Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: **ECC703** and Course Name: **Optical Communication**

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

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| Q1.  | An incident ray can be defined as |
| Option A: | A light ray reflected from a flat surface |
| Option B: | A light ray directed toward a surface |
| Option C: | A diffused light ray |
| Option D:  | A light ray that happens periodically |
|  |  |
| Q2. | The three major elements in the optical system are |
| Option A: | The components, the data rate and response time |
| Option B: | The source, the link and the receiver |
| Option C: | The transmitter, the cable and the receiver |
| Option D: | The source, the link and the detector |
|  |  |
| Q3. | The cladding which surrounds the fiber core |
| Option A: | Is used to reduce optical interference |
| Option B: | Is used to protect the fiber |
| Option C: | Acts to help guide the light in the core |
| Option D: | Ensures that the refractive index remains constant |
|  |  |
| Q4. | Which is the one of the optical bands for optical communication \_\_\_\_\_\_\_\_\_? |
| Option A: | A band |
| Option B: | B band |
| Option C: | C band |
| Option D: | D band |
|  |  |
| Q5. | In graded index fiber, the refractive index |
| Option A: | Varies in core and constant in clad |
| Option B: | Varies in core and clad |
| Option C: | Varies in clad and constant in core |
| Option D:  | Constant in Core and clad |
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| Q6. | By creating a fiber with larger negative waveguide dispersion, the addition of waveguide and material dispersion can shift zero dispersion point to longer wavelength, such a fiber is known as |
| Option A: | Dispersion flattened fiber |
| Option B: | Dispersion shifted fiber |
| Option C: | Non zero dispersion shifted fiber |
| Option D:  | Optimized fiber |
|  |  |
| Q7.  | During the design of FOC system, which among the following reasons is/are responsible for an extrinsic absorption? |
| Option A: | Atomic defects in the composition of glass |
| Option B: | Impurity atoms in glass material |
| Option C: | Basic constituent atoms of fiber material |
| Option D:  | Due to photons |
|  |  |
| Q8.  | A single-mode cable does not suffer from |
| Option A: | waveguide dispersion |
| Option B: | chromatic dispersion |
| Option C: | modal dispersion |
| Option D:  | Material Dispersion |
|  |  |
| Q9. | SRS can limit the performance of multichannel optical communication system by transferring energy from |
| Option A: | High wavelength channel to low wavelength channel |
| Option B: | One short wavelength channel to other short wavelength channel |
| Option C: | One high wavelength channel to other high wavelength channel |
| Option D:  | Short wavelength channel to high wavelength channel |
|  |  |
| Q10.  | Which of the following takes the advantage of nonlinear effect in silica to overcome the pulse broadening effect of GVD |
| Option A: | SRS |
| Option B: | Soliton |
| Option C: | SBS |
| Option D:  | FWM |
|  |  |
| Q11.  | Four wave mixing is \_\_\_\_\_\_\_\_\_ order non linearity in optical fiber that is analogous to intermodulation distortion in electrical systems |
| Option A: | First |
| Option B: | Second |
| Option C: | Third |
| Option D:  | Fourth |
|  |  |
| Q12.  | Which of the following contributes to the broadening of laser emission bandwidth? |
| Option A: | Doppler shift of moving atoms and molecules |
| Option B: | Amplification within the laser medium |
| Option C: | Coherence of the laser light |
| Option D: | Optical pumping of the laser transition |
|  |  |
| Q13. | When photon colliding with an excited atom causes the stimulated emission of a second photon \_\_\_\_\_\_\_\_\_\_\_\_ occurs. |
| Option A: | Attenuation |
| Option B: | Population inversion |
| Option C: | Dispersion |
| Option D:  | Light amplification |
|  |  |
| Q14.  | Popular single mode optical source |
| Option A: | LED |
| Option B: | Laser |
| Option C: | Vertical cavity surface emitting Laser (VCSEL) |
| Option D:  | Avalanche photo diode |
|  |  |
| Q15. | Photodiode is used in the detection of |
| Option A: | Visible light |
| Option B: | Invisible light |
| Option C: | No light |
| Option D:  | Both visible and invisible light |
|  |  |
| Q16.  | The number of electron hole carrier pairs generated per incident photon is |
| Option A: | Optical Gain |
| Option B: | Responsivity |
| Option C: | Sensitivity |
| Option D:  | Quantum efficiency |
|  |  |
| Q17. | An avalanche photodiode internally \_\_\_\_\_\_\_\_ the primary signal photo current |
| Option A: | Divide |
| Option B: | Equal |
| Option C: | Multiply |
| Option D: | Detect |
|  |  |
| Q18. | \_\_\_\_\_\_\_\_\_\_\_\_ always leads to the generation of a hole and an electron. |
| Option A: | Repulsion |
| Option B: | Dispersion |
| Option C: | Absorption |
| Option D:  | Attenuation |
|  |  |
| Q19.  | The intensity modulated data on one signal wavelength is called as \_\_\_\_\_\_\_ |
| Option A: | Dispersed data |
| Option B: | Pump signal |
| Option C: | Probe signal |
| Option D:  | Frequency signal |
|  |  |
| Q20. | Fusion splices are made by  |
| Option A: | Adhesive bonding |
| Option B: | Elastic tube bonding |
| Option C: | Thermal bonding |
| Option D: | Mechanical bonding |
|  |  |
| Q21. | In fiber fabrication process the thickness of fiber cable will depend on |
| Option A: | Turning speed of take up wheel |
| Option B: | Thickness of preform |
| Option C: | Length of preform |
| Option D:  | Temperature of furnace |
|  |  |
| Q22.  | How many types of misalignments occur when joining compatible fiber? |
| Option A: | Two |
| Option B: | Five |
| Option C: | Four |
| Option D:  | Three |
|  |  |
| Q23. | The method for transmitting microwave analog signal over an optical fiber link is known as |
| Option A: | OTDR |
| Option B: | RF over fiber |
| Option C: | SONET |
| Option D:  | SFDR |
|  |  |
| Q24.  | The primary parameters used to characterize the RF performance of optical link are gain, noise figure and \_\_\_\_\_\_\_\_\_. |
| Option A: | Microwave photonics |
| Option B: | Soliton |
| Option C: | Attenuation coefficient |
| Option D:  | Spurious free dynamic range |
|  |  |
| Q25. | In the fiber optic link, power transfer from one fiber to another and from fiber to detector must take place with \_\_\_\_\_\_\_\_\_coupling efficiency. |
| Option A: | Maximum |
| Option B: | Stable |
| Option C: | Minimum |
| Option D:  | Unpredictable |