B.E. (EXTC) (Sem-VIII) (CBCGS)

Optical Networks

University of Mumbai

Examinations Summer 2022

Program: B.E. Electronics and Telecommunication Engineering (SEM VIII)

Curriculum Scheme: Choice Based Credit Grading System (Rev2016)

Course Code: ECCDLO8041 and Course Name: Optical Networks (DLOC)

Time: 2 hour 30 minutes Max. Marks: 80

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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which is the most popular & efficient type of optical amplifier?
Option A:	Erbium doped fiber amplifier
Option B:	Raman amplifier
Option C:	Semiconductor optical amplifier
Option D:	Pre-amplifier
2.	An optical ..... is a Multi-port, Non reciprocal passive component.
Option A:	Isolator
Option B:	Circular
Option C:	Coupler
Option D:	Amplifier
3.	A..... is the end-to-end portion of the network between two STS multiplexers.
Option A:	Section
Option B:	Line
Option C:	Path
Option D:	LTE
4.	STS-1 in SONET has .....Data Rate in (Mbps)
Option A:	51.84
Option B:	155.520
Option C:	466.560
Option D:	622.080
5.	Hybrid fiber-coaxial (HFC) used for broadband networks contains.....
Option A:	Fiber cable
Option B:	Coaxial cable
Option C:	A combination of Fiber cable & Coaxial cable
Option D:	Twisted pair cable
6.	.....can provide users with better throughput delay performance, faster single channel access times for high data rate end users.
Option A:	OTDM
Option B:	OTDR
Option C:	OFDM
Option D:	OSDM
7.	The routing and wavelength assignment problem addresses the core issue of .....
Option A:	Traffic patterns in a network

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Option B:	Wavelength adjustment
Option C:	Wavelength continuity constraint
Option D:	Design problem
8.	FCAPS is an acronym for.....
Option A:	Fault, Configuration, Accounting, Performance, Security
Option B:	Fault, Control, Accounting, Performance, Security
Option C:	Configuration
Option D:	Security
9.	An add/drop multiplexer is a .....device.
Option A:	One layer
Option B:	Two layer
Option C:	Three layer
Option D:	Four layer
10.	A ..... is a series of logical connections between the source and destination nodes.
Option A:	cell circuit
Option B:	attenuation circuit
Option C:	virtual circuit
Option D:	switched network

Q2 (20 Marks)	Solve any Four out of Six each 5 marks
A	Compare Isolator & Circulator.
B	Explain the concept of solitons.
C	Explain the SONET architecture in detail.
D	What is DWDM? Mention its advantages & disadvantages.
E	Write a short note on Dispersion compensation.
F	Explain in brief Optical layer.

Q3 (20 Marks)	Solve any Two Questions out of Three each 10 marks
A	What is Four Wave Mixing?Explain its applications.
B	Explain Optical Time Division Multiplexing (OTDM).
C	Write the necessity of wavelength converters in optical networks and explain its working.

Q4. (20 Marks)	
A	Solve any Two 5 marks each
i.	Explain the concept of power penalty in optical networks.
ii.	Explain the concept of Mach-Zehnder Interferometer (MZI) Multiplexer
iii.	Briefly explain the different network management functions.
B	Solve any One 10 marks each
i.	Explain in detail the generations of optical networks.
ii.	Compare Optical circuit switching, Optical packet switching & Optical

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	Burst switching.

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