Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: R2012

Examination: Final Year Semester VII

Course Code: ETC703

Course Name: Optical Communication & Network

Time: 1 hour Max. Marks: 50

**SAMPLE PAPER**

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| Q1. | One of the following is not a solid-state optical detector |
| Option A: | APD |
| Option B: | PIN |
| Option C: | PMT |
| Option D: | Phototransistors |
|  |  |
| Q2. | A linear SONET network can be \_\_\_\_\_\_\_\_ |
| Option A: | point-to-point |
| Option B: | multi-point |
| Option C: | both point-to-point and multi-point |
| Option D: | single point |
|  |  |
| Q3. | The scattering resulting from fiber imperfections like core-cladding RI differences, diameter fluctuations, strains, and bubbles is? |
| Option A: | Rayleigh scattering |
| Option B: | Mie scattering |
| Option C: | Stimulated Brillouin scattering |
| Option D: | Stimulated Raman scattering |
|  |  |
| Q4. | Which of the following is not related to Kerr effects? |
| Option A: | Self-phase modulation |
| Option B: | Cross-phase modulation |
| Option C: | Four-wave mixing |
| Option D: | Stimulated Raman Scattering |
|  |  |
| Q5. | The photonic layer of the SONET is similar to the \_\_\_\_\_\_\_\_\_\_ of OSI model. |
| Option A: | network layer |
| Option B: | data link layer |
| Option C: | physical layer |
| Option D: | transport layer |
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| Q6. | Which of these factors are critical in affecting the system performance in the case of coherent optical fiber transmission? |
| Option A: | Laser line-width and stability |
| Option B: | Refractive index and index difference |
| Option C: | Core cladding diameter |
| Option D: | Frequency |
|  |  |
| Q7. | The internal quantum efficiency of LEDs decreasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ temperature. |
| Option A: | Exponentially, decreasing |
| Option B: | Exponentially, increasing |
| Option C: | Linearly, increasing |
| Option D: | Linearly, decreasing |
|  |  |
| Q8. | Which one of the following is not true about SONET? |
| Option A: | frames of lower rate can be synchronously time-division multiplexed into a higher-rate frame |
| Option B: | multiplexing is synchronous TDM |
| Option C: | all clocks in the network are locked to a master clock |
| Option D: | STS-1 provides the data rate of 622.080Mbps |
|  |  |
| Q9. | Which of the following does not explain the requirements of an optical detector? |
| Option A: | High quantum efficiency |
| Option B: | Low bias voltages |
| Option C: | Small size |
| Option D: | Low fidelity |
|  |  |
| Q10. | The \_\_\_\_\_\_\_\_\_\_\_ process takes place in both extrinsic and intrinsic semiconductors. |
| Option A: | Avalanche multiplication |
| Option B: | External photoemission |
| Option C: | Internal photoemission |
| Option D: | Dispersion |
|  |  |
| Q11. | Determine the peak gain wavelength of uncoated FPA having mode spacing of 2nm, and 250 μm long active region and R.I of 3.78. |
| Option A: | 2.25×10-4 |
| Option B: | 4.53×10-8 |
| Option C: | 1.94×10-6 |
| Option D: | 4.25×109 |
|  |  |
| Q12. | \_\_\_\_\_\_\_\_\_\_\_\_\_ are called hybrid Raman amplifier. |
| Option A: | Lumped and distributed Raman Amplifiers |
| Option B: | Rare-earth-doped fiber amplifiers |
| Option C: | Raman fiber systems |
| Option D: | Distributed Raman amplification |
|  |  |
| Q13. | In \_\_\_\_\_\_\_\_\_\_\_\_\_ Rayleigh scattering can be reduced. |
| Option A: | An erbium-based micro fiber amplifier |
| Option B: | Rare-earth-doped fiber amplifiers |
| Option C: | Raman fiber systems |
| Option D: | Distributed Raman amplification |
|  |  |
| Q14. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is defined as a process by which the wavelength of the transmitted signal is changed without altering the data carried by the signal. |
| Option A: | Wavelength conversion |
| Option B: | Attenuation |
| Option C: | Sigma management |
| Option D: | Wavelength dispersion |
|  |  |
| Q15. | \_\_\_\_\_\_\_\_\_\_ wavelength converters make use of a passive optical medium to exploit non-linear effects. |
| Option A: | Bipolar |
| Option B: | Optoelectronic |
| Option C: | Magnetic |
| Option D: | Coherent |
|  |  |
| Q16. | For fabrication of semiconductor photodiodes, there is a drawback while considering \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | GaAs |
| Option B: | Silicon |
| Option C: | GaSb |
| Option D: | Germanium |
|  |  |
| Q17. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ always leads to the generation of a hole and an electron. |
| Option A: | Repulsion |
| Option B: | Dispersion |
| Option C: | Absorption |
| Option D: | Attenuation |
|  |  |
| Q18. | The photocurrent of an optical detector should be \_\_\_\_\_\_\_\_\_\_ |
| Option A: | Less |
| Option B: | More |
| Option C: | Linear |
| Option D: | Non-linear |
|  |  |
| Q19. | device which converts electrical energy in the form of a current into optical energy is called as \_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | Optical source |
| Option B: | Optical coupler |
| Option C: | Optical isolator |
| Option D: | Circulator |
|  |  |
| Q20. | The radiation emission process (emission of a proton at frequency) can occur in \_\_\_\_\_\_\_\_\_\_ ways. |
| Option A: | Two |
| Option B: | Three |
| Option C: | Four |
| Option D: | One |
|  |  |
| Q21. | The fibers which relax the spectral requirements for optical sources and allow flexible wavelength division multiplying are known as \_\_\_\_\_\_\_\_\_\_ |
| Option A: | Dispersion-flattened single mode fiber |
| Option B: | Dispersion-enhanced single mode fiber |
| Option C: | Dispersion-compressed single mode fiber |
| Option D: | Dispersion-standardized single mode fiber |
|  |  |
| Q22. | The concentricity errors between the fiber core and the outside diameter of the jeweled ferrule are in the range of \_\_\_\_\_\_\_\_\_\_\_ with multimode step-index fibers. |
| Option A: | 1 to 3μm |
| Option B: | 2 to 6μm |
| Option C: | 7 to 10μm |
| Option D: | 12 to 20μm |
|  |  |
| Q23. | In a multimode fiber, much of light coupled in the fiber from an LED is \_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | Increased |
| Option B: | Reduced |
| Option C: | Lost |
| Option D: | Unaffected |
|  |  |
| Q24. | The InGaAsP is emitting LEDs are realized in terms of restricted are \_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | Length strip geometry |
| Option B: | Radiance |
| Option C: | Current spreading |
| Option D: | Coupled optical power |
|  |  |
| Q25. | For optical fiber silica core has refractive index 1.50 and cladding has refractive index 1.47 find out numerical aperture |
| Option A: | 0.20 |
| Option B: | 0.30 |
| Option C: | 3 |
| Option D: | 1 |