K. J. Somaiya Institute of Engineering and Information Technology
Sion, Mumbai - 400022
NAAC Accredited Institute with 'A' Grade
NBA Accredited 3 Programs (Computer Engineering, Electronics & Telecommunication Engineering and Electronics Engineering) Permanently Affiliated to University of Mumbai

EXAMINATION TIME TABLE (JUNE 2021)

PROGRAMME - B.E. (Electronics & Tele-communication) (REV-2016)(Choice Based)

SEMESTER - VII

Days and Dates	Time	Course Code	Paper
Tuesday, June 15, 2021	03:30 p.m. to 05:30 p.m.	ECC701	Microwave Engineering
Thursday, June 17, 2021	03:30 p.m. to 05:30 p.m.	ECC702	Mobile Communication System
Saturday, June 19, 2021	03:30 p.m. to 05:30 p.m.	ECC703	Optical Communication
Tuesday, June 22, 2021	03:30 p.m. to 05:30 p.m.	ECCDLO7031	Department Level Optional Course III: Neural Networks & Fuzzy Logic
Tuesday, June 22, 2021	03:30 p.m. to 05:30 p.m.	ECCDLO7032	Big Data Analytics
Tuesday, June 22, 2021	03:30 p.m. to 05:30 p.m.	ECCDLO7033	Internet Communication Engineering
Tuesday, June 22, 2021	03:30 p.m. to 05:30 p.m.	ECCDLO7034	CMOS Mixed Signal VLSI
Tuesday, June 22, 2021	03:30 p.m. to 05:30 p.m.	ECCDLO7035	Embedded System
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7011	Institute Level Optional Course-I :- Product Life Cycle Management
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7012	Reliability Engineering
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7013	Management Information Systems
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7014	Design of Experiments
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7015	Operations Research
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7016	Cyber Security & Laws
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7017	Disaster Management & Mitigation Measures
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7018	Energy Audit & Management
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	ILO7019	Development Engineering

Important Note: ●Change if any, in the time table shall be communicated on the college web site.

Principal

Mumbai
20th May, 2021

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Electronics and Telecommunication**

Curriculum Scheme: Rev2016

Examination: BE SemesterVII

Course Code: ECC701and Course Name: Microwave Engineering

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. (2 marks each)**
1.	Which of the statements is not true for the microstrip line?
Option A:	It is a planer transmission line.
Option B:	Its power handling capacity is small.
Option C:	Characteristic impedance(Z_0) of microstrip line can be controlled by controlling its width(W) only i.e. controlling dimensions in one plane.
Option D:	It is only possible to control its characteristics impedance by controlling width and height of the substrate simultaneously.
2.	The ferrite devices work on the principle of -
Option A:	Faraday's Law of EM Induction
Option B:	Hall effect
Option C:	Faraday's Rotation Effect
Option D:	Photoemission effect
3.	Find S_{11} for a series element Z=200 Ω. Take characteristic impedance Z_0=75 Ω.
Option A:	S_{11}=0.5
Option B:	S_{11}=0.57
Option C:	S_{11}=1.75
Option D:	S_{11}=0
4.	Find cutoff frequency for the dominant mode of a dielectric filled circular waveguide with ε_r=2.08. The radius of the waveguide is 0.5 centimeter.
Option A:	15.92 GHz
Option B:	11.32 GHz
Option C:	12.18 GHz
Option D:	14.45 GHz
5.	For the same defect pattern, small chip size has_____ yield as compared to large chip size.
Option A:	Large
Option B:	Small
Option C:	Cannot say anything
Option D:	Very small
6.	Which of the following devices is a two port non-reciprocal phase shifter with a phase difference of 180^0 between forward and backward direction of propagation?

Option A:	Isolator
Option B:	Gyrator
Option C:	Circulator
Option D:	Directional coupler
7.	The input power in a two-hole directional coupler is 10 mW. The coupler has a coupling coefficient of 20 dB. Calculate power in coupled port
Option A:	0.1 nW
Option B:	0.1 mW
Option C:	9.9 mW
Option D:	0.2 mW
8.	The major advantage of a travelling wave tube (TWT) over a klystron lies in it -
Option A:	Simple construction
Option B:	Low cost
Option C:	Higher gain and bandwidth
Option D:	Low gain
9.	Which of the following statements is true for Gyrotron?
Option A:	It uses resonant cavity
Option B:	It uses slow wave structure
Option C:	It is used for low frequency.
Option D:	The RF field interacts with the electron in a cyclotron motion in the presence of strong static magnetic field
10.	Which of the following statement is not true for Tunnel diode –
Option A:	It is heavily doped semiconductor p-n junction
Option B:	Its working is based on tunnel effect which is quantum mechanical effect
Option C:	Tunneling require empty states on one side of the barrier and filled states on other side of the barrier
Option D:	It is a lightly doped semiconductor p-n junction.
11.	Which of the following statements is true for a BARITT diode?
Option A:	A BARITT diode is much less noisy as compared to an IMPATT diode.
Option B:	They have more bandwidth
Option C:	High power output possible
Option D:	A BARITT diode are much more noisy as compare to IMPATT diode
12.	Which of the following possibilities for semiconductor devices is indication of negative resistance behavior?
Option A:	With increase in voltage, current increases.
Option B:	Voltage across device and current through it is 360 degree out of phase
Option C:	With increase in voltage, current remains constant.
Option D:	Negative differential mobility in bulk semiconductors by transferring electrons from high-mobility energy bands to low-mobility energy bands with increase in voltage

13.	If the required normalized susceptance of the single shunt stub is -j1 and if the characteristic impedance Z_0 = 75 Ohm, then the length of short-circuited shunt stub will be -
Option A:	L = 0.25λ
Option B:	L = 0.125 λ
Option C:	L = 0.35 λ
Option D:	L = 0.5 λ
14.	In single stub matching, the stub should be inserted at a point on the line where the normalized conductance is-
Option A:	0
Option B:	infinity
Option C:	1
Option D:	0.5
15.	Which of the following statements is not true for waveguide tee (three port junction)?
Option A:	They used to split the power
Option B:	A three port, lossless, reciprocal network can never be designed with all its ports matched
Option C:	A three port, lossless, reciprocal network can be designed with all its ports matched
Option D:	They used to combine the power
16.	What is the effect of increase in gap transit angle θ_g in Two Cavity Klystron?
Option A:	Velocity modulation decreases.
Option B:	Velocity modulation increases
Option C:	Velocity modulation remains constant
Option D:	Coupling between the electron beam and the buncher cavity increases
17.	Barratters are used for the measurement of -
Option A:	VSWR
Option B:	Power
Option C:	Impedance
Option D:	Frequency
18.	In travelling wave tube amplifier helical structure is used to -
Option A:	Reduce noise
Option B:	Increase the efficiency
Option C:	Reduce the axial velocity of RF field
Option D:	Ensure broad band operation
19.	A travelling wave tube operates under the following condition: Beam Voltage =3kV, Beam current = 30mA, Characteristics impedance of the helix =10Ω, Circuit length =55 and frequency = 9GHz. Calculate output power gain Ap in decibel.
Option A:	51.8 dB
Option B:	100 dB
Option C:	59.52 dB
Option D:	66.42 dB

20.	Manley-Rowe power relations are useful for-
Option A:	Predicting nonlinear behavior of Gunn diode
Option B:	Explaining tunneling phenomenon of tunnel diode
Option C:	Explaining power loss in Gunn diode
Option D:	Predicting power gain in parametric amplifiers

Q2.	**Solve any Four out of Six. 5 marks each**
A	Explain method to measure VSWR.
B	Derive expression for modulated velocity in case of Two cavity klystron amplifier.
C	Explain how Gunn diodes can exhibit dynamic negative resistance?
D	A air filled rectangular waveguide with waveguide dimensions $a = b = \sqrt{6}$ is extended in z direction. The signal frequency is 10 GHz. The magnetic field in z direction is given as $H_z = H_0 \cos cos\left(\frac{\pi x}{\sqrt{6}}\right) \cos cos\left(\frac{\pi y}{\sqrt{6}}\right) A/m$. Identify mode of propagation and calculate cutoff frequency.
E	Compare Hybrid MICs with monolithic MIC.
F	List medical applications of Microwave engineering and explain any one in brief.
Q3.	**Solve any Two Questions out of Three. 10 marks each**
A	Describe various modes of operation in Gunn oscillator.
B	An X-band pulsed cylindrical magnetron has following parameters: Anode Voltage =32KV, Anode current = 84A, Magnetic flux density = 0.01 Wb/m^2, Radius of cathode cylinder =6cm and Radius of vane edge to center =12cm. Calculate a) The cyclotron angular frequency b) The Hull cutoff voltage for a fixed B_0 c) The Hull cutoff magnetic flux density for a fixed V_0
C	A rectangular waveguide with cross-section dimensions a x b is extended in x direction. Derive expressions for field configuration inside the waveguide for TE mode.

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Electronics and Telecommunication**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ECC701 and Course Name: Microwave Engineering

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	C
Q3.	B
Q4	C
Q5	A
Q6	B
Q7	B
Q8.	C
Q9.	D
Q10.	D
Q11.	A
Q12.	D
Q13.	B
Q14.	C
Q15.	C
Q16.	A
Q17.	B
Q18.	C
Q19.	D
Q20.	D

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021

Program: **Electronics and Telecommunication Engineering (CBCGS)**

Curriculum Scheme: Rev 2016

Examination: BE Semester VII

Course Code: ECC702 and Course Name: Mobile Communication System

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 design process of selecting and allocating channel groups for all of the cellular base stations within a system is called _____.
Option A:	Footprint
Option B:	frequency reuse
Option C:	Cluster
Option D:	Handoff
2.	The propagation model that estimates radio coverage of a transmitter is called _____.
Option A:	Large scale propagation model
Option B:	Small scale propagation model
Option C:	Sector channel model
Option D:	Ricean model
3.	What does path loss exponent indicate?
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
4.	How many users or voice channels are supported for each 200*KHz* channel in GSM?
Option A:	Eight
Option B:	Three
Option C:	Sixty four
Option D:	Twelve
5.	The fundamental time unit of LTE transmission is a _____.
Option A:	radio frame
Option B:	Subframes
Option C:	Slots
Option D:	Symbols
6.	What location management feature is supported by 4G?
Option A:	Concatenated Location Registration
Option B:	Concurrent Location Register

Option C:	Concatenated Management
Option D:	Collated Location Registration
7.	Which property of OFDMA system allows adjacent subcarriers to be used without interference?
Option A:	Orthogonality
Option B:	Orthodoxy
Option C:	Octagonality
Option D:	Originality
8.	The technique in which single omnidirectional antenna at the base station is replaced by several directional antennas is .
Option A:	Cell Splitting
Option B:	Microcell zone concept
Option C:	Cell Sectoring
Option D:	Cell multiplication
9.	The maximum radiated power available from a transmitter in the direction of maximum antenna gain, as compared to an isotropic radiator is _____ .
Option A:	Effective isotropic Radiated Power
Option B:	Effective isotropic Received Power
Option C:	Effective isotropic Radiated Pulse
Option D:	Effective isotropic Received Pulse
10.	Which is the main protocol that transfers packets in a GPRS Core network?
Option A:	GTP
Option B:	SSTP
Option C:	SCTP
Option D:	STTP
11.	The channelization codes used in W-CDMA are:
Option A:	Walsh codes
Option B:	Orthogonal variable spreading factor (OVSF) codes
Option C:	Quasi-orthogonal codes
Option D:	Kasami codes
12.	_____ is a transmission method used in MIMO wireless communications to transmit encoded data signals independently.
Option A:	STTD
Option B:	Spatial Multiplexing
Option C:	Collaborative Uplink MIMO
Option D:	MU-MIMO
13.	Grade of service refers to
Option A:	Accommodating large number of users in limited spectrum
Option B:	Ability of a user to access trunked system during busy hour
Option C:	Two calls in progress in nearby mobile stations
Option D:	high speed users with large coverage area
14.	Coherence time is .

Option A:	Directly proportional to Doppler spread
Option B:	Directly proportional to square of Doppler spread
Option C:	Inversely proportional to Doppler spread
Option D:	Directly proportional to twice of Doppler spread
15.	EDGE is the new radio interface technology with enhance modulation and increase GPRS data rate by up to
Option A:	Three times
Option B:	Four times
Option C:	Six times
Option D:	Eight times
16.	What is the name of a Base Transceiver Station in 2G system equivalent in a 4G LTE system?
Option A:	nodeB
Option B:	eNodeB
Option C:	aNodeB
Option D:	nodeBPro
17.	A spectrum of 30MHz is allocated to a cellular system which uses two 25KHz simplex channels to provide full duplex voice channels. What is the number of channels available per cell for 4 cell reuse factor?
Option A:	150 channels
Option B:	60 channels
Option C:	50 channels
Option D:	85 channels
18.	The no. of cell in the cluster can be calculated by formula.
Option A:	N= i+ij+j
Option B:	N= i^2+j^2
Option C:	N= i+ij-j^2
Option D:	N= i^2+ij+j^2
19.	_____ is the core network architecture of LTE standard.
Option A:	SAE (System Architecture Evolution)
Option B:	SAP (System Architecture Pro)
Option C:	CAS (Core System Architecture)
Option D:	MAP (Message application part)
20.	Which are three basic propagation mechanisms?
Option A:	path loss, free space and reflection
Option B:	Multi path propagation, reflection, and scattering,
Option C:	reflection, diffraction, and scattering,
Option D:	signal loss, attenuation, and scattering

Q2.	**(20 Marks)**

A	**Solve any Two**	**5 marks each**
i.	What is cell dragging and dwell time?	
ii.	Explain SDR in communication.	
iii.	Discuss IS-95 CDMA forward channels.	
B	**Solve any One**	**10 marks each**
i.	Explain Handoff in 2G, 3G and 4G in detail.	
ii.	Describe GSM Frame structure.	

Q3.		**(20 Marks)**
A	**Solve any Two**	**5 marks each**
i.	List out methods to improve system capacity? Explain any one method.	
ii.	Explain power control in IS-95.	
iii.	Explain multiple antenna techniques.	
B	**Solve any One**	**10 marks each**
i.	For a given path loss exponent, n=4 and n=3. find the frequency reuse factor and the cluster size that should be used for maximum capacity. The signal-to-interference ratio of 15dB is minimum required for satisfactory forward channel performance of a cellular system. There are six co-channel cells in the first tier and all of them are at the same distance from the mobile. Use suitable approximations.	
ii.	Draw and explain 3GPP LTE architecture.	

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021

Program: **Electronics and Telecommunication Engineering (CBCGS)**

Curriculum Scheme: Rev 2016

Examination: BE Semester VII

Course Code: ECC702 and Course Name: Mobile Communication System

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	A
Q3.	A
Q4	A
Q5	A
Q6	A
Q7	A
Q8.	C
Q9.	A
Q10.	A
Q11.	B
Q12.	B
Q13.	B
Q14.	C
Q15.	A
Q16.	B
Q17.	A
Q18.	D
Q19.	A
Q20.	C

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **BE Electronics and Telecommunication Engineering**

Curriculum Scheme: Rev-2016

Examination: BE Semester VII

Course Code: ECC703 and Course Name: Optical 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.	What is the numerical aperture of the fiber if the angle of acceptance is 16 degree?
Option A:	0.50
Option B:	0.36
Option C:	0.20
Option D:	0.27
2.	The normalized frequency V number of the single mode fiber is decided by:
Option A:	Only the radius of the core of the fiber
Option B:	The radius of the fiber, numerical aperture and the operating wavelength
Option C:	The radius of the core and cladding both
Option D:	Only on the operating wavelength and the numerical aperture
3.	Which law gives the relationship between refractive index of the dielectric?
Option A:	Law of reflection
Option B:	Law of refraction (Snell's Law)
Option C:	Millman's Law
Option D:	Huygen's Law
4.	Which among the following is regarded as an inelastic scattering of a photon?
Option A:	Kerr effect
Option B:	Raman effect
Option C:	Hall effect
Option D:	Miller effect
5.	Which loss is related to the material composition and the fabrication process of the fiber.
Option A:	Scattering loss
Option B:	Absorption loss
Option C:	Dispersion loss
Option D:	Radiative loss
6.	Rayleigh scattering and Mie scattering are the types of _____
Option A:	Splicing losses

Option B:	Non-linear scattering losses
Option C:	Fiber bends losses
Option D:	Linear scattering losses
7.	Dispersion that results from the different group velocities of the various spectral components launched into the fiber from the optical source is known as
Option A:	Chromatic dispersion
Option B:	Material dispersion
Option C:	Polarization dispersion
Option D:	Intermodal dispersion
8.	A non linearity that result in a different transmission phase for the peak of the pulse compared with the leading and trailing pulse edges is known as:
Option A:	Self-phase modulation
Option B:	Cross-phase modulation
Option C:	four-wave mixing
Option D:	Stimulated Raman Scattering
9.	In Kerr effect, induced index change has its proportionality with respect to ___
Option A:	square of electric field
Option B:	cube of electric field
Option C:	cube root of electric field
Option D:	one-fourth power of electric field
10.	A device which converts electrical energy into optical energy is called as _____
Option A:	Optical source
Option B:	Optical coupler
Option C:	Optical isolator
Option D:	Circulator
11.	The ratio of the increase in photon output rate for a given increase in the number of injected electrons is
Option A:	Internal quantum efficiency
Option B:	External quantum efficiency
Option C:	Emitted power efficiency
Option D:	Intrinsic Efficiency
12.	In Lambertian output pattern of LED, the source is _____ bright from all directions.
Option A:	Less
Option B:	Equally
Option C:	More
Option D:	Unpredictably
13.	The frequency of the emitted radiation is related to difference in energy level i.e.$E=E_2-E_1=hv$. State what h stands for in the given equation?

Option A:	Gravitation constant
Option B:	Planck's constant
Option C:	Permittivity
Option D:	Attenuation constant
14.	A parameter that gives the transfer characteristic of the detector is:
Option A:	Responsivity
Option B:	Quantum efficiency
Option C:	Internal optical power
Option D:	Output power
15.	Optical detectors are square-law devices because they respond to _____ rather than amplitude.
Option A:	Intensity
Option B:	Light
Option C:	Density
Option D:	Photon
16.	Optical Isolators are used to
Option A:	Modulate the light
Option B:	Block any light moving in backward direction
Option C:	Optical to Electrical conversion
Option D:	Amplify the light signal
17.	The heating of the two prepared fiber ends to their fusing point with the application of required axial pressure between the two optical fibers is called as _____
Option A:	Mechanical splicing
Option B:	Fusion splicing
Option C:	Melting
Option D:	Diffusion
18.	At which level of temperature does the oxidation process occur in MCVD?
Option A:	Low
Option B:	Moderate
Option C:	High
Option D:	Unpredictable
19.	A key requirement needed in analyzing an optical link is
Option A:	Desired transmission distance
Option B:	SNR
Option C:	Initial Power level
Option D:	Optical bandwidth
20.	To decide the system performance of optical cable syatem,which analysis is used:
Option A:	Link power budget

Option B:	Rise time budget
Option C:	Cross- phase modulation
Option D:	Link gain

Q2 a)	**Solve any Two Questions out of Three** **05 marks each**
A	Explain the various factors contributing to the attenuation in optical fibers.
B	A silica optical fiber has a core refractive index of 1.48 and cladding refractive index 1.46. Determine (a) The critical angle (b) Numerical Aperture (c) The acceptance angle
C	Compare: Optical Isolator and Circulator.
Q2 b)	**Solve any One Questions out of Two** **10 marks each**
A	Derive an expression for the responsivity of an intrinsic photo detector in terms of quantum efficiency of the device and the wavelength of the incident radiation. What are the parameters on which photo detector response time depends ?
B	Compare Semiconductor optical amplifier with Erbium doped fiber amplifier and Raman amplifier.

Q3 a)	**Solve any One Questions out of Two** **10 marks each**
A	Sketch and explain the construction of Vertical cavity surface emitting lasers and also state its applications.
B	List different types of fiber fabrication techniques and explain any one of them.
Q3 b)	**Solve any One Questions out of Two** **10 marks each**
A	Explain with neat sketches the different types of fiber splicing techniques.
B	Why link budget is important in optical fiber communication system? An analog optical fiber link of length 2 km employs an LED which launches mean optical power of -10 dBm into a multimode optical fiber. The fiber cable exhibits a loss of 3.5 dB/km with splice losses 1.4 dB .In addition there is a connector loss at the receiver of 1.6 dB. The pin photodiode receiver has a sensitivity of -25 dBm for an SNR of 50 dB and with a modulation index of 0.5. It is estimated that a safety margin of 4 dB is required. Ignoring the effects of dispersion on the link determine the optical power budget for the system operating under the above conditions and ascertain its viability.

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: ____**EXTC**_____

Curriculum Scheme: Rev2016

Examination: TE Semester VII

Course Code: ECC 703 and Course Name: OPTICAL COMMUNICATION

Time: 2-hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	B
Q3.	B
Q4	B
Q5	B
Q6	D
Q7	D
Q8.	A
Q9.	A
Q10.	A
Q11.	B
Q12.	B
Q13.	B
Q14.	A
Q15.	A
Q16.	B
Q17.	B
Q18.	C
Q19.	A
Q20.	B

University of Mumbai
Examination June 2021
Examinations Commencing from 15th June 2021 to 26th June 2021
Program: Electronics & Telecommunications
Curriculum Scheme: Rev2016
Examination: BE Semester VII
Course Code: ECCDLO7031 and Course Name: Neural Networks and Fuzzy Logic
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.	_____ in artificial neurons are inspired by synapses in biological neurons.
Option A:	Weights
Option B:	Threshold
Option C:	Activation Function
Option D:	Inputs
2.	Number of neurons required in the hidden layer of the neural network are
Option A:	set equal to the number of outputs to the neural network.
Option B:	determined experimentally based on the complexity of problem or application
Option C:	set equal to number of inputs to the neural network
Option D:	set equal to sum number of inputs and outputs of the neural network.
3.	The learning rate value ranges from _____.
Option A:	1 to 100
Option B:	1 to 10
Option C:	0 to 1
Option D:	0 to 5
4.	Face recognition using neural networks with image data for training tagged with codes of the corresponding persons is an example of _____.
Option A:	Memorization
Option B:	Unsupervised learning
Option C:	Supervised learning
Option D:	Reinforcement learning
5.	RBF Neural Network uses _____.
Option A:	Hard limiter activation function in hidden layer
Option B:	Sigmoidal activation function in hidden layer
Option C:	Tan Sigmoid activation function in hidden layer
Option D:	Gaussian activation function in hidden layer
6.	_____ is the process by which the fuzzy sets that represent the outputs of each rule are combined into a single fuzzy set.
Option A:	Concatenation
Option B:	Fuzzification
Option C:	Fuzzy cross over

Option D:	Aggregation
7.	The activation function of McCulloch Pitt's neuron is _____.
Option A:	Binary in nature
Option B:	Bipolar in nature
Option C:	Tan Sigmoid
Option D:	Gaussian
8.	If fuzzy set A = {0.9/x1 + 0.3/x2 + 0.75/x3}, It Complement will be .
Option A:	{ 0.10/x1 + 0.7/x2 + 0.25/x3}
Option B:	{ -0.9/x1 + -0.3/x2 + -0.75/x3}
Option C:	{ x1/0.9 + x2/0.3 + x3/0.75}
Option D:	{ 0.75/x3 + 0.3/x2 + 0.9/x1}
9.	Which one of the following is true for the hidden layers in the neural networks?
Option A:	Layers of units that do not participate in learning.
Option B:	Layers of units that have no direct connections to any other units.
Option C:	Layers of units that do not contribute towards the output.
Option D:	Layers of units that have no direct connection to the input or the output.
10.	XOR problem cannot be solved by using a single neuron as _____.
Option A:	XOR is logical function
Option B:	XOR problem is not linearly separable
Option C:	XOR uses NAND gates
Option D:	XOR has many biases
11.	If '**a**' is learning rate, X is the input and W_{new} and W_{old} are new and old values of weights respectively. Weight update in Kohonen SOFM is given by the following equation.
Option A:	$W_{new} = W_{old} + \mathbf{a}*(W_{old} - X)$
Option B:	$W_{new} = W_{old} - \mathbf{a}*(X - W_{old})$
Option C:	$W_{new} = W_{old} + \mathbf{a}*(X + W_{old})$
Option D:	$W_{new} = W_{old} + \mathbf{a}*(X - W_{old})$
12.	In a Hopfield weight matrix if W31 = 5 then
Option A:	W13 = 5, W33 =1
Option B:	W13 = 5, W33 =0
Option C:	W13 = -5, W33 =1
Option D:	W13 = -5, W33 =0
13.	If fuzzy membership sets B1 = { 0, 0.3, 0.6} and B2 = { 0.2, 0.5, 0.3} then the intersection of B1 and B2 will be equal to _____
Option A:	{ 0.2, 0.5, 0.6}
Option B:	{ 0, 0.3, 0.3}
Option C:	{ 0.2, 0.3, 0.6}
Option D:	{ 0.2, 0.3, 0.3}
14.	Linguistic membership graph that can be used to represent a fuzzy set is _____.

Option A:	Triangular
Option B:	Rectangular
Option C:	Conical
Option D:	Elliptical
15.	The output of fuzzy inference is converted to crisp values that can be sent to the control process. This procedure is known as .
Option A:	fuzzy inferencing
Option B:	Fuzzification
Option C:	Implication
Option D:	Defuzzification
16.	Multilayer perceptron neural network application is well justified in solving .
Option A:	Nonlinear complex problems
Option B:	Boolean Problems only
Option C:	OR and AND type of problems only
Option D:	Linear Problems only
17.	The winning neuron in the Self-Organizing Feature Map is found on the basis of .
Option A:	maximum distance between weights connected to the node and corresponding inputs
Option B:	minimum distance between weights connected to the node and corresponding inputs
Option C:	minimum distance between desired outputs and corresponding inputs
Option D:	minimum distance between actual output and desired output
18.	Name the correct Fuzzy Inference Systems .
Option A:	Type-T1KP
Option B:	Kawasaki
Option C:	Hopfield
Option D:	Mamdani
19.	Sequence of steps is taken in designing a fuzzy logic based machine are .
Option A:	Rule evaluation, Defuzzification, Fuzzification
Option B:	Fuzzification, Rule Evaluation, Defuzzification
Option C:	Fuzzification, OR operation, Defuzzification
Option D:	Fuzzification, Union, Defuzzification
20.	Categorizing flowers into groups without given names or tags using neural networks is _____.
Option A:	supervised learning
Option B:	reinforcement learning
Option C:	unsupervised learning
Option D:	Memorization

Q2	**Solve any Four out of Six** **(5 marks each)**
A	In which type of applications fuzzy logic is used? Explain with an example.
B	Show using graphs, the data separation performed by two inputs XOR function and two inputs OR function Also, comment on the graphs.
C	A Hopfield network made up of four neurons is required to store the following pattern: $P = [\ 1\ \ -1\ \ -1\ \ 1\ ]^T$ Evaluate the weight matrix of the Hopfield Network and write conclusion on any two properties of Hopfield weight matrix thus obtained.
D	What is defuzzification? Brief about any one method of defuzzification with suitable diagram.
E	Describe handwritten character recognition using Neural Networks.
F	Define Lambda cut set. If fuzzy set A = { 1/x1 + 0.9/x2 + 0.6/x3 + 0.3/x4 + 0.01/x5 + 0/x6 } find it's Lambda Cut-set for Lambda = 0.25

Q3.	**Solve any Two Questions out of Three** **(10 marks each)**
A	Explain perceptron learning algorithm and develop perceptron network to implement two inputs AND function. Consider inputs and output as bipolar. Assume initial weight and bias values equal to zero. Consider learning rate equal to one.
B	Draw a Kohonen Self-Organizing net with two cluster units and three input units. The weight vectors for the cluster units are given by: W1 = [0.8 0.6 0.5] W2 = [0.5 0.4 0.6] Find the winner cluster unit for the input pattern X = [0.5 0.3 0.2] Use learning rate of 0.2. Also find the new weights for the winning unit.
C	Describe Fuzzy Inference System with a block diagram and its application in fuzzy control of the washing machine.

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Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: Electronics & Telecommunications

Curriculum Scheme: Rev 2016

Examination: BE Semester VII

Course Code: ECCDLO7031 and Course Name: Neural Network and Fuzzy Logic

Time: 2 hours Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	B
Q3.	C
Q4	C
Q5	D
Q6	D
Q7	A
Q8.	A
Q9.	D
Q10.	B
Q11.	D
Q12.	B
Q13.	B
Q14.	A
Q15.	D
Q16.	A
Q17.	B
Q18.	D
Q19.	B
Q20.	C

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Electronics and Telecommunications**

Curriculum Scheme: Rev 2016

Examination: BE Semester :VII

Course Code:ECCDL07032 and Course Name: Big Data Analytics

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 feature of big data that refers to the quality of the stored data is
Option A:	Variety
Option B:	Volume
Option C:	Variability
Option D:	Veracity
2.	Listed below are the three steps that are followed to deploy a Big Data Solution except
Option A:	Data Ingestion
Option B:	Data processing
Option C:	Data dissemination
Option D:	Data storage
3.	Concerning the forms of Big Data, which one of these is odd?
Option A:	Structured
Option B:	Unstructured
Option C:	Processed
Option D:	Semi-Structured

4.	_____ is the slave/worker node and holds the user data in the form of Data Blocks
Option A:	DataNode
Option B:	NameNode
Option C:	Secondary Namenode
Option D:	Job Tracker
5.	Which of the following is not an input format in Hadoop .
Option A:	TextInputFormat
Option B:	ByteInputFormat
Option C:	SequenceFileInputFormat
Option D:	KeyValueInputFormat
6.	Core components of Hadoop are except
Option A:	Hadoop common
Option B:	Pig,Hive
Option C:	MapReduce
Option D:	YARN
7.	HIVE is used to process……..data in Hadoop
Option A:	Unstructured
Option B:	SemiStructured
Option C:	Structured
Option D:	Real Time event
8.	Sqoop is used to import data from
Option A:	Internal structured database into HDFS
Option B:	External structured database into HDFS

Option C:	Internal Unstructured database into HDFS
Option D:	External Unstructured database into HDFS
9.	NoSQL is a database management system for
Option A:	Storage and retrieval of massive amount of unstructured data
Option B:	Storage and retrieval of massive amount of structured data
Option C:	Storage and retrieval of massive amount of semi structured data
Option D:	Storage and retrieval of massive amount of Real time data
10.	Which of the following is not the characteristic of CAP Theorem
Option A:	Consistency
Option B:	Availability
Option C:	Atomicity
Option D:	Partition
11.	MongoDB is a document data model that stores data in…….format.
Option A:	XLS
Option B:	HTML
Option C:	BLOB
Option D:	JSON
12.	Cassandra data model is based on all of the following except
Option A:	Google's Big Table
Option B:	Column-based
Option C:	Graph database
Option D:	NoSQL
13.	Neo4j is an example of

Option A:	Graph store
Option B:	Document store
Option C:	Column store
Option D:	Key-Value store
14.	_____ part of the MapReduce is responsible for processing one or more chunks of data and producing the output results.
Option A:	Map Process
Option B:	Mapper
Option C:	Reduce Process
Option D:	Reducer
15.	_____ maps input key/value pairs to a set of intermediate key/value pairs.
Option A:	Combiner
Option B:	Reducer
Option C:	Shuffling
Option D:	Mapper
16.	Which of the following is direct application of frequent itemset mining?
Option A:	Social network Analysis
Option B:	Market Basket Analysis
Option C:	Outlier Detection
Option D:	Intrusion Detection
17.	How do you calculate Confidence of an association rule (A -> B)?
Option A:	Support(A intersection B) / Support (A)
Option B:	Support(A intersection B) / Support (B)
Option C:	Support(A union B) / Support (A)
Option D:	Support(A union B) / Support (B)

18.	The longest common subsequence(LCS) of X and Y can also be used to calculate
Option A:	Cosine Distance
Option B:	Edit Distance
Option C:	Jaccard Distance
Option D:	Hamming Distance
19.	Communication network is a type of which social network
Option A:	Information Linkage Graph
Option B:	Collaboration Graphs
Option C:	Who-Talks-To-Whom Graphs
Option D:	Heterogeneous Social Network Graph
20.	Given a set S of points in space M and a query point Q, the method of finding a set of closest points in S to Q is
Option A:	Data mining
Option B:	Nearest neighbor search
Option C:	Jaccard similarity
Option D:	Distance measure

Q2 **(20 Marks Each)**	
A	Solve any Two 5 marks each
i.	What do you mean by Jaccard Similarity and Jaccard Distance? Illustrate with an example.
ii.	What are the characteristics of data streams and challenges in handling Data Streams? Explain any two data stream applications.
iii.	How big data problems are handled by Hadoop system?

B	Solve any One 10 marks each
i.	Write pseudo code for matrix vector multiplication by MapReduce. Illustrate with an example showing all the steps.
ii.	What are different types of social networks? Explain any one social network mining algorithm.

Q3. **(20 Marks Each)**	
A	Solve any Two 5 marks each
i.	Explain Page Rank with example. Can a website's Page rank ever increase? What are its chances of decreasing?
ii.	What is MapReduce? Explain how Map and Reduce work?
iii.	What do you understand by BASE properties in NOSQL database? Explain in details any one NOSQL architecture pattern.
B	Solve any One 10 marks each
i.	Explain collaborative filtering based recommendation system. What are the advantages and disadvantages of it?
ii.	Explain Park-Chen-Yu algorithm for frequent item set mining.

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Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **EXTC**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ECCDLO7032 and Course Name: Big Data Analytics

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	C
Q3.	C
Q4	A
Q5	B
Q6	B
Q7	C
Q8.	B
Q9.	A
Q10.	C
Q11.	D
Q12.	C
Q13.	A
Q14.	A
Q15.	D
Q16.	B
Q17.	C
Q18.	B
Q19.	C
Q20.	B

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: Electronic and Telecommunication Engineering

Curriculum Scheme: Rev 2016

Examination: BE Semester VII

Course Code: ECCDLO 7033 and Course Name: Internet Communication Engineering

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.	This service is not a part of SSH-TRANS
Option A:	Confidentiality
Option B:	Compression
Option C:	Server Authentication
Option D:	Client Authentication
2.	When the DHCP client and server are on different networks, --------- is used to send local DHCP requests from a client to remote servers.
Option A:	A relay agent
Option B:	A resolver
Option C:	A Router
Option D:	A switch
3.	This protocol allows the transfer of multimedia messages.
Option A:	SMTP
Option B:	MIME
Option C:	POP3
Option D:	IMAP
4.	The following is a dump of a TCP header in hexadecimal format (05320017 00000001 00000000 602008AB 00000000)16. What is the header length?
Option A:	20
Option B:	28
Option C:	24
Option D:	32

5.	This protocol offers unreliable, connectionless but offers faster delivery of packets.
Option A:	TCP
Option B:	UDP
Option C:	SCTP
Option D:	DHCP
6.	The following is a SCTP dump of a DATA chunk in hexadecimal format. (00000015 00000005 0003000A 00000000 48656C6C 6F000000) 16.What is the stream identifier?
Option A:	5
Option B:	3
Option C:	A
Option D:	30
7.	If three duplicate ACKs are received in TCP, there is a _____ .
Option A:	Strong possibility of Congestion
Option B:	Weak possibility of Congestion
Option C:	Moderate Congestion
Option D:	All is well
8.	Given the address 132.6.17.85, find the beginning address (network address).
Option A:	132.6.0.0.
Option B:	132.6.255.0
Option C:	132.6.0.255
Option D:	132.6.255.255
9.	In classless addressing, if the value of prefix is n, then value of suffix is
Option A:	32+n
Option B:	n+32
Option C:	n-32
Option D:	32-n
10.	Subnetting .
Option A:	Decreases the length of the Netid and decreases the length of Host id
Option B:	Increase the length of the Netid and Increases the length of Hostid
Option C:	Decreases the length of the Netid and increases the length of Hostid
Option D:	Increases the length of the Netid and decreases the length of Hostid
11.	Authentication Header (AH) protocol does not provide this security services
Option A:	Source authentication
Option B:	Integrity

Option C:	Confidentiality
Option D:	Access control
12.	To achieve message integrity and confidentiality, SSL needs
Option A:	Six cryptographic secrets, three keys and one IV
Option B:	Five cryptographic secrets, four keys and two IVs
Option C:	Six cryptographic secrets, three keys and two IVs
Option D:	Six cryptographic secrets, four keys and two IVs
13.	Which of the following service is not a part of Pretty Good Privacy (PGP)
Option A:	Privacy
Option B:	Integrity
Option C:	Authentication
Option D:	Compression
14.	RTP is encapsulated in
Option A:	TCP
Option B:	UDP
Option C:	SCTP
Option D:	IP
15.	This protocol is used to control the playing of audio/video
Option A:	RTP
Option B:	RSVP
Option C:	RTCP
Option D:	RTSP
16.	For which of the following applications Delay is not a criterion?
Option A:	Telephony
Option B:	Email
Option C:	Videoconferencing
Option D:	Remote log-in
17.	This protocol provides flow control, quality of data control, and feedback to the sources.
Option A:	RTP
Option B:	RSVP
Option C:	RTCP
Option D:	RTSP
18.	Integrated Services is a *flow-based* QoS model designed for
Option A:	IP
Option B:	ICMP
Option C:	UDP
Option D:	TCP
19.	Scalability and service-type limitation are the problems faced in
Option A:	diffserv
Option B:	intserv

Option C:	interactive services
Option D:	broadcasting services
20.	Differentiated Services is a -------- QoS model designed for IP
Option A:	Load based
Option B:	Flow based
Option C:	Class based
Option D:	Access based

Q2.	Solve any Two Questions out of Three 10 marks each
A	With an example explain in brief one message transfer agent and one message access agent.
B	Draw and explain the Association establishment and Association termination process in Stream Control Transfer Protocol (SCTP).
C	An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows: i. The first group has 200 medium-size businesses: each needs approximately 128 addresses. ii. The second group has 400 small businesses: each needs approximately 16 addresses. iii. The third group has 2000 households: each needs 4 addresses. Design the sub blocks and give the slash notation for each sub block. Find out how many addresses are still available after these allocations

Q3.	Solve any Two Questions out of Three 10 marks each
A	Draw the header formats and explain the AH and ESP protocols
B	Explain Real time Protocol (RTP) in detail.
C	Discuss Resource Reservation Protocol (RSVP) as a signaling protocol that helps IP create a flow and makes a resource reservation.

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: Electronic and Telecommunication Engineering

Curriculum Scheme: Rev 2016

Examination: BE Semester VII

Course Code: ECCDLO 7033 and Course Name: Internet Communication Engineering

Time: 2 Hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	A
Q3.	B
Q4	C
Q5	B
Q6	B
Q7	B
Q8.	A
Q9.	D
Q10.	D
Q11.	C
Q12.	D
Q13.	D
Q14.	B
Q15.	D
Q16.	B
Q17.	C
Q18.	A
Q19.	B
Q20.	C

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: EXTC

Curriculum Scheme: Rev2016.

Examination: BE Semester VII

Course Code: ECCDLO7034 and Course Name: CMOS Mixed signal VLSI

Time: 2 hour Max. Marks: 80

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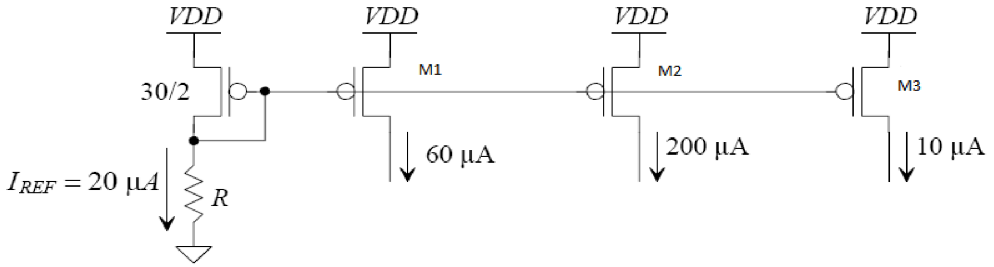
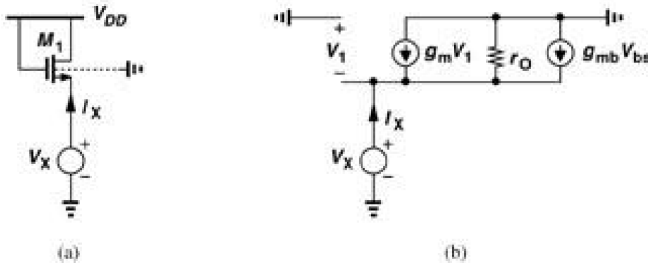
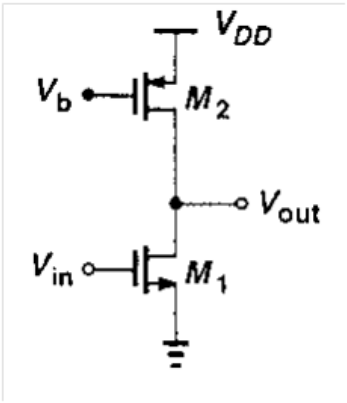
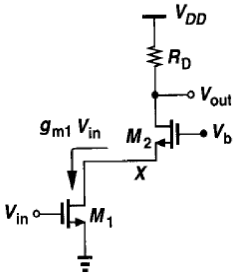
Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks (2 Marks each)**
1.	 In the given circuit what should be the (W/L) ratio of M_1
Option A:	30/2
Option B:	60/4
Option C:	90/6
Option D:	200/8
2.	In the given circuit the ratio V_X/I_X is approximately given as 
Option A:	g_m
Option B:	$g_{m+}g_{mb}$
Option C:	$1/ g_m$
Option D:	$1/ g_{m+}g_{mb}$
3.	In the below circuit of Common Source amplifier, the transistor M1 operates as

	
Option A:	Voltage source
Option B:	Capacitor
Option C:	Load Impedance
Option D:	Amplifying Transistor
4.	In a NMOS diode connected single stage amplifier the maximum o/p voltage is
Option A:	V_{DD}-V_{TN}
Option B:	V_{DD}
Option C:	$V_{DD}/2$
Option D:	$V_{TN.}$
5.	In temperature independent reference voltage source the negative temperature coefficient voltage is formed using ___ .
Option A:	Resistor
Option B:	Diode
Option C:	Diode connected BJT
Option D:	Diode connected MOSFET
6.	In temperature independent reference voltage source the negative temperature coefficient is _____ .
Option A:	-1mv/^{0}k
Option B:	-1.5mv/^{0}k
Option C:	-2mv/^{0}k
Option D:	-2.5mv/^{0}k
7.	The equivalent resistance of a switched capacitor is
Option A:	Proportional to clock frequency
Option B:	Inversely Proportional to clock frequency
Option C:	Proportional to square of clock frequency
Option D:	Do not depend upon clock frequency.
8.	In Ring oscillator circuit we should have _____ numbers of gain stages.
Option A:	1
Option B:	2
Option C:	3
Option D:	0

9.	For a three bit ADC, we will have _____Quantization levels.
Option A:	2
Option B:	4
Option C:	6
Option D:	8
10.	In a two stage Operational Amplifier Gain Bandwidth is given as ____ .
Option A:	$g_{m/}C_C$
Option B:	g_m*C_C
Option C:	$g_{m+}\ C_C$
Option D:	g_m-C_C
11.	In two stage operational Amplifier the second stage is _____ .
Option A:	Class A Amplifier
Option B	Source follower
Option C:	Push-Pull Amplifier
Option D:	Negative Feedback
12.	The Cascode Amplifier is combination of
Option A:	CS-CD
Option B:	CS-CS
Option C:	CS-CG
Option D:	CG-CS
13.	In two stage OP-AMP Slew Rate is given as
Option A:	I_{OUT}/C_C
Option B:	$I_{OUT*}C_C$
Option C:	I_{OUT}^2/C_C
Option D:	C_C/I_{OUT}
14.	In ADC the analog signal is sampled at _____ .
Option A:	Below Nyquist Rate
Option B:	At Nyquist Rate
Option C:	At rate of signal frequency
Option D:	Below the rate of signal frequency
15.	In a 4 bit ADC the Resolution will be _____.
Option A:	4
Option B:	8
Option C:	16
Option D:	32
16.	In PLL the unit for gain of phase detector is
Option A:	Volt/Volt
Option B:	Volt/Rad
Option C:	Rad/Volt
Option D:	Rad/Rad

17.	Identify the following circuit 
Option A:	Cascode
Option B:	Common gate
Option C:	Source follower
Option D:	Common source
18.	In sample and hold circuit error occurred due to clock feed through is known as
Option A:	Pedestal Error
Option B:	Droop
Option C:	Aperture Error
Option D:	Hold Error
19.	For a three bit ADC If V_{REF}=10V, then value of 1LSB Voltage is
Option A:	0.625
Option B:	1.25
Option C:	0.5
Option D:	2
20.	For MOSFET work in deep triode region the condition is
Option A:	$V_{DS} \leq V_{GS}-V_{TN}$
Option B:	$V_{DS} \leq 2(V_{GS}-V_{TN})$.
Option C:	$V_{DS} \leq V_{GS}$
Option D:	$V_{DS} \leq V_{TN}$

Q2 (20 Marks)	**Solve any ONE Questions out of the GIVEN.**
	20 marks Design the two stage op-amp to meet the following specification with phase margin of 60^0.Assume the channel length of transistor to be 1µm.The various specifications are. A_V=4000 V/V,V_{DD}=2.5V,V_{SS}= -2.5V, GB= 5MHz, C_L=10pf, SR=10V/µsec,Vout(range)=±2V,ICMR=-1Vto2V ,P_{diss}=2mw,K_P'=50µA/V^2,K_N'=100µA/V^2, V_{TP}= -0.85V,$V_{TN(MIN)}$=0.55V,$V_{TN(MAX)}$=0.85V,λ_P=0.05 λ_N=0.04.
	OR
	10 marks Explain the various performance parameters of VCO.

	10 marks Explain various Non-Ideal effects in PLL.

Q3. **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	Draw and explain the working of Switch capacitor Inverting amplifier circuit.
B	Draw and explain the working of PipeLine ADC.
C	Draw and explain the working of Cyclic DAC.

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June 2021

Program:EXTC

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ECCDLO7034 and Course Name: CMOS Mixed signal VLSI

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	D
Q3.	D
Q4	A
Q5	C
Q6	B
Q7	B
Q8.	C
Q9.	D
Q10.	B
Q11.	C
Q12.	C
Q13.	A
Q14.	B
Q15.	C
Q16.	B
Q17.	B
Q18.	A
Q19.	B
Q20.	B

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June2021

Program: **BE Electronics and Telecommunication Engineering**

Curriculum Scheme: Rev-2016

Examination: BE Semester VII

Course Code: ECCDLO7035 and Course Name: Embedded System

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.	Mean Time Between Failure (MTBF) of an embedded product is 48 weeks and Mean Time To Repair (MTTR) of the product is 2 weeks. What is the availability of the product?
Option A:	4 %
Option B:	96 %
Option C:	95 %
Option D:	90 %
2.	'Planning activity' and 'Analysis & study activity' are two main activities of ------ phase of Embedded Product Development Life Cycle (EDLC).
Option A:	Development and Testing
Option B:	Analysis
Option C:	Conceptualization
Option D:	Design
3.	Digital multimeter is an example of an embedded system for -------.
Option A:	Data communication
Option B:	Data monitoring
Option C:	Data storing
Option D:	Data processing
4.	-------- helps in all phases of system design through a set of unique diagram for requirement capturing, designing and deployment.
Option A:	Assembly language
Option B:	Java language
Option C:	C and C++ language
Option D:	Unified Modeling Language (UML)
5.	In Harvard architecture, processor .
Option A:	Can fetched Data and instructions simultaneously
Option B:	Can not fetch Data and instructions simultaneously
Option C:	Can fetch only instructions
Option D:	Can fetch only data.
6.	What is cache memory?
Option A:	It is data memory in which program is store

Option B:	It is local copy of a portion of memory which is comparatively faster
Option C:	It is Program memory which is used for storing data
Option D:	It is data memory, which stores the return address during execution of ISR.
7.	Datapath of general purpose processor consist of ____
Option A:	Program counter
Option B:	Instruction pointer
Option C:	Program memory
Option D:	ALU
8.	In ZigBee network, -------- create a network and store relevant information about the network.
Option A:	ZigBee Coordinator
Option B:	ZigBee Router
Option C:	ZigBee End Device
Option D:	Client
9.	Which one of the following is a signal of SPI communication?
Option A:	TXD
Option B:	RXD
Option C:	MOSI
Option D:	SDA
10.	Inter integrated Circuit is --------.
Option A:	Electrical interface of channel
Option B:	Half duplex, Synchronous communication protocol
Option C:	Full duplex communication protocol
Option D:	Simple duplex asynchronous communication protocol
11.	Which of the following is true about “Soft Real Time System”?
Option A:	Strictly adhere to the timing constraints for the task
Option B:	Missing any deadline produce catastrophic result
Option C:	Missing deadline for task is acceptable
Option D:	As the system is automatic, it should not contain humans in loop.
12.	The state where a process is incepted into memory and awaiting the processor time for execution, is known as --------.
Option A:	Created state
Option B:	Blocked state
Option C:	Ready state
Option D:	Waiting state
13.	Data memory of process holds
Option A:	Local variable
Option B:	Global variable
Option C:	Program instructions
Option D:	Only temporary data
14.	Multiple threads of the same process shared -------.
Option A:	Code memory

Option B:	Stack memory
Option C:	Status register
Option D:	Program counter
15.	------- is one of the functional requirements that need to be addressed in the selection of a Real Time Operating System.
Option A:	Availability of development and debugging tool
Option B:	Memory requirement
Option C:	Ease of Use
Option D:	Total cost for developing the OS
16.	Who determines which task/process to be executed at a given point of time?
Option A:	Process Manager
Option B:	Context manager
Option C:	Scheduler
Option D:	Interrupt handler
17.	Which of the following is a test case to be applied to “chocolate vending machine”?
Option A:	User command functionality test
Option B:	Quality of chocolate
Option C:	Size of chocolate
Option D:	Taste of chocolate
18.	Which of the following is not a design matrix of “Digital Camera Module”?
Option A:	Resolution
Option B:	User Interface
Option C:	Performance
Option D:	Aesthetic
19.	Which protocol is used to communicate information in the Adaptive Cruise Control System of a car.
Option A:	RS485
Option B:	UART
Option C:	CAN
Option D:	SPI
20.	Which transform is used to compress the image in the Digital camera module?
Option A:	Discrete Cosine transform
Option B:	Fourier transform
Option C:	Radon Transform
Option D:	Wavelet transform

Q2	Solve any Two Questions out of Three 10 marks each
A	Explain Embedded Product development life cycle (EDLC) with diagram.
B	Explain design of GCD as a custom single purpose processor with the help of controller, data path and program.
C	Explain CAN protocol with the help of its frame format.

Q3	Solve any Two Questions out of Three 10 marks each
A	Explain parameters need to be considered to choose RTOS.
B	Three processes with process IDs P1, P2, P3 with estimated completion time 10, 5, 7 milliseconds respectively enter into the ready queue together. If a new process P4 with estimated completion time 2 ms enters the 'Ready' queue after 2 ms from start. Calculate the waiting time and Turn Around Time (TAT) for each process and the Average waiting time and Turn Around Time for Non preemptive SJF scheduling algorithm.
C	Explain Automatic Coffee Vending Machine with the help of its components.

University of Mumbai

Examination June 2021

Examinations Commencing from 15th June 2021 to 26th June2021

Program**: BE Electronics and Telecommunication Engineering**

Curriculum Scheme: Rev-2016

Examination: BE Semester VII

Course Code: ECCDLO7035 and Course Name: Embedded System

Time: 2 hour Max. Marks: 80

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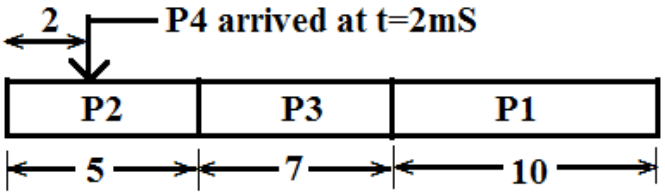
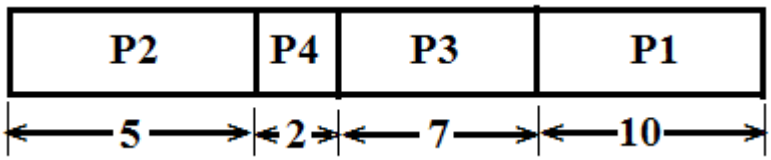
Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	C
Q3.	B
Q4	D
Q5	A
Q6	B
Q7	D
Q8.	A
Q9.	C
Q10.	B
Q11.	C
Q12.	C
Q13.	B
Q14.	A
Q15.	B
Q16.	C
Q17.	A
Q18.	D
Q19.	C
Q20.	A

Q.3 (B)

Solution: At the beginning, there are only three processes (P1, P2 and P3) available in the 'Ready' queue and the SJF scheduler picks up the process with the least execution completion time. Initially sequence of execution was P2, P3 and then P1, but after 2 mS, P4 arrived with expected execution time 2 mS. So that, when scheduler again sorts the 'Ready' queue for process, it picked up P4 process due to least execution time.



Scenario of task execution



Non-preemptive Shortest Job First (SJF) served Scheduling

The waiting time for all the processes are given as

Waiting time for P2 = 0 ms (P2 starts executing first)

Waiting time for P4 = 3 ms (P4 starts executing after completing P2. But P4 arrived after 2 ms of execution of P2. Hence waiting time = Execution start time - Arrival Time = 5-2 = 3)

Waiting time for P3 = 7 ms (P3 starts executing after completing P2 and P4)

Waiting time for PI = 14 ms (PI starts executing after completing P2, P4 and P3)

Average waiting time = (Waiting time for all processes) / No. of Processes

= (Waiting time for (P2+P4+P3+P1)) / 4

= (0 + 3 + 7 + 14)/4 = 24/4

= 6 milliseconds

Turn Around Time (TAT) = Time spent in Ready Queue + Execution Time

Turn Around Time (TAT) for P2 = 5 ms (0 + 5ms)

Turn Around Time (TAT) for P4 = 5 ms (3 + 2ms)

Turn Around Time (TAT) for P3 = 14 ms (7 + 7ms)

Turn Around Time (TAT) for P1 = 24 ms (14 + 10 ms)

Average Turn Around Time = (Turn Around Time for all Processes) / No. of Processes

= (Turn Around Time for (P2+P4+P3+P1)) / 4

= (5+5+14+24)/4 = 48/4

= 12 milliseconds

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7011 and Course Name: Product Life cycle Management

Time: 2 hour Max. Marks: 80

==========

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Color and size of the product, brand and packaging are considered as,
Option A:	Physical features of product
Option B:	Product designing
Option C:	Product manufacture
Option D:	Chemical features of product
2.	Which of the following is the last stage of Product Life Cycle?
Option A:	Introduction Stage
Option B:	Growth stage
Option C:	Decline stage
Option D:	Mature stage
3.	ISO 14042:2000 is related to:
Option A:	Principles & framework
Option B:	Life cycle inventory
Option C:	Life cycle impact assessment
Option D:	Life cycle interpretation
4.	Which of the following is the first step of product development process:
Option A:	Production ramp-up
Option B:	Identification of customer needs
Option C:	Prototyping
Option D:	Product design
5.	Function costing includes,
Option A:	breaking the product down into the functions.
Option B:	detection of activities that forms a PLC.
Option C:	estimating the cost of a product based on its features.
Option D:	Cost of overall product life cycle.
6.	Which of the following is not a characteristic of “Market Introduction Stage” in PLC?
Option A:	Demands has to be created
Option B:	Makes no money at this stage
Option C:	Slow sales volume to start
Option D:	Costs are low
7.	PDM stands for:
Option A:	Product Database Maintenance
Option B:	Price Data Management
Option C:	Product Data Management

Option D:	Production Data Management
8.	is a starting point of development of a PLM strategy.
Option A:	PLM vision
Option B:	PLM goals
Option C:	PLM objectives
Option D:	PLM mission
9.	An Algorithm is a type of:
Option A:	tangible goods
Option B:	services
Option C:	maintenance
Option D:	intangible goods
10.	Which of the following focuses on environmental resources & its proper use?
Option A:	Value analysis
Option B:	PLM objectives
Option C:	Sustainable development
Option D:	Life cycle cost analysis
11.	End of life strategies are used to:
Option A:	repairing of the product at the end of its life.
Option B:	recover the material at the end of its useful life.
Option C:	increase the life of the product by extending the end of the product
Option D:	maintenance of the product to increase its useful life.
12.	Which one of the following gives suggestions for new product and also helps to market new products?
Option A:	Existing products and services
Option B:	Federal government
Option C:	Distribution Channels
Option D:	Consumers
13.	The products enters maturity when,
Option A:	Decrease in profit
Option B:	Increase in sale
Option C:	Sales start growing
Option D:	Sales stop growing and demand stabilizes
14.	Which of the following involves, varying the physical properties of similar products & switching inter-changeable components?
Option A:	Value engineering
Option B:	Configuration management
Option C:	Product variant
Option D:	Change management
15.	PLM focuses on,
Option A:	value
Option B:	pricing
Option C:	product
Option D:	quality
16.	_____it is a method that tries to stimulate the way in which directly illuminated surfaces act as indirect light sources that illuminate other surfaces.

Option A:	Ray tracing
Option B:	Radiosity
Option C:	Digital mock up unit
Option D:	Ray casting
17.	Which of the following uses cross functional integration for concurrent development of a product?
Option A:	Concurrent engineering
Option B:	Value analysis
Option C:	Business analysis
Option D:	Value engineering
18.	Which of the following modeling refers to generate 3D features based on relationships with existing geometry?
Option A:	Parametric modeling
Option B:	Code driven modeling
Option C:	Surface modeling
Option D:	Direct modeling
19.	Compulsory stages of LCIA are:
Option A:	Selection, classification, characterization
Option B:	Scope & goal
Option C:	Functional unit, system boundaries
Option D:	data collection, allocation procedures
20.	Due to it is now possible to do business in all over countries in the world.
Option A:	globalisation
Option B:	liberalization
Option C:	commercialization
Option D:	standardization

Q2	**Solve any Four out of Six. (5 marks each)**
A	Write a note on Digital Mock-up Unit.
B	What are the various barriers to PDM implementation?
C	What are the important factors in sustainable development?
D	Explain general framework for LCCA?
E	Write a note on Design for Environment.
F	Explain PDM system.

Q3.	**Solve any Two Questions out of Three. (10 marks each)**
A	What is PLM? What are its benefits & applications?
B	Explain the process of developing & implementing a PLM strategy.
C	Explain the new product development in detail.

University of Mumbai

Examination 2021 under cluster ALL(Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7011 and Course Name: Product Life cycle Management

Time: 2 hour Max. Marks: 80

==========

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	C
Q3.	C
Q4	B
Q5	A
Q6	D
Q7	C
Q8.	A
Q9.	D
Q10.	C
Q11.	B
Q12.	C
Q13.	D
Q14.	B
Q15.	C
Q16.	B
Q17.	A
Q18.	D
Q19.	A
Q20.	A

University of Mumbai

Examination 2021 under cluster ALL(Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7012 and Course Name: Reliability Engineering

Time: 2 hour Max. Marks: 80

==========

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	What is the failure cost of a product possessing reliability R=1?
Option A:	Zero
Option B:	Unity
Option C:	Infinity
Option D:	Negative
2.	Which among the below mentioned types of redundancy exhibits maximum failure rate?
Option A:	Cold standby
Option B:	Warm or Tepid
Option C:	Hot or Active
Option D:	Negative
3.	At a certain university, 4% of men are over 6 feet tall and 1% of women are over 6 feet tall. The total student population is divided in the ratio 3:2 in favour of women. If a student is selected at random from among all those over six feet tall, what is the probability that the student is a woman?
Option A:	2/5
Option B:	3/5
Option C:	3/11
Option D:	1/100
4.	The probability density function of a Markov process is .
Option A:	p(x1,x2,x3.....xn) = p(x1)p(x2/x1)p(x3/x2).....p(xn/xn-1)
Option B:	p(x1,x2,x3.....xn) = p(x1)p(x1/x2)p(x2/x3).....p(xn-1/xn)
Option C:	p(x1,x2,x3.....xn) = p(x1)p(x2)p(x3).....p(xn)
Option D:	p(x1,x2,x3.....xn) = p(x1)p(x2 *x1)p(x3*x2).....p(xn*xn-1)
5.	The operational availability is calculated as:
Option A:	$A_0 = \frac{Operating\ cycle}{uptime}$
Option B:	$A_0 = \frac{uptime}{operating\ cycle}$
Option C:	$A_0 = \frac{Operating\ cycle}{downtime}$
Option D:	$A_0 = \frac{downtime}{operating\ cycle}$

6.	It is suitable to use Binomial Distribution only for _____
Option A:	Large values of 'n'
Option B:	Fractional values of 'n'
Option C:	Small values of 'n'
Option D:	Any value of 'n'
7.	What is MTTF ?
Option A:	Maximum time to failure
Option B:	Mean time to failure
Option C:	Minimum time to failure
Option D:	Moderate Time to Failure
8.	Which one of the below is measured by MTBF?
Option A:	Tolerance
Option B:	Life time
Option C:	Reliability
Option D:	Quality
9.	Normal Distribution is applied for
Option A:	Continuous Random Distribution
Option B:	Discrete Random Variable
Option C:	Irregular Random Variable
Option D:	Uncertain Random Variable
10.	A go/no-go device is tested until it fail. If X is the number of tests to first failure with no wear our present, and the probability of success on each test is 0.99, then the probability that X is greater than 5 is:
Option A:	0.931
Option B:	0.941
Option C:	0.9510
Option D:	0.9610
11.	Inherent availability is the steady state availability when considering only
Option A:	the corrective maintenance of mean time of the system
Option B:	the corrective maintenance of median time of the system
Option C:	the correlative maintenance of mean time of the system
Option D:	the corrective maintenance of downtime of the system
12.	What is the area under a conditional Cumulative density function?
Option A:	Zero
Option B:	Infinity
Option C:	One
Option D:	Changes with CDF
13.	What will be the reliability of the system for a 100-hour mission, the system has three subsystems are reliability-wise in parallek, Subsystem 1 has a reliability of 99.5%, Subsystem 2 has a reliability of 98.7% and Subsystem31 has a reliability of 97.3%,
Option A:	0.96
Option B:	0.97

Option C:	0.98
Option D:	0.99
14.	According to exponential law of reliability, the relationship between the reliability and the system failure due to consistency in occurrence of failure rate, can be generally expressed as _____
Option A:	$R = \lambda t$
Option B:	$R = -\lambda t$
Option C:	$R = e\ \lambda t$
Option D:	$R = e- \lambda t$
15.	Failure rates in reliability analysis for the exponential case :
Option A:	Are multiplied together for independent events
Option B:	Increase to the mean value and then decrease
Option C:	Are summed to combine independent series elements in reliability analysis
Option D:	Are used to model the Weibull when $\beta = 2$
16.	which of the following is not the advantage of the restoration
Option A:	it reduces the cost of test equipment and downtime system
Option B:	it reduces the cost of system restoration
Option C:	it reduces space and size needed for keeping new systems
Option D:	it is possible even if the spare system is not available
17.	Which of the following can be considered as the worst feature of an aircraft in terms of maintainability?
Option A:	Requirements of removing number of major structural elements
Option B:	Easily reachable parts
Option C:	More accessibility is provided for components
Option D:	Easily accessible parts
18.	Markov analysis assumes that conditions are both
Option A:	Complementary and collectively exhaustive.
Option B:	Collectively dependent and complementary.
Option C:	Collectively dependent and mutually exclusive.
Option D:	Collectively exhaustive and mutually exclusive.
19.	Which method prevents the operating condition that exceeds beyond 50% of the maximum rating in order to improve the system reliability?
Option A:	Parts Improvement Method
Option B:	Structural Redundancy
Option C:	Effective & creative Design
Option D:	Derating of components
20.	What is the reliability of a four component parallel system when the reliabilities of each component are 0.70?
Option A:	0.9813
Option B:	0.9919
Option C:	0.1681
Option D:	0.9976

Q2	**Solve any Four out of Six 5 marks each**
A	Explain Mean Time to Failure and Mean Time Between Failure
B	What is series system? Obtain the system failure time density function for a series system with 'n' independent components. Suppose each of the n independent components has an exponential failure time distribution with constant failure rate λ_i, i= 1,2,3,…….,n. Find the System Reliability.
C	Define (i) Standardization(ii) Interchangeability
D	Explain Fault Tree Analysis with suitable example
E	Consider a system that has eight components and the system will work if at least any five of the eight components work (5-out-of-8 system). Each component has a reliability of 0.87 for a given period. Find the reliability of the system.
F	Describe in detail the qualitative aspects of Availability.

Q3	**Solve any Two out of Three 10 marks each**
A	What do you mean by Bays theorem in Probability? Derive Bays Theorem. And explain how Bays Theorem is different from Conditional Probability?
B	Discuss Importance of Reliability, Quality Assurance and Failure Density.
C	Explain Cut-Set method and Decomposition Method with Suitable Example

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7012 and Course Name: Reliability Engineering

Time: 2 hour Max. Marks: 80

==========

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	C
Q3.	B
Q4	A
Q5	B
Q6	C
Q7	B
Q8.	C
Q9.	A
Q10.	C
Q11.	D
Q12.	C
Q13.	D
Q14.	D
Q15.	C
Q16.	A
Q17.	A
Q18.	B
Q19.	D
Q20.	B

University of Mumbai

Examination 2021 under cluster 6 (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO7013 and Course Name: Management Information System

Time: 2 hour Max. Marks: 80

==========

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Vital roles that the information systems does not perform for a business enterprise includes _____
Option A:	Support of business processes and applications
Option B:	Support of decision making by employees and managers
Option C:	Support for paper based accounting ledger
Option D:	Support of strategies for competitive advantage
2.	Possible response of the ethical challenges faced by Business managers to implement applications of Information Technology includes_____
Option A:	Implementation of information system solutions
Option B:	Infringement on piracy
Option C:	Inaccurate information
Option D:	Incentives
3.	External forces that affected by element of knowledge management includes _____
Option A:	Globalization of business
Option B:	Technology capability
Option C:	Effectiveness of human resource
Option D:	Disseminating knowledge
4.	Types of data warehouse does not include ___
Option A:	Enterprise data warehouse
Option B:	Data marts

Option C:	Data acquisition centre
Option D:	Operational data warehouse
5.	Identify the correct setup in a database environment
Option A:	User, database, DBMS
Option B:	User, DBMS, database
Option C:	Database, user, DBMS
Option D:	DBMS, database, user
6.	Metadata is the data that describes_____
Option A:	The collection and management of data
Option B:	The subset of the data warehouse
Option C:	The data in the warehouse
Option D:	Operations and shares among users
7.	The reverse auction is normally used in _____marketplace model
Option A:	Buy-side
Option B:	Sell-side
Option C:	Group purchasing
Option D:	Electronic exchange
8.	_____ is the intangible property created by individuals or corporations.
Option A:	Intellectual property
Option B:	Copyright
Option C:	Patent
Option D:	Trade secret

9.	Which is not a Fundamental Tenets of Ethics
Option A:	Responsibility
Option B:	Accountability
Option C:	Liability
Option D:	Digital dossiers
10.	Exposure is ____
Option A:	The harm, loss or damage that can result if a threat compromises an information resource
Option B:	Any danger to which a system/information resource may be exposed
Option C:	The procedures, devices, or software aimed at preventing a compromise to a system.
Option D:	The possibility that the system/information resource will suffer harm by a threat.
11.	Organization XYZ tries to attract customers by providing them with experiences tailored to them. What is this technique referred to?
Option A:	Inbound Marketing
Option B:	Outbound Marketing
Option C:	Search Engine
Option D:	Conversation
12.	_____ act as online intermediaries that harness the power of social networks for introducing, buying, and selling products and services.
Option A:	Group shopping sites
Option B:	Social marketplaces

Option C:	Shopping Communities
Option D:	Peer-to-peer shopping models
13.	Banner advertising _____.
Option A:	Is sent directly to potential customers via e-mail
Option B:	Forces customers to click on an ad to get more information.
Option C:	Is of limited value because it cannot be customized to the target audience.
Option D:	Is another name for pop-up advertising.
14.	All the following describe a VPN except:
Option A:	A VPN uses the Internet as its main backbone network.
Option B:	A VPN relies on network firewalls, encryption, and other Internet and intranet security features.
Option C:	A VPN uses the Internet to establish secure intranets between its distant offices and locations.
Option D:	A VPN is available for use by anyone with access to the Internet.
15.	Older, traditional mainframe-based business information systems are called _____ systems.
Option A:	Historical
Option B:	Standard
Option C:	Legacy
Option D:	Application
16.	A communications medium that consists of one or more central wires surrounded by thick insulation is called _____cable.
Option A:	Coaxial
Option B:	Fiber optic
Option C:	Twisted-pair
Option D:	Packet-transmission

17.	Data that have been processed by the organization's _____ are inputs into the organization's database.
Option A:	Office automation systems
Option B:	Functional area information systems
Option C:	Transaction processing systems
Option D:	Decision support systems
18.	Which of the following are disadvantages of the buy option for acquiring IS applications?
Option A:	The software exactly meet the company's needs.
Option B:	The software is easy to modify.
Option C:	The companies have control over software improvements.
Option D:	The software may not integrate with existing systems.
19.	Which of the following statements is false?
Option A:	Companies that use Software-as-a-Service are running applications on the vendor's hardware.
Option B:	Application service providers are similar to Software-as-a-Service providers.
Option C:	Companies that purchase open-source software cannot modify it.
Option D:	Outsourcing refers to acquiring IT applications from outside contractors.
20.	Place the stages of the systems development life cycle in order:
Option A:	Investigation – analysis – design – programming/testing – implementation – operation/maintenance
Option B:	Investigation – design – analysis – programming/testing – implementation – operation/maintenance
Option C:	Analysis – design – investigation – operation/maintenance – programming/testing – implementation
Option D:	Investigation – analysis – design – programming/testing – operation/maintenance – implementation

Q2 **(20 Marks)**	**Solve any Four out of Six 5 marks each**
A	Explain the elements and objectives of Information Systems with a neat diagram
B	Explain the role of information system in framing organizational strategy and bringing competitive advantage
C	Differentiate between knowledge and information and explain the significance of knowledge for a business firm
D	Define and explain the various types of data warehouse
E	Identify the five factors that contribute to the increasing vulnerability of information resources, and provide a specific example of each one?
F	Compare and contrast human mistakes and social engineering, and provide a specific example of each one?

Q3 **(20 Marks)**	**Solve any Four out of Six 5 marks each**
A	Briefly describe the benefits of social commerce to customers.
B	Discuss why social computing is so important in customer relationship management?
C	Differentiate computer network wired and wireless technology?
D	Describe how cloud computing can help organizations expand the scope of their business operations.
E	Explain various ERP implementation strategies
F	Describe the tools that augment the traditional SDLC.

University of Mumbai

Examination 2021 under cluster 6 (Lead College:VCET)

Examinations Commencing from 15th June 2021

Program: **ALL**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO7013 and Course Name: Management Information Systems

Time: 2 hour Max. Marks: 80

==========

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	D
Q3.	A
Q4	D
Q5	B
Q6	C
Q7	A
Q8.	A
Q9.	D
Q10.	A
Q11.	A
Q12.	B
Q13.	B
Q14.	D
Q15.	C
Q16.	A
Q17.	C
Q18.	D
Q19.	C
Q20.	A

University of Mumbai

Examination 2021 under cluster ALL(Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7014 and Course Name: Design of Experiments

Time: 2 hour Max. Marks: 80

==========

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	What is FALSE about strategy of experimentation called as best- guess approach _____.
Option A:	Guess dependent solution is produced
Option B:	May take long time
Option C:	Experimenters having knowledge are preferred
Option D:	Experimenters with good guessing power are preferred
2.	Consider the mathematical model y = f (x, z); $\Delta y = \frac{\partial f}{\partial x}\Delta x + \frac{\partial f}{\partial z}\Delta z$ Now determining the optimized x variability so that the variability of y is small is called _____.
Option A:	Process control
Option B:	Process optimization
Option C:	Robust design
Option D:	Process characterization
3.	The analysis procedure used for experimental data with uncontrollable and measurable nuisance factor is _____.
Option A:	Analysis of covariance
Option B:	Blocking
Option C:	Analysis of variance
Option D:	Analysis of average
4.	In the testing for Lack of Fit (LOF) the formula for sum of square for pure error is given by _____.
Option A:	$SS_{PE} = \sum_{i=1}^{m}\sum_{j=1}^{n}(\overline{y_{ij}} + \hat{y}_i)^2$
Option B:	$SS_{PE} = \sum_{i=1}^{m}\sum_{j=1}^{n}(\overline{y_{ij}} - \hat{y}_i)^2$

Option C:	$SS_{PE} = \frac{1}{2}\sum_{i=1}^{m}\sum_{j=1}^{n}(\overline{y_{ij}} - \hat{y}_i)^2$
Option D:	$SS_{PE} = \frac{1}{2}\sum_{i=1}^{m}\sum_{j=1}^{n}(\overline{y_{ij}} + \hat{y}_i)^2$
5.	Adding center points to a 2*k* factorial design allows the experimenter to obtain an estimate of pure experimental error. This allows the partitioning of the residual sum of squares *SSE* into two components. Which of the following is correct expression for *SSE ?*
Option A:	$SS_E = SS_{PE} + SS_{LOF}$
Option B:	$SS_E = SS_{PE} - SS_{LOF}$
Option C:	$SS_E = SS_{PE} * SS_{LOF} /(SS_{PE} + SS_{LOF})$
Option D:	$SS_E = SS_{PE} * SS_{LOF} / /(SS_{PE} - SS_{LOF})$
6.	A 2 X 2 factorial _____.
Option A:	is essentially two designs that have been combined into a single study.
Option B:	contains four factors.
Option C:	does not have enough factors to show interactions.
Option D:	is extremely difficult to interpret if interactions are found.
7.	What is the appropriate statistical test for a factorial design?
Option A:	the Modes test
Option B:	ANOVA
Option C:	t-test
Option D:	chi-square
8.	Each main plot is divided into subplots depending on the number of _____.
Option A:	Sub plot treatments
Option B:	Pre plot treatments
Option C:	Post plot treatments
Option D:	Modified plot treatments
9.	In field experiments certain factors may require plots than for others.
Option A:	Lesser
Option B:	Same
Option C:	Larger
Option D:	Small

10.	Factorial designs _____.
Option A:	include no more than one research hypothesis.
Option B:	cannot test participants across more than one condition.
Option C:	contain more than one null hypothesis.
Option D:	are ineffective when matched participants are included.
11.	What type of control chart can be used to plot "number of defectives in the output of a process for making a machine part"data?
Option A:	C
Option B:	U
Option C:	S
Option D:	P
12.	The design in which no main effect is aliased with any other main effect, or with any two-factor interaction, but two-factor interactions are aliased with each other are called .
Option A:	Resolution VI design
Option B:	Resolution V design
Option C:	Resolution IV design
Option D:	Resolution III design
13.	Which of the following would be a useful contributor to a strategy of mass customization?
Option A:	Economics of scale
Option B:	Modular Design
Option C:	Offshoring
Option D:	Fixed Automation
14.	Which of the following is true?
Option A:	Having more than one dependent variable allows the examination of interactions between them.
Option B:	There must be the same number of independent variables as there are dependent variables.
Option C:	An experiment can have more than one dependent variable.
Option D:	An experiment can only have one dependent variable.
15.	Small differences in results from trial to trial can happen in case of .
Option A:	good data sets
Option B:	bad data sets
Option C:	sample data sets
Option D:	attribute data sets
16.	Which of the followings is true about sample size?
Option A:	the sample size should be as small as possible
Option B:	the sample size can be random
Option C:	the sample size is insignificant
Option D:	depends upon the quality characteristic under evaluation i.e. Variable or attribute

17.	Which of the following is an example of attribute data?
Option A:	volume
Option B:	switch on & switch off
Option C:	Temperature
Option D:	pressure
18.	A method for quantitatively identifying the right inputs and parameter levels for making a high quality product or service is called as -
Option A:	regression analysis
Option B:	design of experiments
Option C:	random factor design
Option D:	split plot design
19.	2^3 indicates how many levels?
Option A:	2
Option B:	3
Option C:	4
Option D:	8
20.	Larger the better S/N ratio is chosen in case of -
Option A:	undesirable characteristics
Option B:	bad characteristics
Option C:	desirable characteristics
Option D:	good characteristics

Q2. **(20 Marks)**	**Solve any Four out of Six** **5 marks each**
A	What are Experimental Designs? Give its applications.
B	What are guidelines for designing experiments?
C	Write short note on S/N ratios.
D	What are Good and Bad datasets?
E	What is RMS?
F	Explain Construction of Normal Probability Plot.

Q3. **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	What do you understand from the term 2^k design? Explain with an example.
B	Discuss testing for lack of fit
C	What are statistical aspects of conducting tests?

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev 2016

Examination: BE Semester VII

Course Code: ILO 7014 and Course Name: Design of Experiments

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	B
Q3.	A
Q4	B
Q5	A
Q6	A
Q7	B
Q8.	A
Q9.	C
Q10.	C
Q11.	D
Q12.	C
Q13.	B
Q14.	C
Q15.	B
Q16.	D
Q17.	B
Q18.	B
Q19.	A
Q20.	C

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL**

Curriculum Scheme: R2016

Examination: BE Semester VII

Course Code: ILO7015 and Course Name: Operations Research

Time: 2 hour Max. Marks: 80

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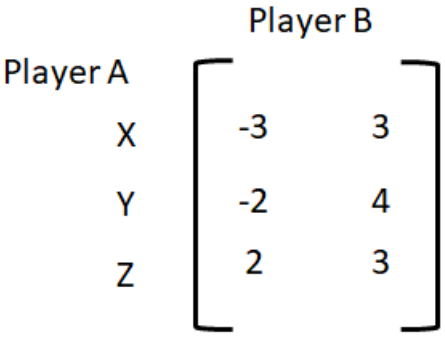
Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Which of the following assumptions of Linear Programming is not obeyed in Integer Linear Programming?
Option A:	Lineraity
Option B:	Continuity
Option C:	Additivity
Option D:	Finiteness
2.	Consider the LP problem Maximise $Z = x_1 - 3x_2 + 3x_3$ Subject to, $3x_1 - x_2 + 2x_3 \leq 7$ $2x_1 + 4x_2 \geq -12$ $-4x_1 + 3x_2 + 8x_3 \leq 10$ Where $x_1, x_2, x_3 \geq 0$ In the simplex algorithm, the variables that enters first is ___ and this variable replaces variable ____
Option A:	x_1, s_1
Option B:	x_2, s_3
Option C:	x_3, s_2
Option D:	x_1, s_2
3.	Which statement holds true for the given LP problem : Maximise $Z = 3x_1 + 5x_2$ Subject to, $2x_1 + x_2 \geq 7$ $x_1 + x_2 \geq 6$ $x_1 + 3x_2 \geq 9$ Where $x_1, x_2 \geq 0$
Option A:	This LP has no solution
Option B:	This LP has redundant constraints
Option C:	This LP has multiple solutions.
Option D:	This LP has an unbounded solution
4.	If two jobs J1 and J2 have same minimum process time under first machine but processing time of J1 is less than that of J2 under second machine, then J1 occupies:

Option A:	Second available place from left
Option B:	First available place from the left
Option C:	First available place from right
Option D:	Second available place from right
5.	To solve degeneracy in the transportation problem we have to:
Option A:	Allocate the smallest element epsilon in such a cell, which will form a closed loop with other loaded cells.
Option B:	Allocate the smallest element epsilon in such a cell, which will not form a closed loop with other loaded cells.
Option C:	Put allocation in one of the empty cell as zero
Option D:	Put a small element epsilon in any one of the empty cell
6.	Consider the following six jobs J1,J2,J3,J4,J5,J6 to be processed on two machines A and B in the order A,B . The processing times on machine A are [1,3,8,5,6,3] and on machine B are [5,6,3,2,2,10]. The optimal sequence is :
Option A:	J1-J2-J3-J4-J5-J6
Option B:	J1-J2-J6-J3-J5-J4
Option C:	J1-J2-J4-J5-J6-J4
Option D:	J1-J2-J3-J6-J5-J4
7.	How many routes are possible if travelling salesman travels six cities?
Option A:	10
Option B:	5
Option C:	24
Option D:	120
8.	In a departmental store, one cashier is there to serve the customers and the customers pick up their needs by themselves. The arrival rate is 7 customers for every 5 minutes and the cashier can serve 10 customers in 5 minutes. Assuming Poisson arrival rate and exponential distribution for service rate, the average number of customers in the system are---
Option A:	1.4
Option B:	0.5
Option C:	0.714
Option D:	2
9.	The characteristics of a queuing model is independent of:
Option A:	Service Pattern
Option B:	Number of service stations
Option C:	Queue discipline
Option D:	Limit of length of queue
10.	For a simple queue (M / M / 1), Probability that a person arriving will have to wait is known as ---
Option A:	Random factor
Option B:	Traffic intensity
Option C:	Poisson busy period
Option D:	Exponential service factor

11.	If the outcome at any decision stage is unique and known for the problem, then the Dynamic programming problem is known as:
Option A:	Static dynamic programming problem
Option B:	Deterministic dynamic programming problem
Option C:	Probabilistic dynamic programming problem
Option D:	Stochastic dynamic programming problem
12.	In Dynamic Programming Problems, the decisions are made in
Option A:	Single stage
Option B:	No decision making process
Option C:	2-stages
Option D:	Multi-stages
13.	If there are 'n' stages, and recursive equations for each stage is f1, f2 ……fn and if they are solved in the order f1 to fn and optimal return for f1 is r1 and that of f2 is r2 and so on, then the method of calculation is known as –
Option A:	Direct Computational Procedure
Option B:	Forward computational procedure
Option C:	Reverse Computational Procedure
Option D:	Backward Computational Procedure
14.	Dynamic Programming is also called as :
Option A:	Multistage problem
Option B:	Structural programming
Option C:	State problems
Option D:	Recursive optimization
15.	The value of the following game G is— $\begin{bmatrix} 1 & 13 & 11 \\ -9 & 5 & -11 \\ 0 & -3 & 13 \end{bmatrix}$
Option A:	0
Option B:	-1
Option C:	+1
Option D:	+11
16.	One of the assumption in the game theory is—
Option A:	Winner alone acts rationally
Option B:	All players act rationally and intelligently
Option C:	Loser acts intelligently
Option D:	Both the players believe luck
17.	Which statement holds true for the given game:

	
Option A:	Game is fair
Option B:	Game is strictly Determinable
Option C:	Saddle point is (1,3)
Option D:	No saddle point exists
18.	Setup costs do not include :
Option A:	Cost of processing the work piece
Option B:	Ordering cost of raw material
Option C:	Maintenance cost of the machines
Option D:	Labour cost of setting up machines
19.	The demand for a commodity is 100 units per day. Every time an order is placed, a fixed cost of Rs. 300 is incurred. Holding cost is Rs. 0.06/- per unit per day. If the lead time is 13 days, then economic lot size is:
Option A:	300
Option B:	1000
Option C:	1200
Option D:	100
20.	A particular item has demand of 3000 units per year. The cost of one procurement is Rs. 100 and the holding cost per unit is Rs. 2.40 per year. The replacement is instantaneous and no shortages are allowed. What will be the total cost in per year if the cost of one unit is Rs. 1?
Option A:	4200
Option B:	3500
Option C:	3120
Option D:	3849

Q2	**Solve any four** **5 marks each**
A.	A branch of Canara Bank has only one typist. Since the typing work varies in length (number of pages to be typed), the typing rate is randomly distributed approximating a Poisson distribution with mean service rate of 8 letters per hour. The letters arrive at a rate of 5 per hour during the entire 8-hour work day. If the typewriter is valued at Rs. 1.50 per hour, determine—Equipment utilization, average cost due to waiting on the part of typewriter i.e it remaining idle.

B. A company manufactures around 200 mopeds. Depending upon the availability of raw materials and other conditions, the daily production has been varying from 196 to 204 mopeds, whose probability distribution is as given below:

Production/day	196	197	198	199	200	201	202	203	204
Probability	0.05	0.09	0.12	0.14	0.20	0.15	0.11	0.08	0.06

The finished mopeds are transported in a specifically designed three-storeyed lorry that can accommodate only 200 mopeds. Using the following 15 random numbers 82,89,78,24,53,61,18,45,04,23,50,77,27,54 and 10, simulate the process to find out what will be the average number of mopeds waiting in the factory?

C. A firm has divided its marketing area into three zones. The amount of sales depends upon the number of salesman in each zone. The firm has been collecting the data regarding sales and salesman in each area over a number of past years. The information is given as below.

No. of Salesman	Zone 1	Zone 2	Zone 3
0	30	35	42
1	45	45	54
2	60	52	60
3	70	64	70
4	79	72	82
5	90	82	95
6	98	93	102
7	105	98	110
8	100	100	110
9	90	100	110

For the next year firm has only 9 salesman and the problem is to allocate these salesman to three different zones so that the total sales are maximum.

D.	An aircraft company uses rivets at an approximate customer rate of 2,500kg per year. Each unit costs Rs. 30 per kg and the company personnel estimate that it costs Rs. 130 to place an order, and that the carrying cost of inventory is 10 percent per year. How frequently should orders for rivets be placed? Also, determine the optimum size of each order.
E.	A and B play a game in which each has three coins a 5p, a 10p and a20p. Each player selects a coin without the knowledge of the other's choice. If the sum of the coins is an odd amount, A wins B's coin; if the sum is even, B wins A's coin. Find the best strategy for each player and the value of the game.
F.	Write the dual of the LPP: Maximise $Z = 30x_1 + 23x_2 + 20x_3$ Subject to, $6x_1 + 5x_2 + 3x_3 \leq 26$ $4x_1 + 2x_2 + 5x_3 \leq 7$ Where $x_1, x_2, x_3 \geq 0$

Q3	**Solve any Two** **10 marks each**
A.	Solve the following LPP: Maximise $Z = 4x_1 + x_2 + 3x_3 + 5x_4$ Subject to, $4x_1 - 6x_2 - 5x_3 - 4x_4 \geq -20$ $-3x_1 - 2x_2 + 4x_3 + x_4 \leq 10$ $-8x_1 - 3x_2 + 3x_3 + 2x_4 \leq 20$ Where $x_1, x_2, x_3, x_4 \geq 0$
B.	Four jobs 1, 2, 3 and 4 are to be processed on each of the five machines A, B, C,D and E in the order ABCDE. Find the total minimum elapsed time if no passing of jobs is permitted and determine idle time for each machine.

Job	Machine A	Machine B	Machine C	Machine D	Machine E
1	7	5	2	3	9
2	6	6	4	5	10
3	5	4	5	6	8
4	8	3	3	2	6

C

Find initial basic feasible solution by VAM and optimal solution by MODI method:

	Warehouse A	Warehouse B	Warehouse C	Availability
Factory F1	8	7	3	60
Factory F2	3	8	9	70
Factory F3	11	3	5	80
Demand	50	80	80	

University of Mumbai

Examination 2021 under clusterALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL**

Curriculum Scheme: R2016

Examination: BESemester VII

Course Code: ILO7015 and Course Name: Operations Research

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	B
Q3.	D
Q4	A
Q5	B
Q6	B
Q7	D
Q8.	A
Q9.	C
Q10.	B
Q11.	B
Q12.	D
Q13.	B
Q14.	D
Q15.	C
Q16.	B
Q17.	B
Q18.	A
Q19.	B
Q20.	A

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7016 and Course Name: Cyber Security and Laws

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.	Which is not an element of information security ?
Option A:	Confidentiality
Option B:	Integrity
Option C:	Authentication
Option D:	Standardization
2.	Cyber -vandalism is
Option A:	Using cyber-technology in unauthorized ways to reproduce copies of propriety software and proprietary information
Option B:	To distribute proprietary information across a network
Option C:	Using cyber-technology to gain unauthorized access to an individual's or organization's computer system.
Option D:	Using cyber-technology to unleash one or more programs that disrupt the transmission of electronic information across one or more computer networks, including the Internet.
3.	Which of the following is a non-violent cybercrime ?
Option A:	Internet gambling
Option B:	Cyberstalking
Option C:	Piracy
Option D:	Identity theft
4.	By Salami Attack virus we mean:
Option A:	Trapdoors persist
Option B:	Control viruses
Option C:	A small amount of money is shaved from each computation
Option D:	Poor error checking
5.	For attacking the database of a system / website which method is used by the criminals.
Option A:	HTML injection
Option B:	SQL Injection
Option C:	Malicious code injection

Option D:	XML Injection
6.	If you are contacted via telephone by someone posing to represent a financial institution you do business with and are asked to provide or update personal or account information, you should:
Option A:	Give all your confidential and personal data to them
Option B:	Ask to speak to a senior supervisor
Option C:	Hang up!
Option D:	Hang up and find the phone number of that institution in one of your account statements, credit cards or their verifiable website address and call that number to check on the request.
7.	If a user's session is compromised by another person with the intention of either misuse of the user's credentials without his/her knowledge or exploiting the user's data and perform malicious activities is called _____
Option A:	Social engineering
Option B:	Session hijacking
Option C:	Cookie stuffing
Option D:	Baiting
8.	The first step in hacking is _____
Option A:	Remote attack
Option B:	Port scanning
Option C:	Reconnaissance
Option D:	Clear logs
9.	_____ is a technique of hiding confidential information inside a picture?
Option A:	Image processing
Option B:	Stenography
Option C:	Key loggers
Option D:	DoS attack
10.	The purpose of a Denial of Service attack is _____.
Option A:	To overload a system so that it is no longer operational
Option B:	To shutdown services by turning them off
Option C:	To crack the password of a system
Option D:	To assess the vulnerabilities
11.	Comparing the value of the canary with the original value, can help one identify if a _____ has occurred.
Option A:	DDoS
Option B:	Nuking
Option C:	Buffer overflow
Option D:	Block cipher
12.	This type of contract is used for online services like creating a new e-mail account. This contract is known as
Option A:	Shrink wrap contract

Option B:	Click wrap contract
Option C:	Browse wrap contract
Option D:	Void contract
13.	Digital Signature Certificate is _____ requirement under various applications
Option A:	Statutory
Option B:	Legislative
Option C:	Governmental
Option D:	Voluntary
14.	Which of the following cannot be exploited by assigning or by licensing the rights of others.
Option A:	Patent
Option B:	Design
Option C:	Trademark
Option D:	Copyright
15.	Which is the Act which provides legal framework for e-Governance in India
Option A:	IT (amendment) Act 2008
Option B:	Indian Penal Code
Option C:	IT Act 2000
Option D:	Indian Evidence Act, 1872
16.	Which following Act was not amended in Information Technology Act 2000 ?
Option A:	The Bankers Books Evidence Act, 1891
Option B:	BSNL IT Policy
Option C:	RBI Act 1934.
Option D:	The Indian Evidence Act, 1872
17.	The punishment for hacking of computers under ITAA 2008?
Option A:	Fine up to ten lakhs or imprisonment up to three years or both
Option B:	Fine up to five lakhs or imprisonment up to three years or both
Option C:	Fine up to five lakhs or imprisonment up to five years or both
Option D:	Fine up to ten lakhs or imprisonment up to five years or both
18.	Companies are required to disclose on an almost real time basis he information concerning material changes in its financial conditions or operations. Which is this key provision?
Option A:	SOX section 302
Option B:	SOX section 404
Option C:	SOX section 409
Option D:	SOX section 806
19.	_____ is a type of program that is installed with or without your permission or knowledge on your personal computer to collect information about users. It tracks every activity of the user including their browsing habits and sends them to a remote user.

Option A:	Adware
Option B:	Spyware
Option C:	Virus
Option D:	Worm
20.	To protect mobile phones from viruses , one should not
Option A:	Update system and application software
Option B:	Disable Bluetooth, infrared or Wi-Fi when they are not in use
Option C:	Be cautious while opening e-mail and text message attachments and clicking links
Option D:	Join unknown public Wi-Fi networks

Q.2	
A	**Solve any Two** **5 marks each**
i.	Explain cyber defamation.
ii.	Write a note on classification of cybercrime.
iii.	Differentiate between virus and worms.
B	**Solve any One** **10 marks each**
i.	Is your data safe on cloud ? Justify your answer.
ii.	Explain SQL injection attack? State different countermeasures to prevent the attack.
Q.3	
A	**Solve any Two** **5 marks each**
i.	What is intellectual property? What are the different types of intellectual property ?
ii.	Mention the key IT requirements of FISMA.
iii.	Identify the type of E-commerce category for the following websites : A) www.bigbasket.com B) www. IndiaMART.com C) www.Olx.in D) www.Freelancer.com E) https://indianvisaonline.gov.in
B	**Solve any One** **10 marks each**
i.	The way banking operations are conducted has changed tremendously with the development of technology. Explain this statement by discussing various electronic banking services provided by the banks in India.
ii.	What is the Indian Information Technology Act,2000? Explain it's objectives and features?

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7016 and Course Name: Cyber Security and Laws

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	D
Q3.	A
Q4	C
Q5	B
Q6	D
Q7	B
Q8.	C
Q9.	D
Q10.	A
Q11.	C
Q12.	B
Q13.	A
Q14.	C
Q15.	C
Q16.	B
Q17.	B
Q18.	C
Q19.	B
Q20.	D

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7017 Course Name: Disaster Management and Mitigation Measures

Time: 2 hour Max. Marks: 80

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Hazards can be prioritized by:
Option A:	Manageability, Urgency, Growth, Seriousness
Option B:	Urgency, Manageability, Seriousness, Growth
Option C:	Growth, Manageability, Urgency, Seriousness
Option D:	Seriousness, Manageability, Urgency, Growth
2.	_____ can be defined as threat to life, health, property, and environment.
Option A:	Hazards
Option B:	Vulnerability
Option C:	Disaster
Option D:	Risk
3.	Urbanization usually results in an increase in flood frequency because :
Option A:	Less water can runoff in streams
Option B:	Less water can infiltrate into the ground, so instead is discharged rapidly into streams
Option C:	More water is used by humans and then discharged to streams
Option D:	Rainfall is greater in urban areas than in rural areas
4.	The cycle of disaster consists of the following components:
Option A:	Mitigation, Preparedness, Response, Recovery
Option B:	Preparedness, vulnerability assessment, risk assessment, recovery
Option C:	Mitigation, Risk assessment, Response and Recovery
Option D:	Mitigation, vulnerability assessment,Response and Recovery
5.	Which of the following is not part of geological disaster?
Option A:	Volcanoes
Option B:	Earthquake
Option C:	Tsunami
Option D:	Sea surge
6.	Pandemic disease is defined as:

Option A:	Outbreak of a disease in international scale
Option B:	Outbreak of a disease beyond the area of a disease
Option C:	Congestion in urban areas.
Option D:	Outbreak of a disease in local area
7.	The primary goal of a disaster preparedness plan is:
Option A:	To protect the population
Option B:	To protect valuable resources
Option C:	To keep communications lines open
Option D:	To protect environmental health personnel
8.	Which of the following is not the causes of manmade disaster?
Option A:	Technological
Option B:	Transportation
Option C:	Landslides
Option D:	Production errors
9.	Which of the following coordinate the research activities in different aspects of management at national level?
Option A:	CDM
Option B:	National center for disaster management
Option C:	NICEE
Option D:	Disaster management institute
10.	Various types of funds have been created under which legal frame work
Option A:	Disaster Management Act 2005
Option B:	Disaster Management Act 2006
Option C:	Disaster Management Act 2002
Option D:	National Plan 2008
11.	Which of the following organizations is the apex authority of disaster management in India?
Option A:	NDA
Option B:	NDMA
Option C:	CDMA
Option D:	INDR
12.	The Richter scale expresses an earthquake
Option A:	Magnitude
Option B:	Location
Option C:	Duration
Option D:	Depth
13.	The technique of acquisition of information about an object or phenomenon without being physical contact with the object.
Option A:	Data acquisition
Option B:	Remote Sensing

Option C:	Management system
Option D:	Image processing
14.	What is called for the manuals that identify the role of each officer in State for managing the natural disasters?
Option A:	State Relief Manuals
Option B:	State Environmental Protection Manuals
Option C:	State Disaster Manuals
Option D:	State Protection Manuals
15.	An extreme natural phenomenon capable of causing disaster leading to loss of lives or damage to property is known as-
Option A:	Natural hazard
Option B:	Hazard calculation
Option C:	Desertification
Option D:	Risk
16.	Which of the following sentence about insurance is not true?
Option A:	Insurance guarantees fixed compensation amount prior
Option B:	Insurance market of India is in developed stage, there is no limitations on the cover under insurance for natural disaster.
Option C:	Insurance is limited to major industrial and commercial properties.
Option D:	Role of insurance agencies in disaster management needs to be given more importance.
17.	The National Disaster Management Authority (NDMA) is headed by:
Option A:	Prime Minister of India
Option B:	President of India
Option C:	Governor of States
Option D:	Chief Minister of States
18.	International Tsunami information Center is located in
Option A:	Honolulu
Option B:	Goa
Option C:	Jakarta
Option D:	Puducherry
19.	What is the main role of Government Agencies in Disaster Relief Funding
Option A:	The financial assistance to meet the rescue & relief expenditure during any disaster
Option B:	To build houses in different disasters
Option C:	To advice state government how to manage various disasters
Option D:	To act as common platform for Central & State Government
20.	Who is the Chairperson of NEC, National Executive Committee?
Option A:	Home Secretary
Option B:	Finance Secretary
Option C:	Home Minister
Option D:	Finance Minister

Q2.	**Solve any Four out of Six 5 marks each**
A	Write a short note on direct and indirect effects of disaster.
B	Describe any 4-natural disaster in brief.
C	Explain objectives of disaster management policy.
D	Write a short note on DM act.
E	Write a short note on role of media in effective disaster management.
F	Explain Community base disaster preparedness.

Q3.	**Solve any Four out of Six 5 marks each**
A	Define hazards and also brief about modes and causes of hazards.
B	Explain the role of growing population in frequent occurrences of manmade disasters.
C	Draw and explain phases of Disaster Management cycle.
D	Write a short note on advantages of GIS and any one application of GIS in disaster management.
E	Write a short note on various activities conducted by SDMA.
F	Explain in detail pre- disaster and post disaster measures.

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7017

Course Name: Disaster Management and Mitigation Measures

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	A
Q3.	B
Q4	A
Q5	D
Q6	A
Q7	A
Q8.	C
Q9.	B
Q10.	A
Q11.	B
Q12.	A
Q13.	B
Q14.	A
Q15.	A
Q16.	B
Q17.	A
Q18.	A
Q19.	A
Q20.	A

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7018 and Course Name: EAM

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.	Choose an incorrect form of natural gas as energy source.
Option A:	Nitrogen
Option B:	LPG
Option C:	LNG
Option D:	CNG
2.	Which of the following power generation type have very least share in India's total installed capacity? (Ref. year Feb2014)
Option A:	Thermal
Option B:	Hydro-electric
Option C:	Nuclear
Option D:	Renewable
3.	In which sector the energy consumption is highest in India?
Option A:	Agriculture
Option B:	Transport
Option C:	Residential
Option D:	Industry
4.	The energy management aims at producing goods and provide services with
Option A:	only the least environmental effect
Option B:	Only the least cost
Option C:	least cost and least environmental effect
Option D:	either least cost or least environmental effect
5.	The type of Energy Audit to be performed depends on:
Option A:	Cost of energy
Option B:	Depth to which final audit is needed
Option C:	The type of Fuel used in Industries
Option D:	Manpower in an Industry
6.	Understanding energy cost is important factor for :
Option A:	Improving system Efficiency
Option B:	Awareness creation and Saving calculation
Option C:	For manpower calculation

Option D:	For material procurement
7.	Penalties were imposed in HT Electricity bills before 1st April 2020 due to:
Option A:	Crossing Maximum Demand
Option B:	Not maintaining Power Factor above specified value
Option C:	Both for crossing maximum demand and non-maintaining power factor above specified value
Option D:	Not maintaining the duration of Electricity use
8.	Plant energy performance (PEP) is the measure of:
Option A:	Material getting used in an Industry
Option B:	Manpower utilization in an Industry
Option C:	How well the energy management programme is doing
Option D:	Utilization of resources available
9.	A utility bill shows an average pf of 0.72 with average KW of 627.How much KVAr is required to improve pf to 0.95
Option A:	425KVAr
Option B:	336 KVAr
Option C:	398 KVAr
Option D:	192 KVAr
10.	Capacitors with automatic power factor controller when installed in a plant:
Option A:	Reduces the voltage of the plant
Option B:	Reduces the reactive power drawn from grid
Option C:	Reduces active power drawn from grid
Option D:	Increases the load current of the plant
11.	The following function **cannot** be achieved with automatic power factor controllers.
Option A:	KVAr control
Option B:	kW control
Option C:	PF control
Option D:	Voltage control
12.	The material used for core of Energy efficient transformer is
Option A:	Cold Rolled Gain Oriented Steel
Option B:	Silicon alloyed iron(grain oriented)
Option C:	Copper
Option D:	Amorphous core - metallic glass alloy
13.	The characteristic of conventional ballast in lighting application is one among the following:
Option A:	They have low operational losses than electronic ballasts
Option B:	They do not require a mechanical switch (starter)
Option C:	They have tuned circuit to deliver power at very high frequency
Option D:	They have high operational losses and high temperature rise
14.	Following is NOT the property of Soft starter
Option A:	less Mechanical stress
Option B:	Improved Power factor

Option C:	Lower maximum demand
Option D:	High Mechanical stress
15.	Length of interior, Width of interior and the mounting height are required to calculate..
Option A:	Lux level
Option B:	Colour Rendering Index
Option C:	Power in watts
Option D:	Room Index
16.	Which of the following lamps has the maximum lamp efficiency in lumens/Watt?
Option A:	Metal Hallide
Option B:	HPSV
Option C:	Incandescent
Option D:	Fluorescent
17.	Slip method for measurement of motor loading has disadvantage of
Option A:	High cost
Option B:	Large time required
Option C:	Less accuracy
Option D:	More calculations
18.	Which of the following produces energy because of temperature difference at various levels in ocean
Option A:	Tidal energy
Option B:	Wave energy
Option C:	Solar energy
Option D:	Ocean thermal energy
19.	What percentage of the sun's energy falling on a silicon solar panel gets converted into electricity?
Option A:	Around 35
Option B:	Around 15
Option C:	Around 75
Option D:	Around 50
20.	Identify the type of steam if it floats out intermittently in a whitish cloud
Option A:	Leaking steam
Option B:	Flash steam
Option C:	Cloud steam
Option D:	Superheated Steam

Q2	
A	**Solve any Two** **5 marks each**
i.	Explain any five features of Energy Conservation Act 2001
ii.	Define monitoring and targeting. Explains elements of M & T system.
iii.	Explain demand charges and TOD tariff.
B	**Solve any One** **10 marks each**

<table>
<tr><td>i.</td><td>Explain general fuel economy measures in boilers.</td></tr>
<tr><td>ii.</td><td>A 415 V, 20kW, 3-ph, 50Hz Induction motor operates at full load, with 86% efficiency and 0.85 power factor lagging:
a) Find the current drawn by the motor
b) If this motor is replaced by 92% energy efficient motor of same capacity with 0.88 power factor, what will be the power savings in terms of kW. If annual working hours of that motor are 7000 and rate of electricity is Rs.10 per Kwh, find annual energy saving.</td></tr>
<tr><td>Q3</td><td></td></tr>
<tr><td>A</td><td>Solve any Two 5 marks each</td></tr>
<tr><td>i.</td><td>List any Five Energy Conservation opportunities in lighting system</td></tr>
<tr><td>ii.</td><td>Explain step by step approach of electrical load management.</td></tr>
<tr><td>iii.</td><td>What are the advantages of green buildings and state 3 examples of green buildings in India?</td></tr>
<tr><td>B</td><td>Solve any One 10 marks each</td></tr>
<tr><td>i.</td><td>Explain energy saving opportunities in steam distribution systems.</td></tr>
<tr><td>ii.</td><td>Find ILER for the industrial illumination system where colour rendering in not essential. Average lux level measured 500lux. Room dimensions 9m*4m*4m. Fixtures are suspended from ceiling at 0.5m. Height of work plane is 0.8m. There are 10 tube lights of 52W each in the room. Suggest the measure if required and find annual wastage if any, If lamps are used for 8 hours a day and 300 days in a year. The room index and associate target lux/W/m^2 for the mentioned system is as follows
<table>
<tr><td>Room Index</td><td>Target lux/W/m^2</td></tr>
<tr><td>1</td><td>52</td></tr>
<tr><td>1.25</td><td>55</td></tr>
<tr><td>1.5</td><td>58</td></tr>
<tr><td>2</td><td>61</td></tr>
<tr><td>2.5</td><td>64</td></tr>
<tr><td>3</td><td>65</td></tr>
<tr><td>4</td><td>66</td></tr>
<tr><td>5</td><td>67</td></tr>
</table></td></tr>
</table>

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 701**8** and Course Name: EAM

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	C
Q3.	D
Q4	C
Q5	B
Q6	B
Q7	C
Q8.	C
Q9.	C
Q10.	B
Q11.	B
Q12.	D
Q13.	D
Q14.	D
Q15.	D
Q16.	B
Q17.	C
Q18.	D
Q19.	B
Q20.	B

University of Mumbai

Examination 2021 under cluster ALL (Lead College: VCET)

Examinations Commencing from 15th June 2021

Program: **ALL_Institute Level Optional Course 1**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7019 and Course Name: Development Engineering

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.	Why did Gandhiji advocate decentralization
Option A:	It weakens the state
Option B:	It brings power to the people
Option C:	It is an alternative to Parliamentary democracy
Option D:	All of the above
2.	Which constitutional amendments give recognition and protection to local government
Option A:	64th and 65th
Option B:	73rd and 74th
Option C:	69th and 70th
Option D:	83rd and 84th
3.	Social ethics
Option A:	Defines behaviour of people in society
Option B:	Examines ethics in business environment
Option C:	Are moral principles that guide religion
Option D:	Based on individual's belief of right and wrong
4.	Development Engineering encompasses the following fields
Option A:	Economics
Option B:	Social sciences
Option C:	Engineering
Option D:	All of the above
5.	The term Panchayati Raj signifies (1) urban local self government,(2) rural local self government. Which of the following is true
Option A:	1 only
Option B:	2 only
Option C:	both
Option D:	none
6.	Infant mortality

Option A:	is defined as the annual number of deaths of infant under 1 year old per 1,000 live births.
Option B:	reflects the availability of primary education, the rights of employment and social security.
Option C:	is life expectancy up to age 3.
Option D:	reflects the availability of hospitals and childcare facilities, and the parents' wealth.
7.	Which is not a terminology associated with Development Engineering
Option A:	Engineering for Design
Option B:	Engineering for change
Option C:	Humanitarian engineering
Option D:	Engineering for impact
8.	Consider the following statements regarding Human Development Index (HDI): I. The Human Development Index (HDI) is a composite index that measures the average achievements in a country in three basic dimensions of human development. II. The basic dimensions are a long and healthy life, knowledge and a decent standard of living. Which of the following statement(s) is/are correct?
Option A:	Only I
Option B:	Only II
Option C:	Both I, II
Option D:	Neither I,II
9.	To which type of engineers can code of ethics conceived by professional engineering societies be of any use
Option A:	Engineers who are licensed professionals
Option B:	Engineers who belong to professional engineering societies
Option C:	Engineers who are working in Public Sector Enterprise
Option D:	All those people who engage in engineering practice
10.	Which of the following statements is correct regarding 73rd amendment (1) Added eleventh schedule to the constitution (2) Added a new part-IX to the constitution of India, entitled as the Panchayats (3) Gives constitutional status to the PRI (4) Significant landmark in the evolution of grass root democratic institutions in the country
Option A:	1,2,3
Option B:	1,2.4
Option C:	2,3,4
Option D:	1,2,3,4
11.	What are the possible ethical dilemma that a whistleblower can face (1) Public interest vs. private interest (2) Citizenship vs. employment(3) Private benefit vs. employers benefit(4) Short term view vs. Long term view
Option A:	1,2,4
Option B:	1,3,4
Option C:	1,2,3
Option D:	1,4

12.	Which of the following criteria for judging whether proposed research involving human subjects is ethically sound?(1) Risk to subject are minimized (2)Risks are reasonable compared to anticipated benefits (3) Prior informed consent will be obtained from subjects (4) Subjects privacy and confidentiality will be maintained. Which of the following is correct?
Option A:	1,2
Option B:	1,3,4
Option C:	1,2,3,4
Option D:	1,3
13.	Which of the following statements are true about values (1) People are always aware of their values (2) Values are the links between needs and action,(3)Moral values are the most fundamental form of values (4) Values are the basis of emotions
Option A:	1,2,3
Option B:	2,3,4
Option C:	1,2,3,4
Option D:	2,4
14.	Panchayati Raj in India was first introduced in 1959 in which state
Option A:	Rajasthan
Option B:	Kerala
Option C:	Tamil Nadu
Option D:	West Bengal
15.	The Human Development Index ranks the countries based on their performance in the key areas of (1) health, (2) sex-ratio, (3)education (4) access to resources
Option A:	1,2,3
Option B:	2,3,4
Option C:	1,3,4
Option D:	1,2,4
16.	Which of the following statements is the most correct description of the relationship between humans and technology
Option A:	Technology impacts upon human action and human beings
Option B:	Human beings" act on, use, make" technology
Option C:	Technology provides apparatus for human action
Option D:	Technology hijacks human autonomy
17.	(1) In Panchayat seats are reserved for SC, ST and women but not for backward classes of citizens (2) Not less than 1/3 of the seats are reserved for women including number of seat reserved for women of SC and ST. Which of these statements is true
Option A:	Only 1
Option B:	Only 2
Option C:	Both
Option D:	none
18.	Which state first reserved 50% seats for women

Option A:	Andhra Pradesh
Option B:	Uttar Pradesh
Option C:	Madhya Pradesh
Option D:	Bihar
19.	Which statement is not correct regarding Gram Sabha
Option A:	It is a body consisting of persons registered in the electoral rolls of a village comprised within the area of the Panchayat level.
Option B:	It is a village assembly consisting of all the registered voters in the area of the Panchayat.
Option C:	Its powers have been determined by the Central Government
Option D:	Its powers and functions at village level are like state legislature at the state level
20.	Which of the following description best describes the principles concerning professional ethics
Option A:	Professional duties must be judged by ethical standards independent of time, place and circumstance
Option B:	Judging professional duties always involves reciprocal adjustment between ends and means
Option C:	Professional duties must by nature be deontological, i.e. he end must not come at the cost of the means
Option D:	Professional duties must be judged only by what they achieve in line with the ends prescribed by the ideals of business

Q2	**Solve any Four out of Six** **5 marks each**
A	As an engineer give your opinion on "Is the use of and development of nuclear power plant ethical?
B	Explain the Gandhian philosophy of rural development
C	List some problems and challenges faced by cooperatives today
D	Discuss the cannons of engineering ethics
E	Explain the four pillars of Smart city
F	Corporates become profitable at the cost of ethics. Argue in favour or against the statement and provide examples to justify your arguments

Q3	**Solve any Four out of Six** **5 marks each**
A	What is the concept of Community development
B	Give high lights of Balwant Rai Mehta committee report of 1957
C	Explain the Gandhian philosophy of rural development

D	Define Ethics, Ethical Dilemma
E	What are the functions of women cooperatives?
F	What is a gram sabha and how does it contribute to the development of a village

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Examination: BE Semester VII

Course Code: ILO 7019 and Course Name: Development Engineering

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	B
Q3.	A
Q4	D
Q5	B
Q6	A
Q7	A
Q8.	C
Q9.	D
Q10.	D
Q11.	C
Q12.	C
Q13.	B
Q14.	A
Q15.	C
Q16.	C
Q17.	C
Q18.	D
Q19.	C
Q20.	B