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B.E. / B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, MAY/ JUNE 2013

GEO-INFORMATICS ENGINEERING BRANCH  
SECOND SEMESTER

PH8204 - PHYSICS FOR GEO INFORMATICS ENGINEERING  
(REGULATIONS 2012)

Time: 3 hr

( Max. Mark: 100)

Answer ALL Questions

Part - A (10 × 2 = 20 Mark )

1. Define irradiance.
2. What are spectral quantities?
3. What is meant by non-selective scattering?
4. What are the ranges of frequencies used in RADAR?
5. What is achromatism ?
6. What is your understanding about the "speed" of a film ?
7. State Kepler's law of planetary motion.
8. What do you mean by Doppler effect ?
9. What do you mean by Schottky barrier ?
10. What is photoresister ?

Part - B (5 × 16 = 80 Mark )

11. (a) i. Outline the basics of photographic process in the film with neat diagram and explain the performance of photographic film in terms of : speed, contrast and spectral resolution. (12)  
ii. How are colour and false-colour infra - red film constructed? (4)
12. (a) Calculate the gravitational potential and the intensity of the gravitational field due to a spherical shell of uniform density ( $\rho$ ) at points: (8+4+4)
  - i. inside
  - ii. outside and
  - iii. on the surface of a hollow spherical shell.

(OR)

- (b) What are the different types of satellites? Describe each satellite with neat diagram. (P T O)

13. (a) i. Describe the construction and working of photomultiplier tube with neat diagram. (10)  
ii. Explain the various parameters used to assess the performance of a detector. (6)

(OR)

- (b) Write short notes on: (6+4+4)
- Photo-voltaic diodes
  - CCD Camera and
  - Avalanche photo diode.

14. (a) Describe, with neat diagram, the interaction of electromagnetic waves with the earth cover type: vegetation, water and soil.

(OR)

- (b) Explain the principle, construction and working of a radar with block diagram.

15. (a) i. Derive the expression for Planck's black body radiation. (8)  
ii. From this expression deduce Rayleigh -Jean's law and Wien's law. (3+3)  
iii. What will be temperature of a star whose energy distribution shows a maximum at 500 nm? (2)

(OR)

- (b) i. What is electromagnetic radiation? Explain the sources of electromagnetic waves with neat diagram. (2+12)  
ii. Estimate the surface temperature of earth assuming it to be in radiative equilibrium with the sun, the radius of the sun is  $7 \times 10^8$  m and its surface temperature is 6000 K. The distance of the earth from the sun is  $1.5 \times 10^{11}$  m. (2)