



Instructions: - i. Attempt all questions.

ii. Figure on right hand side indicates full marks of that question.

Q - 1. Answer the following multiple choice questions.

[10]

1. Brackett series is lies in the _____ region of the spectrum.

(a) visible	(b) extreme ultraviolet
(c) microwave	(d) infrared
2. According to Max Plank, radiant energy is in the form of _____ packets of energy.

(a) cubic	(b) spherical
(c) discrete	(d) continuous
3. In _____ experiment the separation of successive peaks in the graph of collector and grid voltage for Hg atom is 4.9 V.

(a) Stern- Gerlach	(b) Franck-Hertz
(c) Hertz's	(d) Rutherford's
4. A transition between two electronic levels the resultant radiation falls in the _____ region of spectrum.

(a) microwave	(b) far infrared
(c) visible or ultra violet	(d) near infrared
5. A band has sharp intense edge on one side called _____.

(a) fine structure	(b) satellite
(c) shadow	(d) band head
6. Molecules have permanent dipole moment gives rise to _____ spectra.

(a) rotational	(b) Raman
(c) vibrational	(d) Pure rotational
7. Flat plate collector is not suitable for _____ temperature applications.

(a) high	(b) intermediate
(c) low	(d) very low
8. The Solar PV cells convert the incident solar light energy directly to electric energy in _____.

(a) AC form	(b) DC form
(c) thermal form	(d) sinusoidal form
9. The _____ begins about 10 km below the oceanic crust and about 30 km below the continental crust.

(a) core	(b) oceanic crust
(c) mantle	(d) continental crust
10. To record earth tremor, _____ instrument is used.

(a) AVO meter	(b) galvanometer
(c) magnetometer	(d) seismograph

P.T.O.

Q-2. Do as directed:

[08]

[A] Fill proper word in the blanks:

1. The line spectrum is the characteristic of the _____ concerned.
2. A vibration- rotational band arises due to transition between two vibrational level and the same _____ level.
3. The power Solar Cell delivers electrical power is given by _____ watts.
4. The inner most part of the earth is known as _____.

[B] Find true or false from the followings:

5. Relation $\lambda T = a$ constant is known as Wein's displacement law.
6. Raman lines arises due to scattering of light by the vibrating molecules.
7. The performance of a solar thermal collector is evaluated in terms of concentration ratio.
8. When two plates slide apart from each other is known as convergent boundaries.

Q-2. Answer the following short questions (Attempt any ten).

[20]

1. Write any two shortcomings of Bohr's theory.
2. Explain in short: Positronium.
3. Write Ritz combination principle.
4. Give the definition of a rigid rotator with figure.
5. Write the definition of Raman effect.
6. Enlist the differences of Raman Spectra and Fluorescence spectra.
7. Explain in brief: Interconnections of Solar Cells.
8. Draw the energy chain of wind energy.
9. Enlist the advantages of fuel cell power source.
10. Describe in short: The earth's atmosphere.
11. Discuss atmosphere of the Earth.
12. What is epicenter of the earth?

Q-4 Answer the following long questions (any four):

[32]

- [1] Write a note on Stern-Gerlach experiment.
- [2] Explain salient features of Alkali spectra.
- [3] Write theory of diatomic molecule as a non-rigid rotator with energy level diagram.
- [4] Explain: 1. Isotope effect in rotational spectra and
2. Rotational spectra of polyatomic molecules.
- [5] Describe subsystems of solar thermal energy conversion plant.
- [6] Write a note on Horizontal axis propeller type wind turbine generator units.
- [7] List out the major plates of the earth and explain movement of Plates.
- [8] Discuss the modern applications of Seismology.

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