(Model Paper) **C –23, EC -503**

State Board of Technical Education and Training, A. P

Diploma in Electronics and Communication Engineering (DECE)

V Semester

Subject Name: **Optical & Mobile Communications**

Sub Code: **EC - 503**

Time: 90 minutes **Unit Test I** Max.Marks:40

Part-A **16Marks**

Instructions: (1) Answer **all** questions.
(2) First question carries **four** marks, each question of remaining carries **three** marks

1. Answer the following questions with one word
   a) Write Full form of TIR (CO1)
   b) Write full form of WDM (CO2)
   c) Write full form of LASER (CO2)
   d) Write full form of FCC (CO3)
2. Classify fibers based on refractive index profile and core diameter. (CO1)
3. Define critical angle and numerical aperture. (CO1)
4. List various fibre optic components. (CO2)
5. Write the need Hexagonal Cell Site. (CO3)

Part-B **3×8=24**

Instructions: (1) Answer **all** questions.
(2) Each question carries **eight** marks
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. (a)Explain the principle of Light propagation through Optical fibre (CO1)
   or
   (b) Explainstructure of optical fibre and classify them based on RI profile (CO1)
7. (a) Draw the block diagram of fibre optic communication system and explain. (CO2)
   or
   (b) Explain the construction and working of LASER source. (CO2)
8. (a) Explain the evolution of cellular communication in detail. (CO3)
   or
   (b) Derive the expression for cellular capacity. (CO3)

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V Semester

Subject Name: **Optical & Mobile Communications**

Sub Code: **EC - 503**

Time: 90 minutes **Unit Test II** Max.Marks:40

Part-A **16Marks**

Instructions: (1) Answer **all** questions.
(2) First question carries **four** marks, each question of remaining carries **three** marks

1. Answer the following questions with one word
   a) List any one type of multiple access techniques (CO3)
   b) Write any one application of IP Multimedia Subsystem (CO5)
   c) Write full form of GPRS (CO5)
   d) Write full form of GPS (CO5)
2. Define the terms Cell station and Cluster. (CO3)
3. Define capacity of cellular system (CO3)
4. List the various interfaces of GSM (CO4)
5. List the salient features of 5G system (CO5)

Part-B **3×8=24**

Instructions: (1) Answer **all** questions.
(2) Each question carries **eight** marks
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. (a) Explain the Concept of Spread Spectrum technique (CO3)

   or

   (b) Explain the frame structure of TDM. (CO3)

7. (a) Draw the block diagram of GSM architecture and explain. (CO4)

   or

   (b) Explain process of data encryption in GSM. (CO4)

8. (a) Explain the architecture of 5G cellular system. (CO5)

   or

   (b) Compare the features of GSM, GPRS and EDGE systems. (CO5)

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MODEL PAPER

BOARD DIPLOMA EXAMINATIONS

C-23, EC-503, OPTICAL & MOBILE COMMUNICATIONS

V SEMESTER

SEMESTER END EXAMINATION

TIME:3 HOURS MAX MARKS:80

Part-A **10×3=30**

Instructions: (1) Answer **all** questions.
(2) Each question carries **three** marks
(3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Classify fibres based on refractive index profile and core diameter. (CO1)
2. Define critical angle and acceptance angle. (CO1)
3. Write the need for Splice and Coupler. (CO2)
4. List the salient features of optical detectors. (CO2)
5. Define the terms cell and cluster. (CO3)
6. Define handoff in mobile communication. (CO3)
7. List the applications of Spread spectrum technique. (CO4)
8. List the service aspects of GSM. (CO4)
9. Distinguish between GPRS and EDGE. (CO5)
10. List the salient features of 5G systems. (CO5)

Part-B **5×10=50**

Instructions: (1) Answer **any Five** questions.
(2) Each question carries **10** marks
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Define Snell's law and explain the principle of light propagation through an optical fibre. (CO1)
12. Draw the structure of Fabry perot resonator cavity LASER and explain its working. (CO2)
13. Explain the process of call progress in cellular system. (CO3)
14. Define Cellular capacity and derive the relation between cellular capacity and co-channel reuse ratio (CO3)
15. Explain the concept of spread spectrum technique with block diagram (CO4)
16. Draw the block diagram of GSM architecture and explain. (CO4)
17. Draw and explain the VoLTE architecture for IMS. (CO5)
18. (a) Write short notes on various dispersions in the fiber. (5 Marks) (CO2)

    (b) Explain the concepts of GPRS. (5 Marks) (CO5)

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