

[A-52]

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SARDAR PATEL UNIVERSITY  
BSc (VI Semester) Examination  
2016

Saturday, 9<sup>th</sup> April

2.30 pm to 5.30 pm

US06CELE06 – Analog Communication and Fiber Optics

Total Marks: 70

Q.1 Multiple Choice Questions

[10]

- The mirror coated with \_\_\_\_\_ material makes any mirror reflect a specific colour and permit other colours to pass through it.  
(a) Saturated (b) Unsaturated (c) Dichroic
- Among the following colours for which the response of human eye is maximum.  
(a) Blue (b) Red (c) Green
- \_\_\_\_\_ light occupies frequency spectrum from about 700 m $\mu$  to 360 m $\mu$ .  
(a) Infrared (b) Visible (c) Ultra violet
- In which type of fiber the modal dispersion is found minimum.  
(a) Multimode graded index fiber (b) Multimode step index fiber  
(c) Mono mode step index fiber
- Which of the following is not associated in optical communication ?  
(a) Numerical Aperture (b) Dispersion (c) Antenna
- What is the band gap of Gallium Arsenide ?  
(a) 1.24 eV (b) 1.42 eV (c) 10.10 eV
- The photo diode operates on the principle of \_\_\_\_\_.  
(a) Photo emission (b) Photoconduction (c) Photo absorption
- Total internal reflection takes place when photons are incident to the surface at angles greater than the \_\_\_\_\_ angle.  
(a) Reflection (b) Critical (c) Refraction
- \_\_\_\_\_ is required in optical fiber to repair a broken connection or to extend an optical link.  
(a) Soldering (b) Welding (c) Splicing
- In \_\_\_\_\_ the signal is detected, amplified and re-emitted.  
(a) Amplifier (b) Repeater (c) Demodulator

Q.2 Answer **Any Ten** questions in brief.

[20]

- What is the principle of Trinitron colour Picture Tube ?
- State the principle of additive mixing.
- State the principle of PAL system.

4. Explain how total internal reflection of light ray takes place at Core Cladding interface of optical fiber.
5. What is the result of losses and dispersion in the optical fiber ?
6. What is Rayleigh scattering ?
7. What is Population inversion ?
8. Differentiate between spontaneous and stimulated emission of radiation.
9. Explain Avalanche multiplication process.
10. What is the need of optical source in fiber optics communication ?
11. What is the need of repeater in the fiber optics communication ?
12. Explain Fusion of Glass fiber briefly.

Q.3 Draw the block diagram of PAL Encoder and Decoder and explain the function of each block. [10]

OR

Q.3 Draw the block schematic of colour television camera and explain its working. [10]

Q.4 Discuss in detail the various type of losses and dispersion observed in the optical fibers. [10]

OR

Q.4 (a) What are the advantages of Optical Fiber cables over conventional cables ? [06]  
 (b) Give the classification of Optical fibers. [04]

Q.5 Give an account of Avalanche photodiode. [10]

OR

Q.5 (a) Discuss the principle of operation of LED. [05]  
 (b) Discuss the various losses that occur in a LED. [05]

Q.6 Explain in detail splicing of Optical Fibers. [10]

OR

Q.6 Explain the fiber optics communication system with the help of necessary diagram. [10]

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