

Question Paper Code: 59B09

B.E./B.Tech. DEGREE EXAMINATION, DEC 2021

Elective

Biomedical Engineering

15UBM 909 - Medical Optics

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Sun is a good example of CO2 App
(a) Luminous objects (b) Non-luminous objects
(c) Transparent objects (d) Opaque objects
2. We see the image of our face when we look into the mirror. It is due to CO2 App
(a) Interference (b) Diffraction (c) Polarisation (d) Reflection
3. As wavelength gets longer the laser light can be focused to CO2 App
(a) Large spot sizes (b) Small Spot sizes
(c) None of the above (d) Very small spot sizes
4. To generate laser beam which process must be satisfied? CO1 U
(a) Population inversion (b) Stimulated Emission
(c) Pumping source (d) All the above
5. Why the lasers used in Laser printers? CO2 App
(a) They can be focused down to very small spot size for high resolution
(b) They are cheap
(c) Very costly
(d) They are impossible to damage

6. Why lasers are used in cutting materials? CO2 Ana
 (a) It never gets dull (b) It has a small heat affected zone
 (c) Accuracy (d) All of the above
7. The elastic scattering of photons is called as _____ CO1 U
 (a) Atmospheric scattering (b) Rayleigh Scattering
 (c) Conserved Scattering (d) Raman Scattering
8. Raman effect is scattering of _____ CO1 U
 (a) Atoms (b) Molecules (c) Protons (d) Photons
9. Current indications of PDT include..... CO2 App
 (a) Superficial spreading melanoma
 (b) Superficial basal cell carcinoma
 (c) Invasive squamous cell carcinoma
 (d) Seborrhoeic Keratoses
10. In Photodynamic therapy blue light Photosensitizer has a particular CO1 U
 wavelength of
 (a) 400 nm -1.2 nm (b)500 nm- 5 mm (c) 600 nm- 1 cm (d) 450 nm- 1 mm

PART – B (5 x 2= 10 Marks)

11. For a proper intake of Vitamin A, what kind of food should you eat? CO2 - App
12. Distinguish between spontaneous emission and stimulated emission CO1 - U
13. What are the applications of lasers in dermatology? CO2 - App
14. List out some advantages of Laser-induced Fluorescence. CO1 - U
15. Write a short note on classification of Laser safety procedures. CO1 - U

PART – C (5 x 16= 80Marks)

16. (a) Write in detail about instrumentation for Absorption CO1-U (16)
 Measurements and Emission measurements with neat diagram.
- Or
- (b) Describe in detail about the properties of light CO1-U (16)
 (a) Scattering (b) Types of Scattering
 (c) Application of Scattering

17. (a) Draw a schematic representation and write about the Laser interaction with biological tissue. CO2-App (16)
- Or
- (b) Explain in detail about lasing action of Ruby rod lasers with neat sketch. CO2- App (16)
18. (a) Explain in what way laser is used in dermatology and ophthalmology. CO2-App (16)
- Or
- (b) Summarize on the applications of lasers in otolaryngology and dentistry. CO2-App (16)
19. (a) Explain in detail about principle, types of elastography and their applications with neat diagram. CO1-U (16)
- Or
- (b) With neat diagram write in detail about Laser induced fluorescence imaging (LIF), types and the application of LIF. CO1-U (16)
20. (a) Write in detail about mechanism of Phototherapy in therapeutic applications with neat diagram. CO1-U (16)
- Or
- (b) Explain in detail about steps involved in photodynamic therapy, mechanism and their advantages and limitations with neat sketch. CO1-U (16)

