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BOARD DIPLOMA EXAMINATION, (C-20)
DECEMBER—2022
DECE - FIFTH SEMESTER EXAMINATION
OPTICAL AND MOBILE COMMUNICATIONS

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

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

1. Classify optical fibers based on refractive index profile.
2. State the need of splicing in optical fibers.
3. List two types of sources used in OFC.
4. List any three advantages of electronic telephony over manual telephony.
5. Define hand-off in mobile communication.
6. State the need for multiple access techniques.
7. List the features of digital cellular systems.
8. List any three advantages of GSM.
9. List any three IMS applications.
10. List any three advantages of 3G over earlier versions.

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

11. (a) Explain the structure of optical fiber.

(OR)

(b) Derive the expression for NA in terms of refractive indices of core and cladding.

12. (a) Explain intrinsic and extrinsic losses in optical fibers.

(OR)

(b) Draw the block diagram of DWDM system and explain.

13. (a) Draw and explain the block diagram of a telephony system.

(OR)

(b) Draw the block diagram of a basic cellular system and explain.

14. (a) Explain call progress in a cellular telephone system.

(OR)

(b) Explain CDMA and list its features.

15. (a) Explain the architecture of GSM.

(OR)

(b) Explain the VoLTE architecture of IP multimedia subsystem.

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PART—C

10×1=10

- Instructions :** (1) Answer the following question.
(2) The question carries **ten** marks.
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Why is the regular hexagonal cell shape preferred over circular shape in mobile communication? Explain it.

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