FACULTY OF ENGINEERING
UNIVERSITY OF RAJSHAHI

Total Marks

Class Test

No 001574

Roll Number .....
Course Code .....
Exam. Date .....

Signature of Invigilator

RUP – 25,000/25-07-2015(C.S-1209)

Questions on atomic Structure

1.** what are the fundamental particles?

2.** what are the Rutherboord's atomic model ?
OR (2·75) 2012
Describe the Solar system atom model

3.** what are the limitation of Rutherboords atomic model
OR
what are the inadequacies of Rutherboords atomic model
OR
Postulates of Rutherboords atomic model (2·75) 2012

4** what are the Bohr atomic model
OR
postulates of Bohr's atomic model. (3.75) 2013, 2015, 20

5** what are the inadequacies of Bohr's theory?
OR
limitation of Bohr theory (2) M5

6** what are the De Broglie's equation
OR
Derive $\lambda = \frac{h}{mv}$
OR
The Dual nature (wave nature and particle nature)

7** Heisenberg uncertainty principle

8** Derive the expression for the radius of nth orbit of H-atom OR any orbit
OR
prove $r = 0.01 \times 0.529 \times 10^{-8}$ cm (3) 2016, 2019, 2012

9** Derive the expression for the energy of any orbit of the atom
OR
Prove, $E = \frac{2\pi^2 m z^2 e^4 q}{n^2 h^2}$

10** State and explain the Hunds rule of maximum multiplicity with example (2) 2016, 2019

11.** Aufbau principle OR building up principle
OR
(n+l) principle/rule (1) 2013

12** State and explain the paulis exclusion principle. (2) 2013

13** Give the value of l, m, S for n=1, 2, 3, 4

14** what are the quantum numbers
classify? (1) 2016, 2019

15 ** Calculate the radii of fourth orbit in H-atom. Given that $h = 6.62 \times 10^{-27}$ erg-s, $m = 9.1 \times 10^{-28}$ g, $\pi = 3.1416$, $e = 4.8 \times 10^{-10}$ esu

(2) 2012

16 ** what is the subshell designation for each of the following cases?

i) $n=2, l=0$ ii) $n=5, l=1$ iii) $n=4, l=3$

(1.75) 2016, 2014

17 ** Electronic configuration of the following

Cr, Cu, Sc, Cu^{2+}, Fe^{2+}, Zn^{2+}

Na^-, Cl^-

** Why the last electron of K goes to 4s orbital beforee ~~19th electron~~ 3d orbital? (2)