope of hydrogen.
3. Nuclear is isotope of hydrogen.
4. There are energy ranges from 0 to max called as end point.
5. No. of atoms in Bcc are 9
6. There are 7 crystal systems.
7. [h k l] group are the miller induces of the.
8. CSCl structure has simple cubic structure.
9. The semi vertical angle of cone is gioen by 2θ
10. Born-repulsive P-E is UR = $-\frac{B}{r^n}$
11. Fission can be best explained by liquid drop model
12. Semi empivical mass formula is useful for explaining Fission
13. ISO bars have the same mass number
14. The mass of nutron is slightly greater than lamu
15. Quadrapole moment for a spherical nucleus is zero
16. Liquid drop model was suggested by N.Bhor and Kalker
17. No. of atoms in Base-centered cub is 10
18. Tetragonal system axces and angles $a = b \neq c, \alpha = \beta \neq \gamma$
19. Density (ρ) = mass/vol
20. CSCl structure simple cubic structure

III. Short Answers.

1. What is nuclear charge?

Ans: The charge of the nucleus is due to the of nucleons. It is given by Q = Ze, where; e = 1.6 X 10^{-19}C

2. What is α - decay?

Ans: K-mission of α -particle from the radio-active element. ${}_H X^A \rightarrow {}_{Z-2} y^{A-4} + 2He^4$

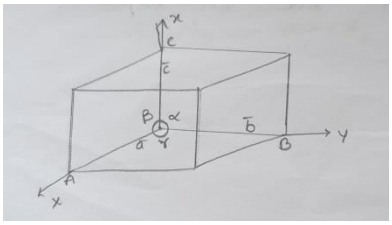
3. What is a crystal?

Ans: Crystal is a homogeneous anisotropic body having the natural shape of a Polyhedron.

4. Write positions of carbon atom in a diamond crystal?

Ans: [0 0 0] $\left[\frac{1}{2}\frac{1}{2}\frac{1}{2}\right]\left[\frac{3}{4}\frac{3}{4}\frac{3}{4}\right]\left[\frac{1}{4}\frac{1}{4}\frac{1}{4}\right]$

5. Draw lattice Parameter?



6. What is Unit Cell?

Ans: The unit cell is a smallest building block (or) geometric figure from which the entire crystal is built up by repetation is 3D.

7. Ortho Rhombic system axices and angles?

Ans: $a \neq b \neq c, \alpha \neq \beta \neq \gamma = 90^0$

8. What is basic?

Ans: A unit assembly of atoms (or) molecules in the orbital is known as basis.

9. 1 a.m.u ?

Ans: 1 atomic mass unit = 931.5 Mev

10. Failures of liquid drop model?

Ans: High stability of nucleus with magic numbers. Ii) The measured spine and magnetic moments of the nucleus are not explained.