# NTS Educators SSE (Science) Jobs Test

| Sr | Questions | Answers Choice |
|---|---|---|
| 1 | Two electric bulbs of 200 W and 100 W have same voltage.If R1 and R2 be their resistance respectively then | A. R<sub>1</sub> = 2R<sub>2</sub><br>B. R<sub>2</sub> = 2R<sub>1</sub><br>C. R<sub>2</sub> = 4R<sub>1</sub><br>D. R<sub>1</sub> = 4R<sub>2</sub> |
| 2 | A ten-ohm electric heater operates on a 110 V line Calculate the rate at which it develops heat in watts: | A. 1310 W<br>B. 670 W<br>C. 810 W<br>D. 1210 W |
| 3 | The excess (equal in number) of electrons that must be placed on each of two small spheres spaced 3 cm apart. with force of repulsion between the spheres to be $10^{-19}$ N is | A. 25<br>B. 225<br>C. 625<br>D. 1250 |
| 4 | Two points charges A and B separated by a distance R attract each other with a force of 12 x $10^{-3}$ N. The force between A and B when the charges on them are doubled and distance is halved | A. 1.92 N<br>B. 19.2 N<br>C. 12 N<br>D. 0.192 N |
| 5 | A charge Q is divided into two parts q and Q - q and separated by a distance R. the force of repulsion between them will be maximum when: | A. q = Q/4<br>B. q = Q/2<br>C. q = Q<br>D. None of these |
| 6 | When a Na ion and a Cl ion are placed in air a force F acts between them when they are separated by a distance of 1 cm from each other the permittivity of air and the dielectric constant of water are $\varepsilon_0$ and K respectively When a piece of salt is placed in water then the force between $Na^+$ and $Cl^-$ ions separated by a distance of 1 cm will be | A. F<br>B. FK/ε<sub>0</sub><br>C. F/Kε<sub>0</sub><br>D. F/K |
| 7 | Two point charges placed at distance of 20 cm in air repel each other with a certain force.When a dielectric slab of thickness 8 cm and dielectric constant K is introduced between these point charges force of interaction becomes half of its previous value Then K is approximately. | A. 2<br>B. 4<br>C. √2<br>D. 1 |
| 8 | A point charge Q is placed at the mid-point of a line joining two charges 4q and q. if the net force on charge q is zero. then Q must be equal to | A. -q<br>B. +q<br>C. -2q<br>D. +4q |
| 9 | In a Millikan's oil drop experiment the charge on an oil drop is calculated to be 6.35 x 10-19 C. The number of excess electrons on the drop is | A. 3.9<br>B. 4<br>C. 4.2<br>D. 6 |
| 10 | Two point charge +3μC and +8μC repel each other with a force of 40 N. if a charge of -5μC is added to each of them then the force between will become | A. -10N<br>B. +10N<br>C. +20N<br>D. -20N |
| 11 | What is the average energy of N molecules of monoatomic gas? | A. 1/2 NkT<br>B. NkT<br>C. 3/2 NkT<br>D. 5/2 NkT |
| 12 | What is the ratio of r.m.s velocity for $O_2$ to $H_2$? | A. 1/4<br>B. 4<br>C. √4 : 1<br>D. 1 : √4 |
| 13 | At 0° K which of the following properties of a gas will be zero? | A. Kinetic energy<br>B. Potential energy<br>C. Vibrational eneqy |

| | | |
|---|---|---|
| | | D. Density |
| 14 | The product of the pressure and volume of an ideal gas is | A. A constant<br>B. Approximately equal to the universal gas constant<br>C. Directly Proportional to its temperature<br>D. Inversely proportional to its temperature |
| 15 | Boyle's law is applicable in | A. Isochoric process<br>B. Isothermal process<br>C. Isobaric process<br>D. Isotonic process |