Program: 1T01018 / / B.E.(ELECTRONICS & TELE-COMMN)(SEM VIII) (CBSGS)

Curriculum Scheme: Rev2012

Examination: BE Semester VIII

Course Code: ETC801 and Course Name: 52901 / / Wireless Networks

Time: 2 hour   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.	Middleware is popular as it provides
Option A:	Easy computation facilities
Option B:	A runtime environment that can support and coordinate multiple applications
Option C:	Uses huge memory
Option D:	Can be easily installed
2.	Simple Network Management Protocol cannot be used in managing WSN as it
Option A:	Imposes Heavy management traffic overhead
Option B:	Consumes less energy
Option C:	Is used only for wired networks
Option D:	Maintenance of the network is easy
3.	MIRES is a message oriented Middleware
Option A:	Which aggregate data, Multi-Hop routing and greatly reduce the among of transmissions, save lots of energy.
Option B:	Does not aggregate data
Option C:	Transmit the data with single hop
Option D:	Is not energy efficient
4.	Middleware for WSN
Option A:	Does not support diverse applications
Option B:	Only supports Tracking of objects
Option C:	Provide standardized system services to diverse applications
Option D:	Provides security to application layer
5.	Which of the following multiple access technique is used by UMTS?
Option A:	CDMA
Option B:	TDMA
Option C:	FDMA
Option D:	SDMA
6.	What does path loss exponent indicates?
Option A:	Rate at which path loss decreases with distance
Option B:	Rate at which path loss increases with distance
Option C:	Rate at which path loss decreases with power density
Option D:	Rate at which path loss increases with power density
7.	ZigBee operates in following ISM bands

Option A:	70 MHz,900MHz,2 GHz
Option B:	68 MHz,915MHz,2.4 GHz
Option C:	65 MHz,800MHz,2.9GHz
Option D:	60 MHz,915KHz,2.9MHz
8.	Wireless Sensor nodes also have additional application-dependent components, such as a
Option A:	Sensing unit
Option B:	Analog to digital converter
Option C:	Location finding system and mobilizer
Option D:	Transceiver unit
9.	Logical-to-transport channel conversion happens in the
Option A:	Network Layer
Option B:	Transport Layer
Option C:	Medium Access Control (MAC) layer
Option D:	Session Layer
10.	A ------ is the calculation of the amount of power received, cell coverage, path loss at a given receiver based on the output power from the transmitter.
Option A:	Radio design
Option B:	Handover margin
Option C:	Attenuation
Option D:	Link budget
11.	IEEE 802.15.3 uses
Option A:	FHSS
Option B:	DSSS
Option C:	FHSS and DSSS
Option D:	FDM
12.	The frequency bands used to allow multiple pairs of devices to use the same time slots for transmission.
Option A:	Are different in SMACS
Option B:	Are same in SMACS
Option C:	No frequency band is present
Option D:	One frequency band is used
13.	What changes GPRS need to acquire while upgrading itself from GSM?
Option A:	A whole new base station
Option B:	New transceiver at base station
Option C:	New channel cards
Option D:	New packet overlay including routers and gateways
14.	Overestimation of path loss will lead to -------.
Option A:	An Inefficient use of network resources
Option B:	Poor radio coverage
Option C:	Cell sizes
Option D:	An Infrastructure requirements

15.	Bluetooth operates at frequencies between ____, or ____ including guard bands 2MHz wide at the bottom end and 3.5MHz wide at the top
Option A:	2.500 and 2.580 GHz, or 2.435 and 2.4835 GHz
Option B:	2.202 and 2.880 GHz, or 2.400 and 2.4835 GHz
Option C:	2.402 and 2.480 GHz, or 2.400 and 2.4835 GHz
Option D:	2.312 and 2.350 GHz, or 2.500 and 2.5835 GHz
16.	Flooding is a data centric routing protocol with
Option A:	Implosion and overlap drawbacks
Option B:	Very simple and costly
Option C:	Need complex route discovery algorithm
Option D:	Does consider the available energy resources of the sensor node
17.	Average throughput in HSDPA can be estimated by --------.
Option A:	SINR
Option B:	Noise figure
Option C:	Interference
Option D:	Path loss
18.	IEEE 802.16 standard is commonly known as
Option A:	WiMAX
Option B:	Wi-Fi
Option C:	WLAN
Option D:	WMAN
19.	_____ routes user queries or commands to appropriate nodes in a sensor network (bridge/gateway).
Option A:	Bridge
Option B:	Hub
Option C:	Gateway
Option D:	Modem
20.	Because of the unique attenuation characteristics of RF signals, multihop network provides a significant energy saving over _____network for the same distance
Option A:	Centralized
Option B:	Multihop
Option C:	Single hop
Option D:	Star

Subjective/Descriptive Questions

Q2 (20 Marks)	Solve any Four out of Six 5 marks each
A	List the features of the IEEE 802.15.4 MAC.
B	Discuss technical requirements and selection criteria of the IEEE 802.15.3a.
C	What is RFID? Discuss some of its applications.
D	Discuss different types of network topology that are supported in ZigBee
E	Explain the middleware architecture.
F	What are piconet and scatternet in Bluetooth?
Q3 (20 Marks)	
A	**Solve any Two 5 marks each**
i.	Explain challenges and hurdles of wireless sensor networks
ii.	Explain SPIN protocol
iii.	Compare fixed and mobile WiMax.
B	**Solve any One** **10 marks each**
i.	Using the following data for a GSM network, calculate (1) average busy hour traffic per subscriber, (2) traffic capacity per cell, (3) required number of base stations per zone, and (4) the hexagonal cell radius for the zone. Subscriber usage per month= 170 minutes Days per month = 24 Busy hours per day = 6 Allocated spectrum = 4.8 MHz Frequency reuse plan = 4/12 RF channel width = 200 kHz (full rate) Present number of subscribers in the zone = 60,000 Subscriber growth = 6% per year Area of the zone = 500 km^2 Initial installation based on a four-year design Capacity of a base station transceiver (BTS) = 30 Erlangs **Given: from Erlangs B Table** a. for 16 channel with 2%GOS traffic intensity is 9.828 Erlangs. b. for 14 channel with 2%GOS traffic intensity is 8.2 Erlangs
ii.	Draw and Explain Bluetooth Protocol Stack in details.

University of Mumbai
Examination June 2021
Examinations Commencing from 1ˢᵗ June 2021
Program: Electronics and Telecommunications Engineering
Curriculum Scheme: Rev2016
Examination: BE Semester VIII
Course Code: ECC 801 and Course Name: RF Design

Time: 2 hour   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.	An ideal filter would have _____ in the passband, _____ in the stopband, and _____ in the passband.
Option A:	infinite attenuation, zero insertion loss, a linear phase response
Option B:	zero insertion loss, infinite attenuation, a non-linear phase response
Option C:	finite attenuation, zero insertion loss, a non-linear phase response
Option D:	zero insertion loss, infinite attenuation, a linear phase response
2.	Find the value of center of noise figure circle, if noise parameter N = 0.0986 and optimum reflection coefficient is 0.62 ∠100°
Option A:	0.56 ∠ (-100°)
Option B:	0.85 ∠ 100°
Option C:	0.56 ∠100°
Option D:	0.85 ∠ (-100°)
3.	In Indirect frequency synthesizer, the output frequency f0 is equal to
Option A:	fr/N (fr is reference frequency)
Option B:	Nfr (fr is reference frequency)
Option C:	fr + N (fr is reference frequency)
Option D:	fr - N (fr is reference frequency)
4.	The RF-LO isolation is excellent in
Option A:	Image reject mixer
Option B:	single ended mixer
Option C:	Double balanced mixer
Option D:	balanced (90°) mixer
5.	The mechanism that enables electromagnetic energy to be created in an electronic device and coupled to its AC power cord is known as
Option A:	Radiated Emission (RE)
Option B:	Conducted Emission (CE)
Option C:	Radiated Susceptibility (RS)
Option D:	Conducted Susceptibility (CS)
6.	In a FET design, for value of S11 = 0.75∠-120°, find the value of maximum source

	gain Gsmax in dB.
Option A:	3dB
Option B:	2.92dB
Option C:	4.4dB
Option D:	3.6dB
7.	The value of inductor for π section constant K low pass filter with cut off frequency 3000Hz and nominal characteristic impedance R0 of 600Ω is equal to:
Option A:	31.84mH
Option B:	12.6mH
Option C:	63.68mH
Option D:	30.6mH
8.	For a one port negative resistance oscillator for steady state oscillation, which of the following is TRUE?
Option A:	Γ L * Γ in= 1
Option B:	Γ L / Γ in= 1
Option C:	Γ L + Γ in= 1
Option D:	Γ L - Γ in= 1
9.	Under which condition the Transistor is unconditionally Stable?
Option A:	K > 1, Δ > 1
Option B:	K < 1, Δ > 1
Option C:	K < 1, Δ < 1
Option D:	K > 1, Δ < 1
10.	The process of filter design by the insertion loss method is given by
Option A:	Filter Specifications → Scaling and Conversion → LP Prototype Design → Implementation
Option B:	Filter Specifications → HP Prototype Design → Scaling and Conversion → Implementation
Option C:	Filter Specifications → BP Prototype Design → Scaling and Conversion → Implementation
Option D:	Filter Specifications → LP Prototype Design → Scaling and Conversion → Implementation
11.	_____cannot be used to minimize the EMI.
Option A:	filtering
Option B:	shielding
Option C:	Cable designing
Option D:	rectifying
12.	In order to avoid leakage of electromagnetic energy through the shield, the outer surface of the shield has to be_____.
Option A:	Covered through insulators.
Option B:	Placed in isolation
Option C:	Grounded
Option D:	Kept in open environment

13.	Burst noise present in semiconductors and ultra-thin gate oxide films is also called as
Option A:	Flicker noise
Option B:	Popcorn noise
Option C:	Shot noise
Option D:	Thermal noise
14.	For a minimum insertion loss, one could use a _____ and for the sharpest cutoff use a _____.
Option A:	Chebyshev response, Binomial response
Option B:	Binomial response, Butterworth response
Option C:	Binomial response, Chebyshev response
Option D:	Elliptic response, Butterworth response
15.	A one port oscillator uses a negative resistance diode having Γin = 1.25 $\angle$40° at 8GHz in Z0=50 ohms system. Then the input impedance of diode in ohms will be
Option A:	(-44+j124)
Option B:	50+j100
Option C:	(-48+j145)
Option D:	(-50+j100)
16.	In Electrical bonding process the components of an assembly, equipment or subsystems are electrically connected by means of what kind of conductor?
Option A:	Low impedance
Option B:	Twisted
Option C:	High impedance
Option D:	Mechanically strong
17.	PLL functions as a _____for phase noise arising in the reference signal and phase detector.
Option A:	High Pass Filter
Option B:	Low Pass Filter
Option C:	Band Pass Filter
Option D:	Band Stop Filter
18.	For a unilateral device condition for unconditional stability in terms of S parameters is:
Option A:	|S11|<1, |S22|<1
Option B:	|S11|>1, |S22|>1
Option C:	|S11|>1, |S22|<1
Option D:	|S11|< 1, |S22|> 1
19.	A method of frequency synthesis where multiple output frequencies are generated by mixing the outputs from two or more crystal-controlled frequency sources or by dividing or multiplying the output frequency from a single-crystal oscillator.

Option A:	Digital frequency synthesizer
Option B:	General frequency synthesizer
Option C:	Direct Frequency Synthesis
Option D:	Looped frequency synthesizer
20.	A dielectric resonator is modeled as _____ when it is used as a tuning circuit with a oscillator.
Option A:	series RLC circuit
Option B:	parallel RLC circuit
Option C:	LC circuit
Option D:	tank circuit

Q2.	
A	**Solve any Two** **5 marks each**
i.	Explain the steps involved in filter designing by Insertion loss method.
ii.	Discuss the working of fractional N-Frequency Synthesizer.
iii.	Show that both ports of a two-port negative resistance oscillator oscillate.
B	**Solve any One** **10 marks each**
i.	Explain the following power amplifier performance parameters: a) Amplifier efficiency and power added efficiency b)1-dB compression point c)1-dB compression gain d)Dynamic range e) Load Pull Contours
ii.	The S-parameters at 10 GHz for a microwave transistor with a 50 ohms reference impedance are: $S11= 0.45\angle 150°$, $S12= 0.01\angle -10°$, $S21=2.05 \angle 10°$ $S22=0.40\angle -150°$ The source impedance is 20 ohms and the load impedance is 30 ohms. Calculate the power gain, the available gain and the transducer power gain.

Q3.	
A	**Solve any Two** **5 marks each**
i.	Why is single point ground system undesirable at high frequency? How multipoint ground system overcomes this problem?
ii.	Explain the mixer characteristics: Image frequency, Conversion loss, noise figure of SSB and DSB signal
iii.	Discuss the types of stability in an Amplifier design
B	**Solve any One** **10marks each**
i.	Explain:

	a) Radiation and Conduction Coupling modes. b) Common Mode Coupling Mechanisms.
ii.	Design a m-derived T- section of LPF having fc= 5KHz and nominal characteristic impedance Ro=600 ohms. The frequency of infinite attenuation is 1.25 times the cut off frequency fc.

University of Mumbai
Examination June 2021
Examinations Commencing from 1st June 2021
Program: BE (Electronics and Telecommunication Engineering) (CBCGS)
Curriculum Scheme: Rev2016
Examination: BE Semester VIII
Course Code: ECC 802 and Course Name: Wireless Networks

Time: 2 hours   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	The full form of SPIN is
Option A:	Sensor Protocol for Information via Negotiation
Option B:	Secrete Protocol for Information via Negotiation
Option C:	Simple Protocol for Information via Negotiations
Option D:	Sensor point for Information via Negotiations
2.	Inductive Coupling is used in the
Option A:	Physical Layer
Option B:	Network Layer
Option C:	MAC Layer
Option D:	Date Link Layer
3.	An EMG sensor is for monitoring the activity of
Option A:	Brain
Option B:	Muscles
Option C:	Respiration
Option D:	Heart
4.	The full form of MAC is
Option A:	Multiple Alternative Control
Option B:	Medium Access Configuration
Option C:	Medium Access Control
Option D:	Medium Alternative Control
5.	The Access method of IEEE 802.15 is
Option A:	DSS-TDD-TDMA
Option B:	FHSS-FDD-FDMA
Option C:	FHSS-TDD-TDMA
Option D:	DSSS-FDD-FDMA
6.	Which of the following is not a type of RFID tag
Option A:	Active Tag
Option B:	Passive Tag
Option C:	Semi active Tag
Option D:	Additive passive Tag
7.	Which of the following is related to Ultra Wideband

Option A:	IEEE 802.15.3a
Option B:	IEEE 802.15.3b
Option C:	IEEE 802.15.3c
Option D:	IEEE 802.15.3d
8.	The full form of FEC is
Option A:	Frequent Error Correction
Option B:	Forward Error Correction
Option C:	Frequent Error Comparison
Option D:	Forward Error Comparison
9.	IEEE 802.11b has a maximum data rate _____Mbps
Option A:	2
Option B:	54
Option C:	11
Option D:	27
10.	Which multiple access technique is used by IEEE 802.11 standard for random access?
Option A:	CSMA/CA
Option B:	FDMA
Option C:	TDMA
Option D:	WCDMA
11.	If Interference Margin is 3dB, what will be the cell loading of CDMA?
Option A:	0.5
Option B:	0.6
Option C:	0.7
Option D:	1
12.	WMAN'S span upto
Option A:	200 Kms
Option B:	150 Kms
Option C:	50 Kms
Option D:	100 Kms
13.	IEEE 802.16.1 standard is
Option A:	Air interface for 10-66 GHz
Option B:	Coexistence of broadband wireless access systems
Option C:	Air interface for licensed frequencies for 2-11 GHz
Option D:	Air interface above 66 GHz
14.	In MAC PDU format MSB comprises of
Option A:	Genetic payload header
Option B:	Genetic MAC header
Option C:	Payload
Option D:	CRC
15.	Which of the following does not belong to the Reservation mechanism of contention based MAC protocol

Option A:	CSMA/CA
Option B:	IEEE 802.11
Option C:	MACA
Option D:	CSMA
16.	Which of the following is not a Hierarchical routing protocol
Option A:	DSR
Option B:	HSR
Option C:	CGSR
Option D:	ZRP
17.	Which of the following is not a characteristic of Ad-hoc networks
Option A:	Multihop
Option B:	Rapid deployment
Option C:	Fixed infrastructure
Option D:	Sporadic connectivity
18.	Flooding is
Option A:	Reactive technique
Option B:	Duplicated messages that can be avoided
Option C:	Redundant routing
Option D:	Proactive technique
19.	What will be the maximum number of subscribers, at initial installation, if present number of subscribers in the zone is 50,000 and subscriber growth 5% per year. Initial installation is based on a four year design.
Option A:	50,500
Option B:	52,500
Option C:	60,655
Option D:	60,775
20.	LEACH protocol is used for
Option A:	Unlimited bandwidth
Option B:	minimizes energy dissipation
Option C:	Maximum packet delivery
Option D:	Low jitter

Q2.	Solve any Two Questions out of Three 10 marks each
A	*Explain Bluetooth security features and security levels with proper diagram*
B	*Explain Link budget analysis requirement of wireless network*
C	*Describe the model of Wireless Sensor Network. What are the factors influencing design of Wireless Sensor Network*

Q3.	
A	**Solve any Two** **5 marks each**
	Write a short note on
i.	*ZigBee*

ii.	*VANETS*	
iii.	M2M communication	
B	**Solve any One each**	**10 marks**
i.	*What is localization of WSN nodes? Explain with examples centralized and distributed schemes in localization*	
ii.	*Write a short note on IEEE 802.16*	

Program: 1T01018   B.E.(ELECTRONICS & TELE-COMMN)(SEM VIII) (CBSGS)
Curriculum Scheme: Rev2012
Examination: BE Semester VIII
Course Code: 52903 and Course Name: Telecom Network Management

Time: 2 hour   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.	The Network ------- is concerned with establishing and administering overall goals, policies and procedure of network management ,
Option A:	Operation
Option B:	Administration
Option C:	Maintenance
Option D:	Provisioning
2.	The model that describe the components of a network management systems, their functions, relation and their infrastructure is ------------
Option A:	Information model
Option B:	Organization model
Option C:	Communication model
Option D:	Functional model
3.	The model that have three components namely management application process , that function in the application layer , layer management –between layers and layer operation , which is within the layer is ---------------
Option A:	Information model
Option B:	Organization model
Option C:	Communication model
Option D:	Functional model
4.	Telecommunication management Network system , the role of the manager is to issue commands and requests to the agents . These commands and request are known as
Option A:	Notification
Option B:	Feedback
Option C:	Operation
Option D:	Acknowledgement
5.	SNMP is a -------- layer protocol
Option A:	Physical
Option B:	Network
Option C:	Application
Option D:	Data link
6.	In the organizational model of a network management architecture , the agent has the following functions , identify the one which is not correct

Option A:	Gathers information from objects
Option B:	Configure parameters of objects
Option C:	Responds to managers request
Option D:	Monitor alarms
7.	In a network management system , the division that is responsible for controlling access to network based on a predefined policy is known as
Option A:	Fault management
Option B:	Secured management
Option C:	Active management
Option D:	Security management
8.	BER stands for
Option A:	Basic Encoding Rules
Option B:	Basic Encoding Resolver
Option C:	Basic Encoding Rotator
Option D:	Basic Encoding Router
9.	Control of the users access to the network resources through charges is the main responsibility of
Option A:	Reactive fault Management
Option B:	Reconfigured Fault management
Option C:	Accounting Management
Option D:	Security Management
10.	Structure of management information (SMI) is the guideline of
Option A:	HTTP
Option B:	SNMP
Option C:	URL
Option D:	MIB
11.	Which of these protocol message can be sent by SNMP agent
Option A:	Get- request
Option B:	Get- next- request
Option C:	Get –response
Option D:	Set –request
12.	Which of these data type is not based on structure
Option A:	Simple
Option B:	Structured
Option C:	Tagged
Option D:	Universal
13.	Which of these is not part of TMN functional block
Option A:	Operation system function
Option B:	Network element function
Option C:	Workstation function
Option D:	Data communication Function
14.	An interface between a management agent embedded in a network element and a

	network management system will be a --------- reference point
Option A:	X
Option B:	q3
Option C:	Qx
Option D:	F
15.	Which of the statement is not true regarding TMN service architecture
Option A:	The lowest layer , the network element layer comprising of network elements such as switches ,routers, bridges , transmission facilities etc .
Option B:	The next layer , network element management layer manages the network element
Option C:	Network element layer and network element management layers are vendor dependent
Option D:	Network element layer is vendor dependent, where as network management layer is vendor independent
16.	In integrated service the highest tolerance on latency is for
Option A:	Data
Option B:	Pure Video
Option C:	Voice
Option D:	Video transmission with audio
17.	Out of the four main class of traffic defined to implement to implement quality of service , which one of the following is used for voice communication
Option A:	Real-Time Variable Bit Rate
Option B:	Constant Bit Rate
Option C:	Non real Time Variable Bit Rate
Option D:	Available Bit Rate
18.	An ATM Packet size is -------- bytes
Option A:	48
Option B:	64
Option C:	53
Option D:	56
19.	We can compare the task of network management to the task of writing a program. Both task need rules. In the network management this is handled by
Option A:	SNMP
Option B:	MIB
Option C:	SMI
Option D:	URL
20.	We can compare the task of network management to the task of writing program. Both task need variable declaration. In network management this is handled by
Option A:	SNMP
Option B:	MIB
Option C:	SMI
Option D:	URL

Q2 **(20 Marks Each)**	Solve any Four out of Six 5 marks each
A	Write Briefly the goal of a network management
B	Draw the block diagram of a network management architecture and write briefly of each block
C	write a short note on OSI network management model with a neat block diagram
D	What are the important characteristics of an OSU managed objects
E	Draw the network management functional model and explain briefly each block
F	With the help of a neat block diagram explain the two tier SNMP organizational model – one manager –one agent model
Q3 **(20 Marks Each)**	Solve any Four out of Six 5 marks each
A	Draw the block diagram of SNMP network management architecture and explain briefly
B	What are the important concepts of ATM technology that helped in merging of computer and telecommunication network
C	What is meant by security management
D	Draw the block diagram of a operation support system for network transmission
E	Draw the block diagram of a TMN functional architecture and explain briefly
F	Draw the TMN service architecture block diagram and explain briefly

University of Mumbai
Examination June 2021
Examinations Commencing from 1ˢᵗ June 2021
Program: Electronics & Telecommunication
Curriculum Scheme: R2012
Examination: BE Semester VIII (CBSGS)
Course Code: ETC802 and Course Name: Satellite Communication & Networks

Time: 2 hour   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.	In demand assigned TDMA satellite access, the burst length may be kept ------- and the number of bursts per frame used by the given station is -----------when the demand is varied.
Option A:	Constant, varied
Option B:	Varied , constant
Option C:	Zero, constant
Option D:	Varied , Zero
2.	Common signaling channel (CSC) is having the following bandwidth and center frequency.
Option A:	170 KHz and 180.045 MHz
Option B:	160 KHz and 180.045 MHz
Option C:	180 KHz and 160.045 MHz
Option D:	165 KHz and 185.045 MHz
3.	Burst code word or unique word in binary word is stored at
Option A:	Reference earth station only
Option B:	Each earth station
Option C:	Each earth station as well as reference earth station
Option D:	Not required to store anywhere.
4.	Frame organization contains
Option A:	Only synchronizing field
Option B:	Only traffic field
Option C:	Synchronizing field and a traffic field both
Option D:	Neither synchronizing field nor traffic field
5.	TCP/IP model does not have _____ layer but OSI model have this layer.
Option A:	Session layer
Option B:	Transport layer
Option C:	Application layer
Option D:	Network layer
6.	Transmission data rate is decided by
Option A:	Network layer
Option B:	Physical layer

Option C:	Data link layer
Option D:	Transport layer
7.	Main advantage of optical or Laser communication in satellite system is----
Option A:	Small beam divergence angle, Greater bandwidth and Larger Antenna.
Option B:	Large beam divergence angle, Greater bandwidth and Small Antenna.
Option C:	Small beam divergence angle, less bandwidth and Small Antenna.
Option D:	Small beam divergence angle, Greater bandwidth and Small Antenna.
8.	A master antenna TV(MATV) system is used to provide reception of _____to a small group of users, for example to the tenants in an apartment building.
Option A:	DBS TV/FM channels
Option B:	FM channels
Option C:	The Ku (12-GHz) band
Option D:	The C (6 GHz) band
9.	The signal fed to the indoor unit of Receive-Only Home TV is normally a wideband signal covering the range _____
Option A:	12.2 to 12.7 GHz
Option B:	950 to 1450 MHz.
Option C:	12-GHz
Option D:	4 to 6 GHz
10.	For a satellite circuit the carrier-to-noise ratios are uplink 23 dB, downlink 20 dB, intermodulation 22 dB. Calculate the overall carrier to noise ratio in decibels.
Option A:	14.42dB
Option B:	20.28 dB
Option C:	18.64 dB
Option D:	16.71 dB
11.	A satellite downlink at 4 GHz operates with a transmit power of 4 W and an antenna gain of 54 dB. Calculate the EIRP in dBW
Option A:	70 dBW
Option B:	50 dBW
Option C:	60 dBW
Option D:	40 dBW
12.	What is an noise power spectral density?
Option A:	$N_0 = P_N/B_N = KT_N$ joules
Option B:	$N_0 = B_N/P_N$
Option C:	$N_0 = B_N/P_N = KT_N B_0$ joules
Option D:	$N_0 = KT_N B_N$
13.	Define saturation flux density
Option A:	The flux density required at both the receiving and transmitting antenna to produce saturation of TWTA is termed the saturation flux density.
Option B:	The maximum power required at receiving antenna to produce saturation of TWTA is termed the saturation flux density

Option C:	The flux density required at the transmitting antenna to produce saturation of TWTA is termed the saturation flux density.
Option D:	The flux density required at the receiving antenna to produce saturation of TWTA is termed the saturation flux density.
14.	To determine the look angles for the geostationary orbit the following information are needed----
Option A:	Only earth-station latitude
Option B:	Only earth-station longitude
Option C:	Only longitude of the sub-satellite point
Option D:	All the above
15.	Which one of the following pair are not the orbital elements.
Option A:	semi major axis, eccentricity
Option B:	inclination angle, argument of perigee
Option C:	right ascension of the ascending node, inclination angle
Option D:	Line of apsides, Line of nodes
16.	The inclination of a prograde and retrograde orbit always lies between
Option A:	0° to 90° and 90° to 180° respectively
Option B:	90° to 180° and 0° to 90° respectively
Option C:	0° to 180° and 0° to 180° respectively
Option D:	0° to 90° and 0° to 90° respectively
17.	True anomaly?
Option A:	The true anomaly is the angle from apogee to the satellite position, measured at the earth's center
Option B:	The true anomaly is the angle from perigee to the satellite position, measured at satellite center.
Option C:	The true anomaly is the angle from perigee to the satellite position, measured at the earth's center
Option D:	The point closest approach to earth.
18.	In wideband receiver a second amplifier follows the mixer stage to provide an overall receiver gain of about
Option A:	70 dB
Option B:	40 dB
Option C:	50 dB
Option D:	60 dB
19.	In three axis stabilization the Yaw axis is
Option A:	directed toward the earth's center
Option B:	normal to the orbital plane
Option C:	perpendicular to orbital plane
Option D:	perpendicular to the remaining two axis
20.	What is meant by frequency reuse?
Option A:	The carrier with opposite senses of polarization may overlap in frequency this technique is known as frequency reuse.

Option B:	The carrier with same senses of depolarization may overlap in frequency this technique is known as frequency reuse.
Option C:	The carrier with opposite senses of depolarization may overlap in frequency this technique is known as frequency reuse.
Option D:	The carrier with same senses of polarization may overlap in frequency this technique is known as frequency reuse.

Q2 (20 Marks)	Solve any two out of three 10 marks each
A	State and explain orbital Elements in detail?
B	What do you understand by reliability and space qualification? Explain significance of bath-tub curve?
C	Draw the block diagram for transmit and receive earth station and explain each block in detail?

Q3. (20 Marks)	Solve any Two Questions out of Three 10 marks each
A	Explain the overall system noise temperature in detail?
B	Draw and explain TDMA frame structure in brief?
C	Draw and explain the satellite network architecture?

University of Mumbai
Examination 2020 under cluster
Examinations Commencing from 1ˢᵗ June 2021 to 10ᵗʰ June 2021
Program: Electronic and Telecommunication Engineering
Curriculum Scheme: Rev 2012
Examination: BE   Semester VIII
Course Code: **ETC 803** and Course Name: **Internet and Voice Communication**

Time: 2 Hour   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	Who translates internet domain and host names to IP address
Option A:	Dynamic host configuration protocol
Option B:	Domain Name System
Option C:	Routing Information Protocol
Option D:	Internet control message protocol
2	Telnet is used for
Option A:	Assigning IP address to a host
Option B:	Remote Login
Option C:	Assigning name to an IP address
Option D:	Video Compression
3	The time for which an IP address is allocated to a DHCP client by a DHCP server is called
Option A:	Time to live
Option B:	Lease time
Option C:	Rebind time
Option D:	Total time
4	How many bits internet address is assigned to each host on a TCP/IP internet which is used in all communication with the host?
Option A:	16 bits
Option B:	32 bits
Option C:	48 bits
Option D:	64 bits
5	_____ adjusts the segment size to be smaller than MTU.
Option A:	Internet Protocol 6
Option B:	User Datagram Protocol
Option C:	Internet Protocol 4
Option D:	Transmission Control Protocol

6	Which of the following does not have a Net ID and Host ID?
Option A:	Class A
Option B:	Class C
Option C:	Class B
Option D:	Class D
7	Which Application Protocol establishes, manages and terminates a multimedia session
Option A:	RIP
Option B:	SIP
Option C:	IP
Option D:	DIP
8	Which of the following term is used when different forms of information like text, sound is converted to a binary code?
Option A:	Digitalization
Option B:	Digitization
Option C:	Binarization
Option D:	Digization
9	Video is represented as a series of images formally known as _____
Option A:	Pics
Option B:	Shots
Option C:	Frames
Option D:	Snaps
10	In audio and video compression each frames will be divided into small grids is called as
Option A:	Packets
Option B:	Frames
Option C:	Pixels
Option D:	Mega Pixels
11	Which lossy method for audio compression is responsible for encoding the difference between two consecutive samples?
Option A:	Silence Compression
Option B:	Linear Predictive Coding (LPC)
Option C:	Adaptive Differential Pulse Code modulation (ADPCM)
Option D:	Code Excited Linear Predictor (CELP)
12	Session Initiation Protocol (SIP), is very
Option A:	Independent.
Option B:	Flexible.
Option C:	Important.
Option D:	Layered.

13	RTCP stands for
Option A:	Real-time Transport Control Program.
Option B:	Real-time Transport Control Protocol.
Option C:	Real-time Transport Control Packet.
Option D:	Real-time Transport Control Path
14	A leaky bucket algorithm shapes bursty traffic into fixed-rate traffic by averaging the
Option A:	Traffic Rate
Option B:	Data Rate
Option C:	Average Rate
Option D:	Traffic Shaping
15	In Classful addressing ,which class addresses are used for multicasting
Option A:	Class A
Option B:	Class C
Option C:	Class D
Option D:	Class E
16	Data Integrity can be ensured in Transport layer using
Option A:	Checksum
Option B:	Repetition codes
Option C:	Cyclic redundancy checks
Option D:	Error correcting codes
17	Transport Layer receives data in the form of
Option A:	Byte Streams
Option B:	Bits Stream
Option C:	Datagrams
Option D:	Both Packets and Byte Stream
18	A classless address is given as 167.199.170.82/27. Find the first address.
Option A:	167.199.170.32
Option B:	167.199.170.82
Option C:	167.199.170.64
Option D:	167.199.170.78
19	HTTP uses TCP port number
Option A:	22
Option B:	23
Option C:	80
Option D:	92
20	Integrated Services is based on flow based Quality of service model designed for
Option A:	CPU
Option B:	Data Node
Option C:	IP
Option D:	Traffic Shaping

Subjective/Descriptive questions

Q.2	Solve any Two out of Three (10 marks each)
A	Write the general format of an IPv4 datagram and explain the fields in the header.
B	What is the need of digitizing of Audio and Video in Internet communication? Explain Video Compression (MPEG) in detail.
C	Explain Karn's algorithm in detail.
Q.3	Solve any Two out of Three (10 marks each)
A	Explain in detail the SIP.
B	Explain the different error reporting messages in ICMP with message format.
C	Differentiate between TELNET and SSH. Explain various components of SSH

Examinations Commencing from 1st June 2021
Program: Electronics and Telecommunication Engineering) (CBCGS)
Curriculum Scheme: Rev2016
Examination: BE Semester VIII
Course Code: ECCDLO8041 and Course Name: Optical Networks

Time: 2 hour   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	Information transfer is basically carried out in Optical communication by means of _____.
Option A:	Optical Attenuation
Option B:	Optical Gain
Option C:	Low refractive index
Option D:	Optical Networking
2.	Optical Network has _____ as a multifunctional element.
Option A:	Optical Node
Option B:	HOP
Option C:	Loss
Option D:	Gain
3.	The optical networking uses_____.
Option A:	Pair of copper conductors
Option B:	Optical Fiber cable
Option C:	Antenna
Option D:	None of above
4.	Optical networking fundamentals are _____ of the transmission techniques.
Option A:	Independent
Option B:	Dependent
Option C:	Useful
Option D:	None of above
5.	Insertion loss in a commercially available circulator is around --------------
Option A:	2dB
Option B:	0.7dB
Option C:	0.2dB
Option D:	1dB
6.	SONET in optic networks means_____.
Option A:	Similar Optical Networks
Option B:	Serial Optical Networks
Option C:	Synchronous Optical Networks

Option D:	Asynchronous Optical Networks
7.	In which topology, data circulates bi-directionally?
Option A:	Ring
Option B:	Bus
Option C:	Star
Option D:	Serial
8.	In SONET, for each frame, the bytes are transmitted -------------
Option A:	from left to right, top to bottom
Option B:	from right to left, bottom to top
Option C:	from left to right, bottom to top
Option D:	from right to left, top to bottom
9.	In _____topology, star and ring topology is combined.
Option A:	Fringe
Option B:	Mesh
Option C:	Seismic
Option D:	Synchronous
10.	Packet Switching is also known as_____
Option A:	Data switching
Option B:	Node switching
Option C:	Frame switching
Option D:	Cell switching.
11.	_____ Circuit is a series of logical connections between source and destination.
Option A:	Virtual
Option B:	Gain
Option C:	Switched network
Option D:	None of above
12.	A quantum or quasiparticle propagated as a travelling non-dissipative wave that is neither preceded nor followed by another such disturbance is known as_____.
Option A:	SONET
Option B:	Solitons
Option C:	OTDM
Option D:	None of above
13.	The network structure formed due to the interconnectivity patterns is known as a _____.
Option A:	Network
Option B:	Topology
Option C:	Circuit
Option D:	None of above
14.	_____ type of fiber-optic coupler causes the distribution of an optical power from more than two input ports among the several output ports.
Option A:	X coupler
Option B:	Tree Coupler

Option C:	Star coupler
Option D:	None of above
15.	Which optical devices are adopted or applicable for routing signals from one waveguide to another?
Option A:	Coupler.
Option B:	Splitter
Option C:	Splice
Option D:	Combiner
16.	Which one of following supports a great number of wavelength channels and reduces the number of switches within the optical network?
Option A:	Waveband switching
Option B:	Optical remuneration
Option C:	Optical genesis
Option D:	Wavelength multiplexing
17.	_____ is usually required by a packet so that the data is not overwritten.
Option A:	Guard band
Option B:	Footer
Option C:	Header
Option D:	Payload
18.	OTDM stands for _____.
Option A:	Optical Transfer Data Mode
Option B:	Optical Time Division Multiplexing
Option C:	Optical Transfer Domain Mode
Option D:	Optical Transfer Domain Measurement
19.	In an optical network, increase in the number of lasers _____the bit rate.
Option A:	Decreases
Option B:	Stabilizes
Option C:	Increase
Option D:	None of above
20.	_____ is the function responsible for detecting failures when they happen and isolating the failed component.
Option A:	Performance management
Option B:	Configuration management
Option C:	Fault management
Option D:	Information management

Q2.	Solve any Two Questions out of Three 10 marks each
A	Describe any five types of Multiplexers and filters.
B	Explain Operational principle of WDM, WDM network elements, WDM architecture.
C	With reference packet switching and access networks, explain synchronization, broadcast OTDM networks and switch based networks.

Q3.	Solve any Two Questions out of Three 10 marks each
A	Explain Optical network routing principals namely impairment aware routing, optical circuit switching and optical packet switching.
B	With reference to design of optical networks, explain transmission system model, power penalty transmitter and receiver optical amplifier.
C	Discuss virtual topology design problem combined SONET/WDM network design and regular virtual technologies.

University of Mumbai
Examination June 2021
Examinations Commencing from 1st June 2021
Program: **IT01028**
Curriculum Scheme: Rev2016
Examination: BE Semester VIII
Course Code: 52965 and Course Name: Environmental Management

Time: 2 hour   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 of the following salts is the main cause of permanent hardness of water?
Option A:	Magnesium sulphate
Option B:	Magnesium bicarbonate
Option C:	Magnesium carbonate
Option D:	Potassium sulphate
2.	Which of the following is incorrect, if we only achieve two out of three pillars of Sustainable Development?
Option A:	Social + Economic Sustainability = Equitable
Option B:	Social + Environmental Sustainability = Bearable
Option C:	Economic + Environmental Sustainability = Viable
Option D:	Political + Environmental Sustainability = Bearable
3.	In a food chain animals constitute the:
Option A:	First trophic level
Option B:	Second trophic level
Option C:	Intermediate trophic level
Option D:	Ultimate trophic level
4.	What are the Primary Goals of Sustainability? i. The end of poverty and hunger ii. Better standards of education and healthcare - particularly as it pertains to water quality and better sanitation iii. To bring about a gradual and sometimes catastrophic transformation of the environment iv. Sustainable economic growth while promoting jobs and stronger economies
Option A:	i,ii,iv
Option B:	i,ii,iii
Option C:	i,iii,iv
Option D:	ii,iii,iv
5.	How many percentage of fissionable U-235 occurring in uranium?
Option A:	0.20%
Option B:	0.70%
Option C:	1.00%

Option D:	1.50%
6.	Which of the following is NOT a problem caused by deforestation?
Option A:	Loss of biodiversity
Option B:	Hurting the economy
Option C:	The harming of many indigenous peoples
Option D:	Creating political and social issues

7.	Biodiversity is important for a variety of reasons
	    i. promotes healthier, maintained ecosystems that provide services to us
	    ii. genetic variety of crops, livestock, and marine organisms
	    iii. There are too many animal species on the world
	    iv. ensures that humans are provided with a healthy, nutrient rich diet

Option A:	i,ii,iv
Option B:	i,ii,iii
Option C:	i,iii,iv
Option D:	ii,iii,iv
8.	The reason of Arc blast is
Option A:	Poor contact within electrical wire splices
Option B:	Radio frequency emissions from high-power transmitters
Option C:	Discharge of high electrical current through open air
Option D:	Failure to lock-out and tag-out electrical breakers
9.	Match the following: Earth Spheres Characteristics a. Hydrosphere 1. It lies above 50 km which coincides with the thermosphere b. Lithosphere 2. Earth's crust and a lower portion of the mantle c. Biosphere 3. Earth's water which exists in both fresh and saline form d. Ionosphere 4. Zone incorporating elements of the hydrosphere, lithosphere and atmosphere
Option A:	a= 1 b=2 c=3 d=4
Option B:	a= 4 b=23 c=2 d=1
Option C:	a= 3 b=2 c=4 d=1
Option D:	a= 1 b=4 c=2 d=3
10.	Plant species with a wide range of genetic distribution evolve into a local population known as
Option A:	Ecotype
Option B:	population
Option C:	Ecosystem
Option D:	Biome
11.	Name the group of species which exploit the abiotic and biotic resources in a similar way?

Option A:	Guild
Option B:	Ecads
Option C:	Biomes
Option D:	Community
12.	The Montreal Protocol, finalized in 1987, is a global agreement to protect
Option A:	Hydrosphere
Option B:	Ionosphere
Option C:	Biosphere
Option D:	Stratospheric ozone layer
13.	Lichens are good bioindicators for
Option A:	Environmental radiation
Option B:	Soil pollution
Option C:	Water and air pollution
Option D:	Evolution
14.	Opportunities for social innovation are greatest when
Option A:	CSR is aligned with a firm's core skills and capabilities.
Option B:	CSR spending of a firm is larger than that of its competitors.
Option C:	CSR is pursued by a firm to improve its reputation.
Option D:	CSR is pursued by a firm to enhance human capital.
15.	Environment Impact assessment(EIA) is done
Option A:	Before the project
Option B:	After the project
Option C:	During the project
Option D:	Any time in life cycle of project
16.	Match the following: Column "A" Column "B" (i) Montreal Protocol (a) 1974 (ii) Air (Prevention and Control of Pollution) Act (b) 1986 (iii) The Environment Protection Act (c)1987 (iv)The Water (Prevention and Control of Pollution) Act (d) 1981
Option A:	i-a, ii-d, iii-b, iv-c
Option B:	i-c, ii-b, iii-d, iv-a
Option C:	i-c, ii-d, iii-b, iv-a
Option D:	i-c, ii-d, iii-a iv-b
17.	What are the implementation structures of Biodiversity Act - 2002
Option A:	A two tiered structure has been established under the Act at the national and state levels.
Option B:	A three tiered structure has been established under the Act at the national, state and local levels.
Option C:	A four tiered structure has been established under the Act at the national, state, district and local levels.
Option D:	Not structured
18.	Which document provides guidance on auditing management systems?
Option A:	ISO 9000

Option B:	ISO 9001
Option C:	ISO 9002
Option D:	ISO 19011
19.	Within ISO 14001, what do "can" refer to?
Option A:	A requirement
Option B:	A recommendation
Option C:	A permission
Option D:	A possibility or a capability
20.	Which is the most recent pronouncement of the government's commitment to improving environmental conditions?
Option A:	National Environmental Policy
Option B:	National Water Policy
Option C:	Environment Act
Option D:	Air Policy

Q2 **(20 Marks)**	
A	**Solve any Two** **5 marks each**
i.	What is meant by disaster? Differentiate between Industrial disaster and Manmade disaster.
ii.	Explain food chain with respect to four major parts. Give examples of food chain
iii.	What are the stages of the EMS lifecycle process?
B	**Solve any One** **10 marks each**
i.	Discuss the consequences of deteriorating air quality on humans, plants and animals.
ii.	What all are components of environment? Define each component.

Q3 **(20 Marks)**	
A	**Solve any Two** **5 marks each**
i.	Explain Global warming. How does it take place?
ii.	Explain in detail what is Environmental Quality Management?
iii.	Give a brief account of Air (P&CP Act).
B	**Solve any One** **10 marks each**
i.	What is meant by habitat? What are its types? Elaborate on them.
ii.	Classify Ecosystems and explain them in detail.

University of Mumbai
Examination June 2021
Examinations Commencing from 1st June 2021
Program: **Mechanical Engineering**

Curriculum Scheme: Rev 2016

Examination: BE Semester VIII

Course Code: ILO 8021 and Course Name: Project Management

Time: 2 hour   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.	Projects are unique and temporary, while operations are
Option A:	Specific And Targeted
Option B:	Ongoing and Permanent with a Repetitive Output
Option C:	Unique And Permanent With Non-Repetitive Outputs
Option D:	Ongoing And Temporary
2	**From a practical perspective, what is the most important element of a good project communication management approach?**
Option A:	Setup a regular and frequent method for communicating with team members and stakeholders and then follow it.
Option B:	Conduct one-on-one meetings (face-to-face or virtual) with project team members every week.
Option C:	Ensure all project communication between team members and stakeholders goes through the Project Leader so that there is no opportunity for misunderstanding.
Option D:	Telephonic conversation, and Emails
3.	The lowest element in the hierarchical breakdown of the WBS is
Option A:	Work package
Option B:	Responsibility matrix
Option C:	Bottoms up budget
Option D:	Deliverable
4.	Use of PMIS is comparatively less in this process group of project management
Option A:	Initiating
Option B:	Executing
Option C:	Monitoring and Controlling
Option D:	Planning
5.	Which of the following represents the estimated value of the work actually accomplished?
Option A:	Earned value (EV)
Option B:	Planned value (PV)
Option C:	Actual cost (AC
Option D:	Cost variance (CV)
6.	_____ is the discounting rate, which delivers a Net Present Value equal to zero
Option A:	ARR

Option B:	IRR
Option C:	NPV
Option D:	Profitability Index
7.	Project is stopped due to either its successful or unsuccessful conclusion. Auditing, team on new assignment, assets transferred as per policy is known as :
Option A:	Extinction
Option B:	Addition
Option C:	Integration
Option D:	Starvation
8.	The process of partnering is an attempt to mitigate he risk associated with
Option A:	Networking
Option B:	Uncertainty
Option C:	Risks
Option D:	Subcontracting
9	Project Risk = _------------* Consequences of Event. None of the above
Option A:	Loss
Option B:	Outcomes of Event
Option C:	Probability of Event
Option D:	Profit
10.	What is the correct sequence of stages in group development
Option A:	Forming, Norming, Performing, Storming, Adjourning
Option B:	Forming, Norming, Storming, Performing , Adjourning
Option C:	Forming, Storming, Norming, Performing , Adjourning
Option D:	Forming, Performing, Norming, Storming , Adjourning
11.	An activity has an optimistic time 11 days, a most likely time of 15 days, and a pessimistic time of 23 days. What is its variance?
Option A:	15.6
Option B:	16.33
Option C:	4
Option D:	2
12.	What are the determinants of project success as per Iron Triangle?
Option A:	Resources, Cost, Performance
Option B:	Knowledge, Time, Resources
Option C:	Cost, Skills, Performance
Option D:	Cost, Performance, Time
13	What is the correct sequence for the following processes of Project Risk Management: 1. Plan Risk Management; 2. Perform Qualitative Risk Analysis; 3. Identify Risks; 4. Perform Quantitative Risk Analysis; 5. Plan Risk Responses;

	6. Control Risks
Option A:	1-2-3-4-5-6
Option B:	1-3-2-4-5-6
Option C:	1-3-4-2-5-6
Option D:	3-1-2-4-5-6

14.	Arrange the following elements of the Project Cycle in the right order:
	  A- Project Appraisal
	  B- Feasibility Analysis
	  C- Negotiation
	  D- Project Selection

Option A:	A-B-C-D
Option B:	B-A-C-D
Option C:	B-A-D-C
Option D:	B-C-A-D
15.	An activity takes 4 days to complete at a normal cost of Rs.500. If it is possible to complete the activity in 2 days with an additional cost of Rs.700, what is the incremental cost of activity.
Option A:	100
Option B:	125
Option C:	1000
Option D:	250
16.	In PERT/CPM, slack time is :
Option A:	Is the amount of time a task may be delayed without changing the overall project completion time
Option B:	Is the latest time an activity can be started without delaying the entire project
Option C:	Is a task or subproject that must be completed
Option D:	Marks the start or completion of a task
17.	The review of the successes and the mistakes is normally held during _____ phase.
Option A:	Initiation
Option B:	Planning
Option C:	Execution
Option D:	Closure
18.	Cost performance index value is less than 1 indicates :
Option A:	Cost under run
Option B:	Cost overrun
Option C:	Cost average
Option D:	Cost Variance
19.	Why does scope creep cause a delay on a project?
Option A:	The project resources are doing the scope creep work and not the originally planned work, causing the originally planned tasks to be delayed.
Option B:	Project work is postponed until the magnitude of scope creep is defined.
Option C:	Scope creep causes task estimates to increase.
Option D:	Scope creep causes cost estimates to increase.

20.	Goldratt's critical chain method is based on
Option A:	Theory of constraints
Option B:	Critical path method
Option C:	Supply of raw material in time
Option D:	Use of concurrent engineering principle

Q.2	Solve any Four out of Six . 5 Marks Each
A	What are the knowledge areas and process groups in Project Management as per PMI?
B	Explain various project selection models.
C	What is Goldratt's critical chain method?
D	Determine the net present value for a project that costs Rs. 2,40,000/- would yield after tax cash flows as follows. Assume cost of capital is 10% | Year	CASH Flow in Rs. | |---|---| | 1 | 25,000 | | 2 | 75,000 | | 3 | 80,000 | | 4 | 100,000 | Comment on feasibility of project based on NPV
E	Explain importance of ethics in projects.
F	What are the different ways of closing the project?

Q.3	Solve any Two Questions out of Three 10 Marks Each
A	a. A consulting project has an actual cost of Rs. 45000, Scheduled cost Rs. 35000, and value of completed work is Rs. 40000. Find the Schedule and Cost Variance. Also find SPI and CPI. b. What is a contract? Explain different types of contracts.
B	R & D project has a list of tasks to be performed whose time estimates are given in the as follows. **Table-1-Time Estimation for R &D Project** | Activity i j	Activity Time	t_o	t_m	t_p | |---|---|---|---|---| | 1-2 | A | 4 | 6 | 8 | | 1-3 | B | 2 | 3 | 10 | | 1-4 | C | 6 | 8 | 16 | | 2-4 | D | 1 | 2 | 3 | | 3-4 | E | 6 | 7 | 8 | | 3-5 | F | 6 | 7 | 14 | | 4-6 | G | 3 | 5 | 7 | | 4-7 | H | 4 | 11 | 12 | | 5-7 | I | 2 | 4 | 6 | | 6-7 | J | 2 | 9 | 10 | a. Draw the project network. b. Find the critical path. c. Find the probability that the project is completed in 19 days. If the probability is less than 20%, find the probability of completing it in 24 days.

C	Write short notes on.
	    a. Work Breakdown Structure
	    b. Project Procurement Management,