**Q1)** **put (T) and (F) and correct the following** **(MSQ)** **(20 marks)**

1. Expansions in sound waves is region where waves are close together.
2. Light that passes a denser substance, transmitted light will be slow in speed.
3. Angle of refracted makes between the refracted Ray and the normal line.
4. Expansion in longitudinal wave is regions where the coils are close together.
5. Mechanical waves are composed from electric and magnetic fields propagated perpendicular on the wave direction.
6. If angle of incident is more than angle of reflected then the ray bends for from normal.
7. Mirage created by light that passed in air changed its density because change in the temperature.
8. The index of refraction higher for shorter wavelength.
9. At 7km (represent top of the troposphere) all radiation between 200nm has absorbed.
10. Amplitude of a wave refers to the maximum amount of displacement of a particle on the medium from its rest position or a amplitude is the distance from crest to crest.

**Q2) Choose the corrected answer from the following: (MSQ) (30 marks)**

1. The Ray bends away from the normal line if ……………………..
2. $θ\_{1}=θ\_{2}$ b.$ θ\_{1}>θ\_{2}$ c. $θ\_{1}<θ\_{2}$ d.$ θ\_{1}<θ\_{2}$
3. Loud speaker alternately expands and compresses air molecules that is in contact to produce ……………………
4. Longitudinal wave b. crest and through c. compression d. sound wave
5. ……………………is the angle that represent the obliquity of the ecliptic that varies cyclically over an average range of 1.5 degree at the period of about 41000 years.
6. Inclination b. orbital eccentricity c. precession d. obliquity
7. …………………..refer to ability of a light wave to hit an object and bounce back.
8. Echo b. refraction c. reflection d. detraction
9. The maximum cycle of sunspot that have same polarity is about ………………

a.11year b. yearly cycle c. 22year d. 23 year

1. ………………..applied on the electromagnetic waves that travels, its applied if displacement not too large.

a. Interference b. superposition c. Haygen s principle d. phase velocity

1. ……………..define as the ratio of the distance between the two foci, to the major axis of the ellipse.
2. Inclination angle b. orbital eccentricity c. precession d. Obliquity
3. ………………………is the rate at which radiant energy is incident on a surface per unit area of surface in unit’s W/m2.
4. radiant exposure b.insolation c. radiosity d. emissive power
5. The sun is ……………………of intensely hot gasesous matter.

a.elliptical b.rotational c.sphere d.circular

1. Sunspots are cooler regions having an average temperature of about …………..it’s very low companied to the average temperature of photosphere .

a.4\*10^6k b.5\*10^4 c.1\*10^6 d.6\*10^4

**Q3)** **Choose the suitable answer:** **(Mathematics MSQ)**  **(20 marks)**

1. Fringe formed on screen a way about 15cm form sources monochromatic wavelength 700nm pass through a single – slit have width 1um thus width of central fringe is ………cm.
2. 55cm b.29cm c.27cm d.39cm

**2-**If sun have diameter about 1.39\*109m thus the rate of this diameter to the earth sun distance is …………….. (Where earth far about 1.5\*109 km from the sun)

1. 0.932\*10-2 b.0.3 c. 0.26\*10-3 d. 0.7\*10-2

**3-**The equation ……………………… refer to the average direct solar radiation at average distance between the sun and the earth.

1. $I\_{dir}=I\_{Sc}\left( τ\_{0}τ\_{t}-α\_{w}\right)τ\_{a}$ b. $I\_{dir}=I\_{Sc}-α\_{0}$ c. $I\_{dir}=I\_{Sc}τ$

d.$ I\_{dir}=I\_{Sc}( τ\_{0}τ\_{t}-α\_{w})/τ\_{a}$

**4-**When light enters narrow slit, it diffract in different directions, concentrative and destructive interference create …………………….respectively on screen a way distance from source.

a. dark and bright regions b. bright and dark regions c. light wave form d. crest and through

**5-**At higher zenith angle earth curvature become significant and must be taken in to account for example at zenith angle …………, air mass equal to ……………..

a. 90, 2 b. 60, 2 c.30, 1 d. 60, 1

***Good Luck***

