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SEAT No. :

[Total No. of Pages :4

[5315] - 366

T.Y.B.Sc.

ELECTRONIC SCIENCE

EL - 336 (A) : Fiber Optic Communication (Optional)

(2013 Pattern) (Semester - III) (Paper - VI)

Time : 2 Hours]

[Max. Marks :40

Instructions to the candidates:

1) *All questions are compulsory.*

2) *Neat diagrams must be drawn wherever necessary.*

3) *Figures to the right indicate full marks.*

4) *Use of log table and calculator is allowed.*

Q1) Attempt all of the following.

a) Define the term acceptance angle. **[1]**

b) What do you mean by absorption loss in fiber. **[1]**

c) State total internal reflection phenomena. **[1]**

d) Define the term quantum efficiency. **[1]**

e) List the factors due to which connector losses occur. **[2]**

f) Why optical amplifiers are needed in fiber optic communication system?**[2]**

g) Compare between single mode and multimode fiber. **[2]**

h) 'Semiconductor photodetectors are preferred in fiber optic communication system', comment. **[2]**

Q2) Attempt any Two of the following.

a) Explain the working principle of LED. Draw the structures of surface emitter LED and edge emitter LED. State its response. **[4]**

b) Explain the method for measurement of attenuation of fiber cable. **[4]**

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c) Explain the propogation of light through step index single mode and multimode fiber with the help of index profile and ray diagram. State its characteristics and disadvantages. **[4]**

Q3) Attempt any two of the following.

a) Write a note on Advanced fibers. **[4]**

b) Explain scattering losses in optical fiber. **[4]**

c) Explain optical transmitter system with suitable diagram and list its design specifications. **[4]**

Q4) Attempt any Two of the following.

a) Explain working principle of Avalanche photodiode with suitable diagram. State its advantages and parameters. **[6]**

b) Write short note on short haul and long haul communication system. **[6]**

c) i) State the advantages of fiber optic communication system over wireless system. **[3]**

ii) Explain bending loss in optical fiber. **[3]**

OR

Attempt all of the following.

a) Compute the numerical aperature, acceptance angle, and the critical angle of the fiber having core refractive index 1.50 and refractive index of the cladding is 1.45. **[4]**

b) Calculate the quantum efficiency of detecor having responsivity 9.6×10^{-3} A/W at 0.8 μm.

(Given: planck constant = 6.63×10^{-34}

Velocity of light = 3×10^8

Charge on electron = 1.6×10^{-19}) **[4]**

c) The mean optical power launched into an 8km length of fiber is 120μw and mean optical power at the fiber output is 3μw. Calculate signal attenuation in dB per unit (km) length. **[4]**

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T.Y.B.Sc.

ELECTRONIC SCIENCE

EL - 336 (B) : Electronic Product Design and Entrepreneurship.

(2013 Pattern) (Semester - III) (Paper - VI) (Optional)

Time : 2 Hours]   *[Max. Marks :40*

Instructions to the candidates:

1) *All questions are compulsory.*

2) *Neat diagrams must be draw wherever necessary.*

3) *Figures to the right indicate full marks.*

Q1) Attempt <u>all</u> of the following.

    a) State any two types of co-operative societies. **[1]**

    b) What is meant by decision? **[1]**

    c) What is maintainability of electronic product? **[1]**

    d) Define the term pricing. **[1]**

    e) What is techno-commercial feasibility of a product? **[2]**

    f) Explain the term incentive for small business development. **[2]**

    g) State objectives of entrepreneurship development. **[2]**

    h) State merits of partnership firm. **[2]**

Q2) Attempt any <u>two</u> of the following.

    a) State the steps for registration of partnership firm. **[4]**

    b) Explain the basic problems of women entrepreneurship. **[4]**

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c) An electronic circuit that uses 4-resistors, 1-transistor, 2- capacitors, 1-power transformer and 2- diodes with failure rates 0.6, 0.62, 0.61 0.18 and 0.2 respectively per 10^6 hours. Calculate MTBF for the circuit. **[4]**

Q3) Attempt any <u>two</u> of the following.

a) Explain any four points of sole proprietership. **[4]**

b) Explain the steps for electronic product design with neat diagram. **[4]**

c) Explain break event point analysis. **[4]**

Q4) Attempt any <u>two</u> of the following.

a) Explain the terms:

i) Fund flow. **[3]**

ii) Features of co-operative society. **[3]**

b) State merits and demerits of joint stock company. **[6]**

c) State and explain different sources of finance for starting business. **[6]**

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