University of Mumbai

Examination June 2021

Examinations Commencing from 1st June 2021

Program:BE Electronics Engineering

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code:ELX 801 and Course Name:Internet of Things

Time: 2-hour Max. Marks: 80

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Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	In which system, each component cannot see beyond the immediate layer with which they are interacting?
Option A:	REST
Option B:	Cacheable
Option C:	Stateless
Option D:	Layered
2.	Which protocol can be used for real time communication and streaming?
Option A:	XMPP
Option B:	DDS
Option C:	AMQP
Option D:	COAP
3.	Which one of the protocol is approved by W3C open source protocol
Option A:	WebSocket
Option B:	SOAP
Option C:	XMPP
Option D:	MQTT
4.	CoAP is _____ layer protocol
Option A:	Application
Option B:	Transport
Option C:	Application Support
Option D:	Link
5.	As per IETF model, function of Application - Support layer is _____
Option A:	Gather data
Option B:	Enrich data
Option C:	Manage+Acquire+Organize & Analyse

Option D:	Data Abstraction
6.	_____ refers to a collection of resources
Option A:	App
Option B:	Object
Option C:	Web service
Option D:	API
7.	For IoT Things, _____ bit address scheme is used.
Option A:	8
Option B:	32
Option C:	64
Option D:	128
8.	6LoWPAN device node frame size is_____
Option A:	256 B
Option B:	Same as Ethernet frame
Option C:	127 B
Option D:	216 B
9.	Which system is an example of IoT Level 6?
Option A:	Home Automation
Option B:	Irrigation
Option C:	Noise Monitoring
Option D:	Weather Monitoring
10.	Which model involves Broker in it?
Option A:	Publish Subscribe Communication model
Option B:	Push Pull Communication model
Option C:	Exclusive Pair Communication model
Option D:	WebSocket based Communication APIs
11.	The process that occurs as soon as data or events generate in real time is called _____
Option A:	BTP
Option B:	OLTP
Option C:	OSTP
Option D:	ITP
12.	Which is not an example of cloud?
Option A:	GoGrid Virtual Servers
Option B:	DeviceHub
Option C:	AWS
Option D:	Nimbus

13.	Continue using the same cloud platform when developers of software shifts is an example of _____.
Option A:	Web Computing
Option B:	Resilient Computing
Option C:	Seamless Cloud Computing
Option D:	Edge Computing
14.	Cloud Computing model is everything as a _____model
Option A:	Operating
Option B:	Service
Option C:	Process
Option D:	Data storing
15.	MOST bus uses a _____ topology
Option A:	Tree
Option B:	Star
Option C:	Ring
Option D:	Mesh
16.	Internet of RFIDs falls in _____ IoT complexity level
Option A:	3
Option B:	5
Option C:	6
Option D:	2
17.	_____ is the Operating System run by Raspberry Pi.
Option A:	Windows
Option B:	Linux
Option C:	DOS
Option D:	Android
18.	Which pin on Intel Galileo allows an attached shield with the proper configuration to adapt to the voltage provided by the board?
Option A:	VREF
Option B:	AREF
Option C:	IOREF
Option D:	RESET
19.	Which type of sensors is used where 1 corresponds to 12 to 8 V output and 0 corresponds to 0 to 4 V.
Option A:	Capacitive

Option B:	Digital
Option C:	Analog
Option D:	Resistance
20.	Smart air-pollution monitoring-service measures the levels of _____
Option A:	CO, CO2, particulate matter
Option B:	T, RH, P
Option C:	Light Intensity, GPS
Option D:	Proximity

Q2	**Solve any Four out of Six. 5 Marks each**
A	What are the features of REST architectural style?
B	Compare IPv4 and IPv6
C	What are features of SQL ?
D	Detail the difference between IoT Level-3 and IoT Level-4 Application model
E	List the features of MQTT.
F	List and explain the various phases of Analytics

Q3	**Solve any Two Questions out of Three. 10 Marks each**
A	List the Features of XMPP and SoAP.
B	List the various steps involved in IoT system design methodology.
C	Explain NB-IoT and LoRaWAN .

University of Mumbai

Examination June 2021

Examinations Commencing from 1st June 2021

Program: **Electronics Engineering**

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: ELX802 and Course Name: Analog andMixedVLSIDesign

Time: 2 hour Max. Marks: 80

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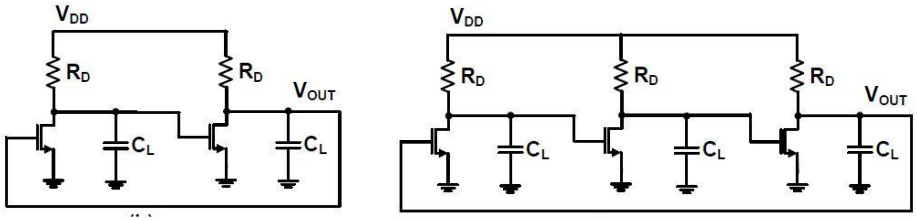
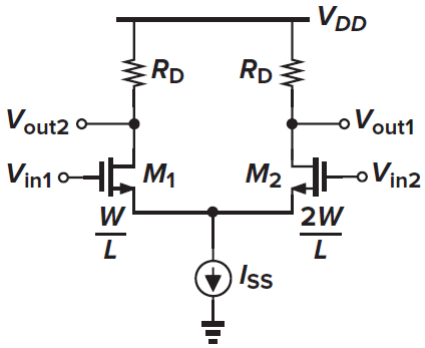
Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	In current mirror circuit, the first MOSFET (which copy current from reference) is operating in which region?
Option A:	Linear
Option B:	Saturation
Option C:	Cut-off
Option D:	deep triode region
2	What does PTAT stands for?
Option A:	proportional to absolute temperature
Option B:	proportional to average transconductance
Option C:	proportional to average temperature
Option D:	proportional to absolute transconductance
3.	MOS devices operating in_____region are called zero offset switches
Option A:	saturation
Option B:	triode
Option C:	deep triode
Option D:	cut off
4.	The condition for MOSFET to be in deep triode region is----------.
Option A:	$V_{DS} << 2(V_{GS}-V_{TH})$
Option B:	$V_{DS} >> 2(V_{GS}-V_{TH})$
Option C:	$V_{DS} << (V_{GS}-V_{TH})$
Option D:	$V_{DS} >> (V_{GS}-V_{TH})$
5.	The maximum output voltage of CS amplifier can be achieved with diode connected load is
Option A:	$V_{out,max}=V_{DD}-V_{TH}$
Option B:	$V_{out,max}=V_{DD}$
Option C:	$V_{out,max}=V_{DD}+V_{TH}$
Option D:	$V_{out,max}=--V_{DD}$

6.	Thermal noise is generated from MOSFET by
Option A:	Conduction of charge carriers in the channel
Option B:	Electric field across the gate and channel
Option C:	Capacitance of the gate oxide
Option D:	Substrate bias effect
7.	CS amplifier with Source degeneration _____voltage gain
Option A:	increases
Option B:	decreases
Option C:	moderate
Option D:	zero
8.	Which of the following parameters is used to determine the noise performance of a differential amplifier?
Option A:	ICMR
Option B:	Gain
Option C:	CMRR
Option D:	Slew rate
9.	The Differential output of the difference amplifier is the amplification of ---------.
Option A:	Difference between the voltages of input signals
Option B:	Difference between the output of each transistor
Option C:	Difference between the supply and the output of each transistor
Option D:	Difference between the voltage of output signals
10.	In a three stage ring oscillator requires a low frequency gain of _____ per stage
Option A:	2
Option B:	3
Option C:	4
Option D:	1
11.	In a single ended OPAMP increasing the tail current I_{ss} will _____
Option A:	Increase the bandwidth & Decrease the gain
Option B:	Decrease the bandwidth & Decrease the gain
Option C:	Increase the bandwidth & Increase the gain
Option D:	Decrease the bandwidth & Increase the gain
12.	Cascode OPAMP increases _____ but limits _____?
Option A:	Voltage swing, Gain
Option B:	ICMR, Voltage swing
Option C:	CMRR, Gain
Option D:	Gain, Voltage Swing
13.	Which of the following comment is true, for speed-precision trade-off resulting from Channel Charge injection in MOS sampling Circuit
Option A:	Dependent of the switch width and the sampling capacitor
Option B:	Independent of the switch width and dependent on the sampling capacitor
Option C:	Independent of the switch width and the sampling capacitor
Option D:	Dependent of the switch width and independent on the sampling capacitor

14.	Switched capacitor circuit can also act as a _____
Option A:	Bus
Option B:	Memory
Option C:	Resistor
Option D:	Inductor
15.	Which of the following is the best phase margin while designing an OPAMP?
Option A:	20^o
Option B:	30^o
Option C:	40^o
Option D:	60^o
16.	Which of the following is the main advantage of semicustom design approach over full custom design?
Option A:	Use of standard cells to reduce design time and complexity
Option B:	High performance
Option C:	More complexity
Option D:	High Speed
17.	What is the function of low pass filter in phase-locked loop (PLL) circuit?
Option A:	Improves low frequency noise
Option B:	Removes high frequency noise
Option C:	Tracks the voltage changes
Option D:	Changes the input frequency
18.	---------- bit DAC will be needed if the output voltage is desired to change in 1mV increments while using a reference voltage of 5V.
Option A:	5
Option B:	4
Option C:	13
Option D:	8
19.	The resolution of a 10-bit AD converter for an input range of 10v is
Option A:	97.7mv
Option B:	9.77mv
Option C:	0.977mv
Option D:	977mv
20.	Find out the integrating type analog to digital converter?
Option A:	Flash type converter
Option B:	Tracking converter
Option C:	Counter type converter
Option D:	Dual slope ADC

Q2	Solve any Four out of Six 5 marks each
A	Derive the expression of Voltage gain Av for Source follower.
B	Explain behavior of gm as function of below parameters i. Overdrive voltage with W/L constant. ii. Overdrive voltage with ID constant
C	Derive equation of common mode gain of differential amplifier
D	Explain Performance parameter of VCO
E	 **(a)** **(b)** Which of the following (a) and (b) circuit oscillates? State the reason in terms of frequency dependent phase shift and DC phase shift.
F	Explain the concept of flash ADC in detail with appropriate block diagram.

Q3	Solve any Four out of Six 5 marks each
A	Analyze following circuit to get voltage gain equation if M_2 is twice wide as that of M_1 and $V_{in1}=V_{in2}$. 
B	Which are errors contributes by charge injection in MOS sampling circuits
C	Explain input and output characteristics of phase detector (PD) circuit
D	What are the disadvantages of basic current mirror and how it overcomes in cascode current mirror?
E	Compare the performance of various op-amp topologies.
F	Explain specification of Digital to Analog Converter

University of Mumbai

Examination June 2021

Examinations Commencing from 1st June 2021

Program: BE Electronics Engineering

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: ELXDLO8042 Course Name: MEMS Technology

Time: 2 hour Max. Marks: 80

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Note to the students:- All the Objective Questions are compulsory and carry equal marks .

Q1.	DMD Stands for _____.
Option A:	Discrete Mirror Device
Option B:	Digital Mirror Device
Option C:	Digital Micromirror Device
Option D:	Discrete Micromirror Device
Q2.	Silicon does not exist in which microstructure form?
Option A:	Plasma
Option B:	Crystalline
Option C:	Polycrystalline
Option D:	Amorphous
Q3.	Which of the following is not a piezo electric sensor?
Option A:	PZT
Option B:	Roscelle salt
Option C:	Quartz
Option D:	Microheater
Q4.	What is Piezo resistivity?
Option A:	Electrical voltage changes in response to mechanical stress
Option B:	Electrical resistance changes in response to mechanical stress
Option C:	Electrical current changes in response to mechanical stress
Option D:	Producing an electric field when subjected to an external force
Q5.	Which material has highest Young's modulus?
Option A:	Si
Option B:	SiC
Option C:	Diamond
Option D:	Quartz
Q6.	An Alloy that can be deformed when cold but returns to its pre-deformed shape when heated?
Option A:	Polymers

Option B:	Metal
Option C:	Shape memory alloy
Option D:	Quartz
Q7.	To deposit polymers which deposition method is used?
Option A:	CVD
Option B:	LPCVD
Option C:	HPCVD
Option D:	PECVD
Q8.	Lorenz electric force has direction
Option A:	Similar to electric field
Option B:	Opposite of electric field
Option C:	Similar to Magnetic field
Option D:	Scalar Quantity
Q9.	An etching method in which low pressures and a correspondingly high degree of directionality is achieved is,_____.
Option A:	Wet Etching
Option B:	Dry Etching
Option C:	Plasma Etching
Option D:	Reactive ion Etching
Q10.	In DMD the Hinge & Yoke are fabricated by _____.
Option A:	Bulk micromachining
Option B:	Sacrificial micromachining
Option C:	Superficial micromachining
Option D:	Deep layer micromachining
Q11.	What is the use of accelerometer in laptops?
Option A:	To rotate the screen
Option B:	To protect hard drives from damage
Option C:	To get the angle on monitor
Option D:	To get the linear acceleration
Q12.	For sensing of chemical gases and humidity which material is used?
Option A:	Silicon
Option B:	Polysilicon
Option C:	Silicon Carbide
Option D:	Polymers
Q13.	In DMD ON and OFF of a pixel is represented by,_____.
Option A:	Tilting of mirror by -10degree and +10degree.
Option B:	Tilting of mirror by +10degree and -10degree.
Option C:	Tilting of mirror by -30degree and +30degree.
Option D:	Tilting of mirror by +30degree and -30degree.

Q14.	What is TCR?
Option A:	Time Constant Resistance
Option B:	Time Coefficient of Resistance
Option C:	Thermal Constant Resistance
Option D:	Temperature Coefficient of Resistance
Q15.	Which statement is wrong for good reliability check?
Option A:	Wafer Dicing should be checked
Option B:	Thermal management should be checked
Option C:	Stress should be isolated properly.
Option D:	Photoresists is a type of solvent
Q16.	Stiction occurs in
Option A:	Bulk manufacturing
Option B:	Surface micromachining
Option C:	The LIGA process
Option D:	Polymer Micro/Nano Fabrication
Q17.	In microvalve which actuation technique is used
Option A:	Lorentz force actuation
Option B:	Capacitive
Option C:	Resistive
Option D:	Inductive
Q18.	In MEMS reliability curve initial part of failure occurs mainly due to
Option A:	Design defects
Option B:	Aging effect
Option C:	Both design defect and aging effect
Option D:	Neither design defect nor aging effect.
Q19.	An electron is moving at 30 degrees to the magnetic field of strength B 5mTesla At speed of 1000m/s,what is the magnitude of Lorentz force acting on it
Option A:	$1*10^{-19}$ N
Option B:	$2*10^{-19}$ N
Option C:	$3*10^{-19}$ N
Option D:	$4*10^{-19}$ N
Q20.	IOT stands for
Option A:	Internal optional things
Option B:	Internet of things
Option C:	Intranet of things
Option D:	International object things

Q.2 Solve any two of the following .....20 M

A. Explain in detail advantages, disadvantages and applications of MEMS .

B.What are different types of MEMS pressure sensors?Explain working principle and applications of MEMS pressure sensors.

C.Explain in brief LIGA process.

Q.3 Solve any two of the following .....20 M

A. Explain in brief working principle ,advantages and applications of micro grippers.

B.What is piezoresistivity?Explain in detail piezoresistive coefficiants.

Which are the MEMS devices in which piezoresistivity effect is used?

C.What do you mean by reliability of MEMS devices ?Explain various factors affecting reliability of MEMS devices.

University of Mumbai

Examination 2021

Program: Electronics Engineering

Curriculum Scheme: Rev 2016

Examination: BE Semester VIII

Course Code: DLE8022 and Course Name: Advanced Power Electronics

Time: 2-hour Max. Marks: 80

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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	In 120° conduction mode of voltage source Inverter, How many devices conduct devices conduct at a time?
Option A:	5
Option B:	2
Option C:	3
Option D:	4
2.	The space vector modulation technique is used ___
Option A:	To generate random vector in the same plane for alternate modulation cycle.
Option B:	To generate reference vector in the same plane for each modulation cycle.
Option C:	To generate reference vector in the different plane for each modulation cycle.
Option D:	To generate random vector in the different plane for alternate modulation cycle.
3.	The angular period, when outgoing and incoming SCRs are conducting together in 3-phase controlled rectifier is called as
Option A:	Firing angle
Option B:	Overlap angle
Option C:	Extinction angle
Option D:	Conduction angle
4.	Which of the following pair of space vectors called as zero vector
Option A:	(0 0 0), (1 1 0)
Option B:	(0 1 0), (1 1 1)
Option C:	(1 0 0), (1 1 0)
Option D:	(0 0 0), (1 1 1)
5.	Total harmonic distortion in the output of inverter _____with increase in carrier frequency of reference signal.
Option A:	Increases
Option B:	Decreases
Option C:	Remains same
Option D:	Rises exponentially
6.	The ratio of output voltage to input voltage for DC – DC buck – boost converter considering D as the duty ratio of switch is
Option A:	D

Option B:	(1 – D)
Option C:	D/(1 – D)
Option D:	(1 – D)/D
7.	To get a perturbation model of DC-DC converters, a small perturbation is given in the _____
Option A:	Duty Cycle
Option B:	Load Current
Option C:	Load Voltage
Option D:	Supply Current
8.	Maximum dc output voltage obtained in a AC-DC converter when α is equal to
Option A:	180^0
Option B:	zero
Option C:	infinity
Option D:	90^0
9.	Current distortion factor for 3-phase full wave converter is _____
Option A:	1
Option B:	0
Option C:	0.955
Option D:	0.855
10.	Ratio of rms value of voltage to the Average voltage is called as _____
Option A:	Power factor
Option B:	Form factor
Option C:	Current distortion factor
Option D:	Harmonic factor
11.	Which of the following technique is used for achieving the dynamic braking
Option A:	Reversal of field connections
Option B:	Reversal of armature connections
Option C:	Removal of armature circuit from supply circuit
Option D:	Addition of equal and opposite field
12.	The speed of a separately excited dc motor above normal speed can be controlled by
Option A:	flux control method
Option B:	armature voltage control method
Option C:	Armature resistance control is used
Option D:	Armature impedance control is used
13.	The speed of separately excited dc drive is _____in the constant torque region and _____in constant power region
Option A:	Below rated, above rated speed
Option B:	Above rated, below rated speed
Option C:	Rated speed, rated speed
Option D:	Zero, infinite speed

14.	A three phase full-converter with RL load without Freewheeling Diode is a ____-_quadrant converter
Option A:	one
Option B:	two
Option C:	three
Option D:	Four
15.	Three phase induction motor, if the supply frequency is increases by keeping supply voltage constant, the speed of the motor _____
Option A:	decreases
Option B:	increases
Option C:	same
Option D:	zero
16.	From the torque speed characteristic of Induction motor, when slip is greater than 1(S >1) ,this region is called as
Option A:	Forward motoring region
Option B:	Braking region
Option C:	Forward generation
Option D:	Starting region
17.	The rotor resistance control method of speed control of motor is applicable to
Option A:	Squirrel cage induction motor
Option B:	Slip ring induction motor
Option C:	DC series Motor
Option D:	DC shunt Motor
18.	Which of the following cannot be considered as application of induction heating
Option A:	Geyser
Option B:	Preheating for welding
Option C:	Cutting edge hardening
Option D:	Induction melting
19.	For solar panel, with the increase in temperature, efficiency of various types of collectors
Option A:	increase
Option B:	decreases
Option C:	remains same
Option D:	depend on type of collector
20.	Which renewable power has a large amount of installed grid interactive renewable power capacity in India
Option A:	Solar power
Option B:	Wind power
Option C:	Biomass power
Option D:	Hydro energy

Q2 :A	Solve any Two out of Three 5 marks each
1	Describe the effect of source inductance in three phase rectifiers. Draw relevant circuit diagrams and waveforms.
2	Explain the principle of Induction heating. State its applications.
3	Explain the operation of Three phase inverter in 180^0 mode resistive load with the help of waveforms and circuit.
Q2 :B	Solve any One out of Two 10 marks each
1	Explain the steps involved in Space vector modulation (SVM) technique used in three phase voltage source inverter.
2	Write short note on Krammer's Drive

Q3 :A	Solve any Two out of Three 5 marks each
1	Explain solar energy as a renewable energy source.
2	What is four quadrant DC-drive
3	Derive and explain the state-space model of Buck converter.
Q3 :B	Solve any One out of Two 10 marks each
1	Explain the working of single-phase full converter drive for separately excited DC motor
2	Draw & explain torque-speed characteristics of three-phase induction motor during plugging, motoring and generating modes with the help of equation.

University of Mumbai

Examination June 2021

Examinations Commencing from 1st June 2021

Program: **_Electronics**

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: ELXDLO8044 and Course Name: Digital Image Processing

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.	Salt and pepper noise in an image can be removed using
Option A:	Median filter
Option B:	High pass filter
Option C:	Low pass filter
Option D:	Gray level slicing
2.	Negative of an image is
Option A:	Enhancing the intensity levels
Option B:	Reducing the intensity levels
Option C:	Adding the intensity levels
Option D:	Reversing the intensity levels
3.	If bit plane slicing is implemented on an 8-bit image, number of planes obtained will be
Option A:	2
Option B:	8
Option C:	5
Option D:	9
4.	The 4-directional chain code is represented as 10103322. Its first difference is
Option A:	3133030
Option B:	3033030
Option C:	3103030
Option D:	0303133
5.	Intensity range of 8-bit image is
Option A:	0 to 7
Option B:	0 to 15
Option C:	0 to 255
Option D:	-128 to 127
6.	A 64 x 64 image with 32 gray levels requires_-------- bits of storage
Option A:	20,480
Option B:	10,240
Option C:	4,096
Option D:	8,192

7.	Write 3-bit IGS code for value 57 and 54
Option A:	111 and 110
Option B:	110 and 111
Option C:	011 and 101
Option D:	100 and 110
8.	Which of the following transform matrix is not symmetrical
Option A:	DFT
Option B:	DCT
Option C:	Hadamard
Option D:	DST
9.	Huffman coding is an encoding algorithm used for
Option A:	Lossless data compression
Option B:	Broadband systems
Option C:	Lossy data compression
Option D:	Files greater than 10 Mb
10.	Histogram equalization technique is used for
Option A:	Image Blurring
Option B:	Image enhancement
Option C:	Image Compression
Option D:	Image segmentation
11.	Digitizing the coordinate values of a continuous image is called
Option A:	Compression
Option B:	Quantization
Option C:	Sampling
Option D:	Segmentation
12.	-----is a simple and well known form of lossy predictive coding.
Option A:	PCM
Option B:	PM
Option C:	FM
Option D:	DM
13.	Which one of the following can be defined as point processing operation of image processing
Option A:	Contrast Stretching
Option B:	Huffman Coding
Option C:	Transform Coding
Option D:	Discrete Fourier Transform
14.	In case, a digital image is subjected to histogram equalization, second pass of histogram equalization will produce
Option A:	Normalized histogram
Option B:	Totally different result than the first pass
Option C:	Exact the same result as the first pass
Option D:	Perfectly flat histogram

15.	For frequency domain analysis of a digital image which of the following transform is mainly used
Option A:	Wavelet
Option B:	DCT
Option C:	DFT
Option D:	Hadamard
16.	To expand the boundary of an object in binary image, the appropriate operation is
Option A:	Erosion
Option B:	Dilation
Option C:	Opening
Option D:	Closing
17.	To eliminate the small holes in a binary image the appropriate operation is
Option A:	Erosion
Option B:	Dilation
Option C:	Opening
Option D:	Closing
18.	Which of the following is the first fundamental step in digital image processing
Option A:	Image Segmentation
Option B:	Image Enhancement
Option C:	Image Compression
Option D:	Image Acquisition
19.	High Boost filtering becomes ‘standard’ sharpening filter when
Option A:	A=1
Option B:	A=10
Option C:	A=0
Option D:	A= -1
20.	For smoothening of a digital image, which of the following filter can be used
Option A:	Sobel Filter
Option B:	High pass Filter
Option C:	Low Pass Filter
Option D:	High Boost Filter

Q2	**Solve any Four out of Six** **5 marks each**
A	Explain Region Growing technique of image segmentation with an example.
B	Explain various steps involved in digital image processing.
C	Write a note on Hit and Miss Transformation.
D	Explain different types of Data redundancies present in digital image.
E	Explain in detail Gray level Slicing with and without background with the help of transformation graphs.
F	Explain different Image file formats.
Q3.	**Solve any Two Questions out of Three** **10 marks each**

A	Explain different filtering techniques in frequency domain.
B	With the help of suitable examples explain the following morphological operations (i) Opening (ii) Closing
C	Compute 2D-DFT using fast algorithm.

0	1	2	1
1	2	3	2
2	3	4	3
1	2	3	2

University of Mumbai
Examination June 2021
Examinations Commencing from 1st June 2021

Program: _____

Curriculum Scheme: Rev2016 (Keep the required)

Examination: BE Semester VIII

Course Code: 53364 and Course Name: IPR & Patenting

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.	As per____ a work created by an individual represents their specific character as an individual, natural rights demands that we accept the resulting development as its creator's exclusive property.
Option A:	Personality Theory
Option B:	Labour Theory
Option C:	Natural theory
Option D:	Social Contract Theory
2.	A design in India does not include
Option A:	mode or principle of construction
Option B:	features of shape
Option C:	composition of lines or colours
Option D:	shape of the object
3.	What is the challenge faced by Intellectual Property?
Option A:	Biodiversity
Option B:	Digital world
Option C:	Internet
Option D:	Product
4.	A patent is _____granted by a country to the owner of an invention to make, use, manufacture and market the invention, provided the invention satisfies certain conditions stipulated in the law.
Option A:	exclusive right
Option B:	Inclusive right
Option C:	Private
Option D:	tangible property
5.	_____can be interpreted stand-alone without associating with any other claims.
Option A:	Dependent claims

Option B:	Independent claims
Option C:	Mutually dependent claims
Option D:	verbatim claim
6.	When did China become a member of the World Intellectual Property Organization (WIPO)?
Option A:	1978
Option B:	1979
Option C:	1980
Option D:	1982
7.	If you file provisional specification, the complete specification is required to be filed within :
Option A:	10 months
Option B:	12 months
Option C:	18 months
Option D:	24 months
8.	Duration of patent is
Option A:	20 years from the date of application
Option B:	20 years from the date of publication
Option C:	20 years from the date of grant
Option D:	20 years from the date of examination
9.	What is the territorial jurisdiction of the Patents Act, 1970?
Option A:	It extends to whole of India except for the State of Jammu & Kashmir
Option B:	It extends to whole of India
Option C:	It extends to the whole of India except for the Union Territories and State of Jammu & Kashmir.
Option D:	It extends to whole of India and members of the World
10.	Every application for a patent shall be for one invention only and shall be filed in Form-1 at an appropriate office
Option A:	One invention- one application
Option B:	Up to four connected inventions are permissible
Option C:	Multiple inventions can be clubbed in one application and special fees to be charged for it
Option D:	One major invention and one minor invention are permissible
11.	Indian Design Act was enacted in the year
Option A:	1970
Option B:	2000
Option C:	1998
Option D:	1995

12.	Which of the following remedies is not available for infringement?
Option A:	Civil
Option B:	Criminal
Option C:	Administrative
Option D:	personal law
13.	Design patents may be granted to whom in US Scenario?
Option A:	anyone who uses design
Option B:	anyone who replicates useful process or machine
Option C:	anyone who invents a new, original, and ornamental design for an article of manufacture
Option D:	anyone who replicates a ornamental design
14.	An inventor was awarded a patent in U.K. on a method for selecting transformed plants and has practiced the mentioned method only in U.K. Six months later, another person who independently invented the same method in Australia wants to obtain a patent in Australia. She:
Option A:	could do it without major problems
Option B:	would not be able to do it because the granted patent was published in the U.K.
Option C:	would not be able to do it because the method is used in the U.K.
Option D:	would not be able to do it because the method is used in the U.K and patent granted was published in UK
15.	The publication of a patent application shall be available
Option A:	Official Journal of the Patent office
Option B:	Official Gazette of the Government of India
Option C:	Website of the Press Information Bureau
Option D:	National Newspapers on every Tuesday
16.	Which of the following are remedies to breach of confidential information?
Option A:	infringement
Option B:	Permanent Injunction
Option C:	Damages
Option D:	Interim Injunction
17.	How many types of compulsory licenses are provided for under the Indian patent Act?
Option A:	1
Option B:	2
Option C:	3
Option D:	4
18.	A National Phase Application may be filed in India because India is a member of the
Option A:	WHO
Option B:	UNICEF

Option C:	PCT
Option D:	NASA
19.	E-commerce thing that needs to be considered with respect to IP is
Option A:	traditional knowledge
Option B:	data
Option C:	logo
Option D:	photos
20.	Typically, transfer technology is done ___ protecting the IPR (i.e. patents and copyrights).
Option A:	before
Option B:	after
Option C:	never
Option D:	anytime

Q2	**Solve any Two Questions out of Three** **10 marks each**
A	List and explain the different IP with examples
B	What do you understand by claims? Draft five claims for a mobile phone.
C	Write in brief about pre-grant and post-grant opposition for a patent.

Q3	**Solve any Two Questions out of Three** **10 marks each**
A	Enumerate the procedure to file trademark in India.
B	Explain the Berne Convention.
C	What are impacts of internet on Intellectual Property?

University of Mumbai

Examination June 2021

Examinations Commencing from 1st June 2021

Program: **IT01028**

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: 52965 and Course Name: Environmental Management

Time: 2 hour Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Which of the following salts is the main cause of permanent hardness of water?
Option A:	Magnesium sulphate
Option B:	Magnesium bicarbonate
Option C:	Magnesium carbonate
Option D:	Potassium sulphate
2.	Which of the following is incorrect, if we only achieve two out of three pillars of Sustainable Development?
Option A:	Social + Economic Sustainability = Equitable
Option B:	Social + Environmental Sustainability = Bearable
Option C:	Economic + Environmental Sustainability = Viable
Option D:	Political + Environmental Sustainability = Bearable
3.	In a food chain animals constitute the:
Option A:	First trophic level
Option B:	Second trophic level
Option C:	Intermediate trophic level
Option D:	Ultimate trophic level
4.	What are the Primary Goals of Sustainability? i. The end of poverty and hunger ii. Better standards of education and healthcare - particularly as it pertains to water quality and better sanitation iii. To bring about a gradual and sometimes catastrophic transformation of the environment iv. Sustainable economic growth while promoting jobs and stronger economies
Option A:	i,ii,iv
Option B:	i,ii,iii
Option C:	i,iii,iv
Option D:	ii,iii,iv
5.	How many percentage of fissionable U-235 occurring in uranium?
Option A:	0.20%
Option B:	0.70%
Option C:	1.00%

Option D:	1.50%
6.	Which of the following is NOT a problem caused by deforestation?
Option A:	Loss of biodiversity
Option B:	Hurting the economy
Option C:	The harming of many indigenous peoples
Option D:	Creating political and social issues
7.	Biodiversity is important for a variety of reasons i. promotes healthier, maintained ecosystems that provide services to us ii. genetic variety of crops, livestock, and marine organisms iii. There are too many animal species on the world iv. ensures that humans are provided with a healthy, nutrient rich diet
Option A:	i,ii,iv
Option B:	i,ii,iii
Option C:	i,iii,iv
Option D:	ii,iii,iv
8.	The reason of Arc blast is
Option A:	Poor contact within electrical wire splices
Option B:	Radio frequency emissions from high-power transmitters
Option C:	Discharge of high electrical current through open air
Option D:	Failure to lock-out and tag-out electrical breakers
9.	Match the following: Earth Spheres Characteristics a. Hydrosphere 1. It lies above 50 km which coincides with the thermosphere b. Lithosphere 2. Earth's crust and a lower portion of the mantle c. Biosphere 3. Earth's water which exists in both fresh and saline form d. Ionosphere 4. Zone incorporating elements of the hydrosphere, lithosphere and atmosphere
Option A:	a= 1 b=2 c=3 d=4
Option B:	a= 4 b=23 c=2 d=1
Option C:	a= 3 b=2 c=4 d=1
Option D:	a= 1 b=4 c=2 d=3
10.	Plant species with a wide range of genetic distribution evolve into a local population known as
Option A:	Ecotype
Option B:	population
Option C:	Ecosystem
Option D:	Biome
11.	Name the group of species which exploit the abiotic and biotic resources in a similar way?

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

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

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

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

University of Mumbai

Examination June 2021

Examinations Commencing from 1st June 2021

Program: **Mechanical Engineering**

Curriculum Scheme: Rev 2016

Examination: BE Semester VIII

Course Code: ILO 8021 and Course Name: Project Management

Time: 2 hour Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Projects are unique and temporary, while operations are
Option A:	Specific And Targeted
Option B:	Ongoing and Permanent with a Repetitive Output
Option C:	Unique And Permanent With Non-Repetitive Outputs
Option D:	Ongoing And Temporary
2	**From a practical perspective, what is the most important element of a good project communication management approach?**
Option A:	Setup a regular and frequent method for communicating with team members and stakeholders and then follow it.
Option B:	Conduct one-on-one meetings (face-to-face or virtual) with project team members every week.
Option C:	Ensure all project communication between team members and stakeholders goes through the Project Leader so that there is no opportunity for misunderstanding.
Option D:	Telephonic conversation, and Emails
3.	The lowest element in the hierarchical breakdown of the WBS is
Option A:	Work package
Option B:	Responsibility matrix
Option C:	Bottoms up budget
Option D:	Deliverable
4.	Use of PMIS is comparatively less in this process group of project management
Option A:	Initiating
Option B:	Executing
Option C:	Monitoring and Controlling
Option D:	Planning
5.	Which of the following represents the estimated value of the work actually accomplished?
Option A:	Earned value (EV)
Option B:	Planned value (PV)
Option C:	Actual cost (AC
Option D:	Cost variance (CV)
6.	_____ is the discounting rate, which delivers a Net Present Value equal to zero
Option A:	ARR

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

	6. Control Risks
Option A:	1-2-3-4-5-6
Option B:	1-3-2-4-5-6
Option C:	1-3-4-2-5-6
Option D:	3-1-2-4-5-6
14.	Arrange the following elements of the Project Cycle in the right order: A- Project Appraisal B- Feasibility Analysis C- Negotiation D- Project Selection
Option A:	A-B-C-D
Option B:	B-A-C-D
Option C:	B-A-D-C
Option D:	B-C-A-D
15.	An activity takes 4 days to complete at a normal cost of Rs.500. If it is possible to complete the activity in 2 days with an additional cost of Rs.700, what is the incremental cost of activity.
Option A:	100
Option B:	125
Option C:	1000
Option D:	250
16.	In PERT/CPM, slack time is :
Option A:	Is the amount of time a task may be delayed without changing the overall project completion time
Option B:	Is the latest time an activity can be started without delaying the entire project
Option C:	Is a task or subproject that must be completed
Option D:	Marks the start or completion of a task
17.	The review of the successes and the mistakes is normally held during _____ phase.
Option A:	Initiation
Option B:	Planning
Option C:	Execution
Option D:	Closure
18.	Cost performance index value is less than 1 indicates :
Option A:	Cost under run
Option B:	Cost overrun
Option C:	Cost average
Option D:	Cost Variance
19.	Why does scope creep cause a delay on a project?
Option A:	The project resources are doing the scope creep work and not the originally planned work, causing the originally planned tasks to be delayed.
Option B:	Project work is postponed until the magnitude of scope creep is defined.
Option C:	Scope creep causes task estimates to increase.
Option D:	Scope creep causes cost estimates to increase.

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

Q.2 **Solve any Four out of Six . 5 Marks Each**

A. What are the knowledge areas and process groups in Project Management as per PMI?

B. Explain various project selection models.

C. What is Goldratt's critical chain method?

D. Determine the net present value for a project that costs Rs. 2,40,000/- would yield after tax cash flows as follows. Assume cost of capital is 10%

Year	CASH Flow in Rs.
1	25,000
2	75,000
3	80,000
4	100,000

Comment on feasibility of project based on NPV

E. Explain importance of ethics in projects.

F. What are the different ways of closing the project?

Q.3 **Solve any Two Questions out of Three 10 Marks Each**

A. a. A consulting project has an actual cost of Rs. 45000, Scheduled cost Rs. 35000, and value of completed work is Rs. 40000. Find the Schedule and Cost Variance. Also find SPI and CPI.

b. What is a contract? Explain different types of contracts.

B. R & D project has a list of tasks to be performed whose time estimates are given in the as follows.

Table-1-Time Estimation for R &D Project

Activity *i* *j*	Activity Time	to	t_m	t_p
1-2	A	4	6	8
1-3	B	2	3	10
1-4	C	6	8	16
2-4	D	1	2	3
3-4	E	6	7	8
3-5	F	6	7	14
4-6	G	3	5	7
4-7	H	4	11	12
5-7	I	2	4	6
6-7	J	2	9	10

a. Draw the project network.
b. Find the critical path.
c. Find the probability that the project is completed in 19 days. If the probability is less than 20%, find the probability of completing it in 24 days.

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