UNIVERSITY OF MUMBAI

CURRICULUM SCHEME R2016

EXAMINATION: FINAL YEAR SEMESTER VII

COURSE CODE ILO7019 COURSE NAME : DEVELOPMENT ENGINEERING

TIME: 1 Hr Marks 50

QUESTION PAPER-1

	QUESTION		Answer
Q.No.1	The 73rd amendment Act pertains to which of the following		**B**
Option A	Statehood of Delhi		
Option B	Panchayti Raj Institutions		
Option C	Municipalities		
Option D	Land reforms		
Q.No.2	The Panchayati Raj is included in the		**B**
Option A	Union list		
Option B	State list		
Option C	Concurrent list		
Option D	Residuary list		
Q. No.3	Which of the following was the first committee on Panchayati raj in India		**A**
Option A	Balwant Rai Mehta		
Option B	Ashok Mehta		
Option C	L.M.Singhvi		
Option D	S. Mohinder Singh		
Q.No.4	Which of these is a factor that affects ethical and unethical behaviour		**A**
Option A	Ethical dilemma		
Option B	Diversity		
Option C	Teamwork		
Option D	Open communication		**C**
Q. No.5	When is National Panchayati Day celebrated		
Option A	23rd December		
Option B	1st June		
Option C	24th April		
Option D	15th September		
Q.No.6	Those individuals who raise ethical concerns to others inside or outside the organisation are called		**B**
Option A	Entrepreneur		
Option B	Whistle blower		
Option C	Social entrepreneur		
Option D	Social impact management		
Q.No.7	The term that refers to principles, values, beliefs that define right or wrong behaviour is		**C**
Option A	Customer satisfaction		
Option B	Innovation		
Option C	Ethics		
Option D	Empowerment		

Q.No8	Which of the following principles is the essential principle of utilitarian school of ethics		**B**
Option A	Greatest health principle		
Option B	Greatest Happiness principle		
Option C	Greatest wealth principle		
Option D	Greatest respect principle		
Q.No9	Which of the following is an appropriate general principle with regard to engineering ethics		**A**
Option A	The engineer shall regard his duty to the public welfare as paramount to all other obligations		
Option B	The engineer shall regard his duty to the objectives of the company as paramount to all other obligations		
Option C	The engineer shall regard his duty to the Profession of engineering as paramount to all other obligations		
Option D	The engineer shall regard his duty to his excellence as paramount to all other obligations		
Q.No10	Which of the following statements is the most correct description of the relationship between humans and technology		**C**
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		
Q.No 11	Which of the following elements must always be in the mind of the engineer while performing his duties vis-a-visEthics (1)public safety, (2) economy, (3) health, (4) welfare		**D**
Option A	1,2,3		
Option B	1,2,3,4		
Option C	1,4		
Option D	1,3,4		
Q.No 12	73rd amendment gave practical shape to which article of the constitution		**C**
Option A	Article 14		
Option B	Article 32		
Option C	Article 40		
Option D	Article 51		
Q.No 13	Which one of the following is not correct ?		**C**
Option A	Growth is quantitative and value neutral		

Option B	Development means a qualitative change which is always value positive		
Option C	Positive growth and development refer to changes over a period of time		
Option D	Both growth and development refer to changes over a period of time.		
Q.No 14	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		**C**
Option A	1,2,3		
Option B	2,3,4		
Option C	1,3,4		
Option D	1,2,4		
Q.No 15	The multi-dimensional poverty index is a measure developed by the		**D**
Option A	UNCTAD		
Option B	World Bank		
Option C	International Monetary Fund IMF		
Option D	Oxford poverty and human development initiative , OPHDI , and the UNDP		
Q.No 16	Which state has no Panchayati Raj Institution at all		**A**
Option A	Mizoram		
Option B	Manipur		
Option C	Arunachal Pradesh		
Option D	Tripura		
Q.No 17	Which state first reserved 50% setas for women		**D**
Option A	Andhra Pradesh		
Option B	Uttar Pradesh		
Option C	Madhya Pradesh		
Option D	Bihar		
Q.No 18	Which of the following system is established on the basis of direct election		**A**
Option A	Gram Panchayat		
Option B	Block Committee		
Option C	Zila Parishad		
Option D	District		
Q.No 19	The following is true about khap panchayat		**A**
Option A	based on caste system		
Option B	Consists of elected representatives		
Option C	Are constitutional bodies		
Option D	Follow rule of law of the land		
Q.No 20	In which five year plan the Panchayat Raj System was introduced in India for the first time		**B**

Option A	First		
Option B	Second		
Option C	Fifth		
Option D	Sixth		
Q.No 21	Which of the following years has been declared year of Gram Sabha		**B**
Option A	2008-09		
Option B	2009-10		
Option C	2011-12		
Option D	2012-13		
Q.No 22	Engagement of local people in development project refers to		**C**
Option A	Economic development		
Option B	Socila development		
Option C	Participatory development		
Option D	Sustainable development		
Q.No 23	Panchayati Raj system is based on the vision of		**B**
Option A	Pandit Jawaharlal Nehru		
Option B	Mahatma Gandhi		
Option C	Lal Bahadur Shastri		
Option D	Sardar Patel		
Q.No 24	Panchayats are constituted for		**B**
Option A	four years		
Option B	five years		
Option C	six years		
Option D	three years		
Q.No 25	The G.V.K.Rao committee was appointed by		**B**
Option A	Government of India		
Option B	Planning Commission		
Option C	Block development office		
Option D	Zilla Parishad		

Q=QUESTION	question_description	question_explanation	question_type	question_difficulty
A=ANSWER	answer_description	answer_explanation	answer_isright	answer_position
Q	Which of them is not a wireless attack?		M	1
A	Eavesdropping		0	1
A	MAC Spoofing		0	2
A	Wireless Hijacking		0	3
A	Phishing		1	4
Q	Who deploy Malwares to a system or network?		M	1
A	Criminal organizations, Black hat hackers, malware developers, cyber-terrorists		1	1
A	Criminal organizations, White hat hackers, malware developers, cyber-terrorists		0	2
A	Criminal organizations, Black hat hackers, software developers, cyber-terrorists		0	3
A	Criminal organizations, gray hat hackers, Malware developers, Penetration testers		0	4
Q	Compromising confidential information comes under_____		M	1
A	Threat		1	1
A	Bug		0	2
A	Vulnerability		0	3
A	Attack		0	4
Q	What is the best option for thwarting social-engineering attacks?		M	1
A	Technology		0	1
A	Training		1	2
A	Policies		0	3
A	Physical controls		0	4
Q	Botnets are managed by _____		M	1
A	Bot-holders		0	1
A	Bot-herders		1	2
A	Bot-trainers		0	3
A	Bot-creators		0	4
Q	_____ is a code injecting method used for attacking the database of a system / website.		M	1
A	HTML injection		0	1
A	SQL Injection		1	2
A	Malicious code injection		0	3
A	XML Injection		0	4
Q	Try not to keep _____ passwords, especially fingerprint for your smart-phone, because it can lead to physical hacking if you're not aware or asleep.		M	1
A	Biometric		1	1
A	PIN-based		0	2
A	Alphanumeric		0	3
A	Short		0	4
Q	By default, Bluetooth devices operate in which security mode?		M	1
A	Mode 1; "non-secure" mode		1	1
A	Mode 2; leaving security up to each application.		0	2
A	Mode 3; enforce link encryption for all traffic.		0	3
A	Mode 4; security settings default to a mobile policy server.		0	4
Q	Which of the following is NOT real security threat?		M	1
A	Virus		0	1
A	Worms		0	2
A	Spam		1	3

A	Trojans		0	4
Q	A small piece of code used as a payload in the exploitation of software vulnerability, is called as _____		M	1
A	Assembly code		0	1
A	Shell code		1	2
A	C and C++ code		0	3
A	Malicious code		0	4
Q	If you fall for a phishing scam, what should you do to limit the damage?		M	1
A	Change Username		0	1
A	Delete the phishing email.		0	2
A	Unplug the computer. This will get rid of any malware		0	3
A	Change any compromised passwords		1	4
Q	What kind of attempts is made by individuals to obtain confidential information from a person by falsifying their identity?		M	1
A	Phishing		1	1
A	Computer viruses		0	2
A	Spyware		0	3
A	Malware		0	4
Q	Phishers often develop _____ websites for tricking users & filling their		M	1
A	Legitimate		0	1
A	Illegitimate		1	2
A	Genuine		0	3
A	Official		0	4
Q	_____ is a generic term which refers to all the legal and regulator aspects of Internet and the World Wide Web		M	1
A	Cyber law		1	1
A	Cyber dyne		0	2
A	Cyber café		0	3
A	Electronic law		0	4
Q	Which factor determines when your IT system will be available for knowledge workers to access?		M	1
A	Reliability		0	1
A	Accessibility		0	2
A	Availability		1	3
A	Admissibility		0	4
Q	Accessing data without permission is known as.....		M	1
A	unlawful access		0	1
A	Illegal Access		0	2
A	Legal Access		0	3
A	Unauthourized Access		1	4
Q	____ is the application of information and communication technology (ICT) for delivering government services		M	1
A	Governance		0	1
A	Governance and ethics		0	2
A	Electronic governance		1	3
A	Risk and governance		0	4
Q	The following cannot be exploited by assigning or by licensing the rights to others		M	1
A	Patents		0	1
A	Designs		0	2
A	Trademark		1	3
A	Ownership		0	4
Q	When IT Act 2000 came into effect?		M	1

A	17 October,2000		1	1
A	11 November,2000		0	2
A	17 October,2001		0	3
A	11 November,2001		0	4
Q	Which section of IT Act deals with Hacking of computer systems and its penalties?		M	1
A	Section 65		0	1
A	Section 66		1	2
A	Section 67		0	3
A	Section 69		0	4
Q	Which are the sections of IT Act applicable for Cyber pornography?		M	1
A	66, 66A, 66B		0	1
A	67, 67A, 67B		1	2
A	67, 67C, 67D		0	3
A	43, 43D, 69D		0	4
Q	Penalty for Breach of confidentiality and privacy is defined in section ----		M	1
A	71		0	1
A	72		1	2
A	73		0	3
A	74		0	4
Q	Sarbanes-Oxley Act (SOX) is used for		M	1
A	to stop hacking		0	1
A	protect equity shares		0	2
A	protect employee		0	3
A	To protect shareholders and the general public from accounting errors and fraudulent practices in enterprises		1	4
Q	HIPPA Act of 1996 stands for _____		M	1
A	Health Insurance Policy and Administration Act		0	1
A	Health Insurance Policy and Accountability Act		0	2
A	Health Insurance Portability and Administration Act		0	3
A	Health Insurance Portability and Accountability Act		1	4
Q	NERC Stands for_____		M	1
A	North African Electric Reliability Corporation		0	1
A	North American Electric Reliability Corporation		1	2
A	North American Electronic Reliability Corporation		0	3
A	North American Electric Regularatory Corporation		0	4

Q=QUESTION A=ANSWER	question_description answer_description	question_explanation answer_explanation	question_type answer_isright	question_difficulty answer_position
Q	_____ analyzes customer data for designing and executing targeted marketing campaigns.		M	1
A	Analytical CRM		1	1
A	Operational CRM		0	2
A	Collaborative CRM		0	3
A	Transactional CRM		0	4
Q	Cybersquatting refers to the practice of_____		M	1
A	Using someone else's domain names for profiting from their goodwill		1	1
A	Buying competitors information for profiting		0	2
A	Using illegal means to crash competitor's website		0	3
A	Selling competitors information for profiting		0	4
Q	Social computing forces companies to deal with customers _____		M	1
A	Reactively		0	1
A	Proactively		1	2
A	Neutrally		0	3
A	Economically		0	4
Q	Electronic commerce systems generally includes all of the following except:		M	1
A	Internet websites for online sales		0	1
A	Extranet access of inventory databases		0	2
A	Direct links to credit reporting services		1	3
A	Intranets that allow sales reps to access customer records		0	4
Q	Cloud computing can be best explained by _____		M	1
A	LAN operations		0	1
A	Intranet		0	2
A	Web application		0	3
A	Hadoop		1	4
Q	Pervasive computing systems are _____		M	1

A	Context aware		1	1
A	Content aware		0	2
A	Network specific		0	3
A	Range specific		0	4
Q	____		M	1
A	Cost of data centres is higher		1	1
A	Cost of data centres is less		0	2
A	Cost of cloud is higher		0	3
A	Cost of cloud is less		0	4
Q	Sourcing, Ownership, reliability are the _____provided by the cloud		M	1
A	Community		0	1
A	Applications		0	2
A	Services		1	3
A	Features		0	4
Q	systems, such as computer-assisted design (CAD), computer assisted		M	1
A	Sales force automation		0	1
A	Computer-integrated manufacturing		1	2
A	Product Lifecycle Management		0	3
A	Management of interdependent items		0	4
Q	Systems which typically provide information to managers in the functional areas include_____		M	1
A	ERP systems		0	1
A	Business Intelligence System		0	2
A	Transaction Processing System		1	3
A	HR Information Systems		0	4
Q	An adhoc report which includes only information that falls outside certain threshold standards includes ____		M	1
A	Comparative reports		0	1
A	Drill-down reports		0	2
A	Exception reports		1	3
A	Routine reports		0	4

Q	The three main business processes supported by ERP systems comprises of_____		M	1
A	Transaction and planning processes		0	1
A	Procurement, fulfillment, production processes		1	2
A	Analysis, Administrative and Adhoc Processes		0	3
A	Production planning and Administrative processes		0	4
Q	A business strategy that enables manufacturers to share product-related data that support product design and development and supply chain operations is_____			1
A	Planning Production and Operations		0	1
A	Quality Control		0	2
A	Product Lifecycle Management.		1	3
A	Control and Auditing		0	4
Q	The two different strategies that the production process can follow:			1
A	Make-to-store and Make-to-sell		0	1
A	Make-to-process and Make-to-store		0	2
A	Best order, Least order		0	3
A	Make-to-stock and Make-to-order		1	4
Q	Which out of the subsquent is NOT an example of data?		M	1
A	301062		0	1
A	Blue		0	2
A	32, Primrose Hill		1	3
A	Mumbai		0	4
Q	Definition of Sample in MIS is			1
A	A tool used to collect statistical data		0	1
A	Statistics collected from an entire population		0	2
A	The factual information collected from a survey or other source is		0	3
A	A group chosen from a population		1	4
Q	Cost leadership strategy of the competitive advantage is to			1
A	Produce products and/or services at the lowest cost in the industry.		1	1
A	competitors.		0	2
A	products		0	3

A	processes		0	4
Q	to management reports			1
A	Interface		0	1
A	Dashboard		1	2
A	Whiteboard		0	3
A	Openboard		0	4
Q	decisions fall?		M	1
A	Operational control		0	1
A	Management control		0	2
A	Inventory control		1	3
A	Strategic planning		0	4
Q	individual attributes.			1
A	First		1	1
A	Second		0	2
A	Third		0	3
A	Fourth		0	4
Q	text, graphics, and tables is known as:			1
A	Image Processing		0	1
A	Data Visualization		1	2
A	Human Machine Interaction		0	3
A	Data Segmentation		0	4
Q	something is called a_____			1
A	Hacker		1	1
A	Cracker		0	2
A	Jammer		0	3
A	Spammer		0	4
Q	program is_____		M	1
A	Worm		0	1
A	Virus		1	2
A	Sniffer		0	3
A	Spoofing		0	4
Q	technology is called_____			1
A	Snooping		0	1

A	Electronic Surveillance		1	2
A	Investigation		0	3
A	Data collection		0	4
Q	intended for general public reading is called_____			1
A	Weblog		1	1
A	Electronic bulletin boards		0	2
A	Newsgroups		0	3
A	Electronic discussions		0	4

University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev2016

Examination: Fourth Year | Semester VII
Course Code: MEC701 | Course Name: Machine Design II
Time: 1 hour | Max. Marks: 50

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

Q1.	The Lewis form factor of a spur gear depends on
Option A:	Circular pitch only
Option B:	Pressure angle only
Option C:	Number of teeth and system of teeth
Option D:	Deflection of teeth under load
Q2.	In gear design the static strength, 'Fs' should be --------the dynamic load, 'Fd'
Option A:	Less than
Option B:	Greater than
Option C:	Equal to
Option D:	Directly Proportional to
Q3.	The product of diametral pitch and circular pitch is equal to
Option A:	1
Option B:	1/ Π
Option C:	Π
Option D:	Πx number of teeth
Q4.	In worm gear the worm material is _____ and worm wheel material is _____
Option A:	Hardened steel, Bronze
Option B:	Bronze, Hardened steel
Option C:	Hardened steel, Hardened steel
Option D:	Cast iron, Cast iron
Q5.	A pair of straight bevel gears consists of 16 pinion teeth and 42 gear teeth. What are the pitch cone angles of pinion and gear?
Option A:	67.60 degree & 22.40 degree
Option B:	52.14 degree & 37.86 degree
Option C:	20.85 degree & 69.15 degree
Option D:	35.12 degree & 54.88 degree
Q6.	If 'b' denotes face width and R denotes cone distance, the bevel factor is written as
Option A:	1- b/R
Option B:	1- 2b/R
Option C:	b/(2R)
Option D:	1-2bR

Q7.	A 1.5 KW motor is running at 1440rpm. It is to be connected to a stirrer running at 36rpm. The gearing arrangement suitable for this application is
Option A:	Spur
Option B:	Helical
Option C:	Bevel
Option D:	Worm
Q8.	Calculate the power transmitted in kW by an open flat belt drive having driving pulley diameter 398 mm which rotates at 960 rpm. Tension in the tiight side is 2000 N while tension in slack side is 1000 N.
Option A:	10KW
Option B:	20KW
Option C:	30KW
Option D:	40KW
Q9.	Sommerfeld number 'S' is given by
Option A:	$Z'n'/P(D/2C)^2$
Option B:	$Z'n'/2P(D/C)^2$
Option C:	$Z'n'/P(D/4C)^2$
Option D:	$Z'n'/P(D/C)^2$
Q10.	The ratio of length of bearing to diameter of bearing (L/D) is equal to one then the bearing is
Option A:	Long Bearing
Option B:	Short Bearing
Option C:	Medium Bearing
Option D:	Square Bearing
Q11.	Difference between the size diameter of ball bearing designated as 305 and 405 is
Option A:	5mm
Option B:	Zero mm
Option C:	50mm
Option D:	100 mm
Q12.	Crowning of a flat belt pulley is done to _____.
Option A:	Prevent the slipping of a belt
Option B:	To increase the angle of contact
Option C:	To increase the tension of a belt
Option D:	To decrease the slip
Q13.	The coefficient of fluctuation of energy in case of the flywheel is given by:
Option A:	Maximum fluctuation of energy / work done per cycle
Option B:	Fluctuation of energy / Work done per cycle
Option C:	Maximum fluctuation of energy / Mean speed

Option D:	Fluctuation of energy / Mean speed
Q14.	The particular application the radial load acting on a ball bearing is 5kN and the life of the ball bearing is 696 million rev. Calculate dynamic load carrying capacity of the
Option A:	54311 N
Option B:	44311N
Option C:	34311N
Option D:	24311N
Q15.	The mass moment of inertia for a solid disc flywheel (m-mass in kg and R= Radius in m) is given by_____.
Option A:	$mR^2/2$
Option B:	$mR^2/3$
Option C:	$mR^2/4$
Option D:	$3mR^2/4$
Q16.	The ball bearings are, usually, made from
Option A:	Low carbon steel
Option B:	High carbon steel
Option C:	Medium carbon steel
Option D:	High speed steel
Q17.	Polygon effected is related to which of the following drive?
Option A:	Belt Drive
Option B:	Chain Drive
Option C:	Rope Drive
Option D:	Gear Drive
Q18.	The torque developed by a disc clutch is given by where W = Axial force with which the friction surfaces are held together, μ = Coefficient of friction ; and R = Mean radius of friction surfaces
Option A:	T = 0.25 μ.W.R
Option B:	T = 0.50 μ.W.R
Option C:	T = 0.75 μ.W.R
Option D:	T = μ.W.R
Q19.	In case of a multiple disc clutch, if n_1 are the number of discs on the driving shaft and n_2 are the
Option A:	$n_1 + n_2$
Option B:	$n_1 + n_2 - 1$
Option C:	$n_1 - n_2$
Option D:	$n_1 + n_2 + 1$
Q20.	The size of a cam depends upon

Option A:	Base circle
Option B:	Pitch circle
Option C:	Prime circle
Option D:	Pitch curve
Q21.	In cam and follower design jerk equation is obtained by
Option A:	Integrating with velocity
Option B:	Differentiating with displacement
Option C:	Differentiating with acceleration
Option D:	Integrating with acceleration
Q22.	Which of the following is not a motion of a follower
Option A:	Uniform Velocity
Option B:	Simple Harmonic Motion
Option C:	Cycloidal Motion
Option D:	Circular Motion
Q23.	A cone clutch transmits 24kW at 490rpm. The coefficient of friction is 0.2 and allowable intensity of pressure is 0.35N/mm^2. The semi cone angle is 12^o. The outer diameter is fixed as 310mm.Assuming uniform wear theory; find the maximum torque which is transmitted.
Option A:	502.4 N-m
Option B:	602.4 N-m
Option C:	467.96 N-m
Option D:	567.96 N-m
Q24.	The friction material of the brake should have
Option A:	High coefficient of friction
Option B:	Low coefficient of friction
Option C:	High surface hardness
Option D:	High endurance limit strength
Q25.	A sliding bearing which operates without any lubricant present, is called
Option A:	Zero film bearings
Option B:	Boundary lubricated bearings
Option C:	Hydrodynamic lubricated bearings
Option D:	Hydrostatic lubricated bearings

University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev2016
Examination: Final Year Semester VII
Course Code: MEC702 and Course Name: CAD/CAM/CAE

Time: 1 hour Max. Marks: 50

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

Q1.	Vector graphics is composed of
Option A:	Pixel
Option B:	Path
Option C:	Pallet
Option D:	Pix Map
Q2.	The simplest output primitive is
Option A:	Straight line
Option B:	Straight line segment
Option C:	Point
Option D:	Circle
Q3.	For a point to be clipped, which of the following conditions must be satisfied by the point?
Option A:	$xw_{min} < x < xw_{max}$
Option B:	$xw_{min} = x = xw_{max}$
Option C:	$xw_{min} > x > xw_{max}$
Option D:	$yw_{min} = y = yw_{max}$
Q4.	Bezier curve is controlled by three points (4, 2), (0, 0), (2, 8) Find the degree of curve.
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q5.	For 3D modeling of automobile body styling, which of the following is a preferred technique?
Option A:	Constructive Solid Geometry
Option B:	Pure Primitive Instancing
Option C:	Boundary Representation
Option D:	Spatial Occupancy Enumeration
Q6.	In a CAD package, mirror image of a 2D point P (5, 10) is to be obtained about a line which passes through the origin and makes an angle of 45° counterclockwise with the X-axis. The coordinates of the transformed point will be
Option A:	(7.5, 5)
Option B:	(10, 5)
Option C:	(7.5, -5)
Option D:	(10, -5)

Q7.	In 2D-translation, a point (x, y) can move to the new position (x', y') by using the equation
Option A:	x'= x - dx and y'=y + dx
Option B:	x'=x + dx and y'=y + dy
Option C:	x'=x + dy and y'=y - dx
Option D:	x'=x - dx and y'=y - dy
Q8.	From the following, which one will require maximum numbers of matrices to multiply?
Option A:	Scaling about the origin
Option B:	Scaling about an arbitrary Point
Option C:	Translation in x direction
Option D:	Rotation about the origin
Q9.	In transformation, clockwise rotation is
Option A:	considered positive
Option B:	considered negative
Option C:	not done
Option D:	considered as 90 plus the given angle of rotation
Q10.	CNC drilling machine is considered as
Option A:	Continuous path controlled machine
Option B:	Straight line controlled machine
Option C:	servo controlled machine
Option D:	point to point controlled machine
Q11.	The coordinate of two location A and B are (30,150) and (160, 40). Absolute Program for tool path from A to B is
Option A:	N010 G90 G01 X160.0 Y40.0 F200
Option B:	N010 G91 G01 X160.0 Y40.0 F200
Option C:	N010 G90 G01 X160.0 Y-40.0 F200
Option D:	N010 G90 G01 X130.0 Y-110.0 F200
Q12.	M-code for Spindle rotation in CW direction is
Option A:	M00
Option B:	M03
Option C:	M04
Option D:	M05
Q13.	G Code to cancel cutter radius compensation is
Option A:	G40
Option B:	G41
Option C:	G42
Option D:	G43
Q14.	The X coordinate of the location for 2mm depth of cut assuming the stock diameter as 30mm and X(0) at the centre of the stock, in diameter mode will be

Option A:	X30
Option B:	X28
Option C:	X26
Option D:	X15
Q15.	Which of the following is not a manufacturing equipment used in CIM?
Option A:	Printers
Option B:	Tool Handling Devices
Option C:	Sensors
Option D:	DNC/FMS Systems
Q16.	What is used to connect different computers in a restricted area?
Option A:	Local Area Network
Option B:	Wide Area Network
Option C:	Distributed Area Network
Option D:	Metropolitan Area Network
Q17.	Which of the following is a positive change brought by technological revolution of CIM?
Option A:	Increase in Productivity
Option B:	Increase in the cost of a product
Option C:	Decrease in the demand of a product
Option D:	Increase in unemployment
Q18.	Computer-integrated manufacturing includes manufacturing systems that have:
Option A:	Computer-aided design, a flexible manufacturing system, inventory control, warehousing and shipping integrated.
Option B:	Transaction processing, management information systems, and decision support systems integrated.
Option C:	Automated guided vehicles, robots, and process control integrated.
Option D:	Robots, automated guided vehicles, and transfer equipment integrated.
Q19.	Of all of the current material addition rapid prototyping technologies, which one is the most widely used?
Option A:	Ballistic particle manufacturing
Option B:	Selective laser sintering
Option C:	Solid ground curing
Option D:	Stereo lithography
Q20.	All triangle coordinates within an STL file must be_____.
Option A:	negative
Option B:	positive
Option C:	zero
Option D:	symmetric
Q21.	Among the following, which one is the last step in Data Processing for Rapid Prototyping?
Option A:	Model slicing

Option B:	Part orientation
Option C:	Tool path generation
Option D:	Support generation
Q22.	In the process of Selective Laser Sintering, raw material used is in the form of _____.
Option A:	machining wax
Option B:	foam core
Option C:	powder
Option D:	rubber
Q23.	Autodesk Fusion 360 does not supports writing scripts and add-ins using ____ language.
Option A:	JavaScript
Option B:	Python
Option C:	C++
Option D:	R
Q24.	Failure Criteria used for Ductile Materials is
Option A:	Maximum Principal Stress Failure Criteria
Option B:	von Mises Criteria
Option C:	Mohr-Coulomb Stress Criteria
Option D:	Maximum Tensile Stress Failure Criteria
Q25.	2D analysis of components with large thickness is a
Option A:	Plane strain condition
Option B:	Plane stress condition
Option C:	Variable stress condition
Option D:	Variable strain condition

University of Mumbai

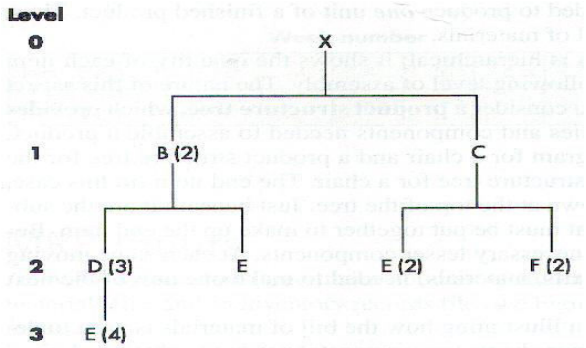
Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev2016
Examination: Fourth Year Semester VII
Course Code: MEC703 and Course Name: Production Planning and Control

Time: 1 hour Max. Marks: 50

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

Q1.	Servicing of automobiles is an example of which of the following?
Option A:	Transformation by Outsourcing
Option B:	Transformation by Assembly
Option C:	Transformation by Service
Option D:	Transformation by Disintegration
Q2.	Which of the following activities is done during Control stage?
Option A:	Inspection
Option B:	Scheduling
Option C:	Flow Design
Option D:	Process Design
Q3.	The volume of production is moderate in which of the following cases?
Option A:	Job Production
Option B:	Batch Production
Option C:	Mass Production
Option D:	Flow Production
Q4.	Sum of weights in exponential smoothing is _____.
Option A:	<1
Option B:	1
Option C:	>1
Option D:	no definite value
Q5.	A pattern that is repeated throughout a time series and has a recurrence period of at most one year is called:
Option A:	Cyclical variation
Option B:	Irregular variation
Option C:	Seasonal variation
Option D:	Long term variation
Q6.	If the demand is 100 during October 2016, 200 in November 2016, 300 in December 2016, 400 in January 2017. What is the 3-month simple moving average for February 2017?
Option A:	300
Option B:	350
Option C:	400

Option D:	425
Q7.	Linear regression was used to develop the slope and intercept values for a forecast equation in Y (sales volume) and X (customer traffic) using the data below (sales in million dollars; customers in thousands). Forecast the sales volume when the customer level is 22. a = –0.158; b = 0.131
Option A:	2.3
Option B:	2.46
Option C:	2.72
Option D:	2.06
Q8.	For this set of errors: -1, -4, 0, +2, +3, MAD is:
Option A:	1
Option B:	1.6
Option C:	2
Option D:	10
Q9.	What is the reorder level if average demand is 20 litres per day and lead time is 12 days
Option A:	200
Option B:	210
Option C:	240
Option D:	220
Q10.	If EOQ = 1200 units, order costs is Rs. 60 per order, and carrying costs is Rs.1 per unit, what is the annual usage in units?
Option A:	10000
Option B:	11200
Option C:	12000
Option D:	13500
Q11.	Use the information presented in the following figure to do the following: Determine the quantities of E needed to assemble two X. 
Option A:	56
Option B:	55
Option C:	54
Option D:	50

Q12.	A master production schedule specifies
Option A:	financial resources required for production
Option B:	what component is to be made and when
Option C:	what product is to be made and when
Option D:	the labour hours required for production
Q13.	---------is the bridge between design and manufacturing.
Option A:	Production planning
Option B:	Process Planning
Option C:	Product design
Option D:	production control
Q14.	Routing is essential in the following types of industry
Option A:	Assembly industry
Option B:	Process industry
Option C:	job order industry
Option D:	mass production industry
Q15.	Productivity define as
Option A:	Input + output
Option B:	input/output
Option C:	output - input
Option D:	output/input
Q16.	If all the processing equipment and machines are arranged according to the sequence of operations of a product the layout is known as
Option A:	Product layout
Option B:	Process layout
Option C:	Fixed position layout
Option D:	Combination layout
Q17.	The network diagram is the best tool for demonstrating:
Option A:	Schedule variances
Option B:	Resource requirements
Option C:	The sequence of project activities
Option D:	Schedule performance over time
Q18.	Which activity is performed to calculate early start (ES) and early finish (EF)
Option A:	Backward pass
Option B:	Forward pass
Option C:	Lateral pass
Option D:	Critical pass
Q19.	After drawing network diagram, the project manager will conduct a forward pass and a backward pass through the network. This will provide information regarding _____ and will identify the_____.
Option A:	The total duration of the project, critical path

Option B:	The slack for each activity, high risk activities
Option C:	Resource shortages, high risk activities
Option D:	The high risk activities, non-critical path
Q20.	_____is the cost slope in critical path method
Option A:	Crash Cost / Normal Cost
Option B:	(Crash Cost-Normal Cost)/(Normal Time-Crash Time)
Option C:	Normal Cost / Crash Cost
Option D:	(Normal Cost-Crash Cost)/(Normal Time-Crash Time)
Q21.	You are a project manager for Move It Now trucking company. Your company specializes in moving household goods across the city or across the country. Your project involves upgrading the nationwide computer network for the company. Your lead engineer has given you the following estimates for a critical path activity: 60 days most likely, 72 days pessimistic, 48 days optimistic. What is the weighted average or expected value?
Option A:	54
Option B:	66
Option C:	60
Option D:	30
Q22.	Which of the following is the right full form of MRP-I
Option A:	Material Requirement Planning
Option B:	Material Resource Planning
Option C:	Manufacturing Resource Planning
Option D:	Manufacturing Requirement Planning
Q23.	A bill of materials lists the
Option A:	times needed to perform all phases of production
Option B:	production schedule for all products
Option C:	components, ingredients and materials required to produce an item
Option D:	operations required to produce an item
Q24.	Linking a part requirement with the parent component that caused the requirements is referred to as
Option A:	net requirement planning
Option B:	a time fence
Option C:	pegging
Option D:	Kanban
Q25.	What lot sizing technique is generally preferred when inventory holding costs are extremely high?
Option A:	lot for lot
Option B:	EOQ
Option C:	part period balancing
Option D:	the Wagner Whitin algorithm

University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev2016
Examination: Final Year Semester VII
Course Code: MEDLO7031 and Course Name: Mechanical Vibrations

Time: 1 hour Max. Marks: 50

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

Q1.	A mass of 1 kg rests on a sponge having only damping properties and has a damping coefficient of 100 Ns/m. Estimate the undamped natural frequency in rad/s.
Option A:	0
Option B:	10
Option C:	50
Option D:	100
Q2.	The reduction of the amplitude ratio in the presence of damping is very significant
Option A:	near ω = ωd
Option B:	near ω = ωn
Option C:	near ω = 0
Option D:	near ω = infinity
Q3.	----------is trial and error method used to find the natural frequency and mode shape of multi-mass lumped parameter system for free and forced vibrations.
Option A:	dunkerleys method
Option B:	rayleigh method
Option C:	matrix iteration method
Option D:	holzers method
Q4.	Rotating shaft tend to vibrate violently in transverse directions at certain speed. This speed is called
Option A:	low speed
Option B:	critical speed
Option C:	high speed
Option D:	maximum speed
Q5.	The accelerometers are commonly used in vibration measurement due to their _____.
Option A:	small size and low sensitivity
Option B:	small size and high sensitivity
Option C:	the large size and high sensitivity
Option D:	the large size and low sensitivity
Q6.	Each term in the equation of motion of linear system involves displacement, velocity and acceleration of the
Option A:	second degree
Option B:	zero degree
Option C:	first degree
Option D:	fifth degree

Q7.	Oscillations of a simple pendulum demonstrate which type of motion?
Option A:	Simple Harmonic motion
Option B:	Uniform Velocity motion
Option C:	Uniform Acceleration and Retardation motion
Option D:	Cycloidal motion
Q8.	A single degree of freedom mass-spring-viscous damper system with mass m, spring constant k and viscous damping coefficient c is critically damped. The correct relation among m,k, and c is _____.
Option A:	c = √(2km)
Option B:	c = 2 √(km)
Option C:	c = √(km/2)
Option D:	c = √(2k/m)
Q9.	Dunkerley's method is used for estimation of fundamental natural frequency for _____.
Option A:	Longitudinal vibration
Option B:	Torsional vibration
Option C:	Nonlinear vibration
Option D:	Transverse vibration
Q10.	A 50 kg machine is mounted on four parallel springs each of stiffness 0.25 MN/m. When the machine operates at 40 Hz, the machine's steady state amplitude is measured as 2 mm. What is the magnitude of the excitation force provided to the machine at this speed?
Option A:	5336.2 N
Option B:	4316.54 N
Option C:	1542.7 N
Option D:	6823.5 N
Q11.	From the following, which one is also known as low-frequency Transducer?
Option A:	Stroboscope
Option B:	Vibrometer
Option C:	Accelerometer
Option D:	Tachometer
Q12.	Lindstedt's perturbation method gives
Option A:	periodic and nonperiodic solutions
Option B:	nonperiodic solutions only
Option C:	periodic solutions only
Option D:	solutions for linear systems
Q13.	Determine the torsional stiffness of the shaft (G = 210 GPa) of length 1.5m having internal and external radius of the shaft 15 mm and 30 mm respectively
Option A:	10.43 kNm/rad
Option B:	134 kNm/rad
Option C:	89 kNm/rad

Option D:	60 kNm/rad
Q14.	A vehicle suspension system consists of a spring and a damper. The stiffness of the spring is 3.6 kN/m and the damping constant of the damper is 400 Ns/m. If the mass is 50 kg, then the damping factor and damped natural frequency respectively, are _____ and _____ Hz.
Option A:	0.471 and 7.48
Option B:	0.471 and 1.19
Option C:	0.666 and 1.35
Option D:	0.666 and 8.50
Q15.	Cantilever beam is an example of _____.
Option A:	Discrete system
Option B:	Lumped system
Option C:	Undistributed system
Option D:	Continuous system
Q16.	In damped forced vibration, if damping ratio is greater than zero and frequency ratio is greater than one,
Option A:	the response lags the excitation
Option B:	the response leads the excitation
Option C:	the phase difference between the excitation and the response is 90°
Option D:	amplitude ratio is 1
Q17.	Fourier transform is a mathematical procedure to obtain the _____ of a given input signal.
Option A:	integration
Option B:	spectrum
Option C:	difference
Option D:	frequency
Q18.	Which of the following methods is used for the solution of nonlinear vibration problems
Option A:	D'Alembert principle
Option B:	Newton's second law
Option C:	Numerical methods
Option D:	Laplace transform method
Q19.	A solid circular plate has a mass of 1 kg and a radius of 10 cm. The mass-moment-of-inertia of the plate about the diametral axis passing through the centre of gravity is _____ kg-m^2.
Option A:	0.0025
Option B:	0.005
Option C:	0.25
Option D:	0.05
Q20.	The displacement amplitudes in a certain vibration test are recorded as 25, 23, 21, 19,17,.....and so on, till mass stops. This is an example of _____ damping.
Option A:	Viscous

Option B:	Coulomb
Option C:	Structural
Option D:	Interfacial
Q21.	Eigen value indicates _____
Option A:	ωn
Option B:	ωn^3
Option C:	√ωn
Option D:	ωn^2
Q22.	In vibration isolation system, if ω/ωn greater than one, then the phase difference between the transmitted force and disturbing force is
Option A:	270 degree
Option B:	180 degree
Option C:	90 degree
Option D:	0 degree
Q23.	In vibrometer, the relative motion between the mass and vibrating body is converted into proportional _____.
Option A:	current
Option B:	voltage
Option C:	resistance
Option D:	ampere
Q24.	Duffing's equation represents the equation of motion of a damped, harmonically excited, single degree of freedom system with
Option A:	a nonlinear mass
Option B:	a nonlinear damper
Option C:	a nonlinear spring
Option D:	a linear mass
Q25.	The transmissibility is same for all value of damping factors at frequency ratio ω/ωn of
Option A:	1
Option B:	2
Option C:	√2
Option D:	3

University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev2016
Examination: Final Year Semester VII
Course Code: **MEDLO7033** and Course Name: **Pumps, Compressors and Fans**
Time: 1 hour Max. Marks: 50

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

Q1.	A pump is a device which converts
Option A:	electrical energy into mechanical energy
Option B:	mechanical energy into hydraulic energy
Option C:	hydraulic energy into mechanical energy
Option D:	electrical energy into hydraulic energy
Q2.	The specific speed of a hydraulic pump is the speed of geometrically similar pump working against a unit head and
Option A:	Delivering unit quantity of water
Option B:	Consuming unit power
Option C:	Having unit velocity of flow
Option D:	Having unit radial velocity
Q3.	Reciprocating pump is a _____
Option A:	Negative displacement pump
Option B:	Emulsion pump
Option C:	Diaphragm pump
Option D:	Positive displacement pump
Q4.	Slip of reciprocating pump is defined as the.....
Option A:	product of the theoretical discharge and actual discharge
Option B:	difference between the theoretical discharge and actual discharge
Option C:	sum of the actual discharge and theoretical discharge
Option D:	ratio of the actual discharge to theoretical discharge
Q5.	In a reciprocating pump, (if the length of the suction pipe is l_s, the area of the piston is A and the area of the suction pipe is a_s) the pressure head due to acceleration in suction pipe is given as
Option A:	$(l_s \times A \times \omega \times r \cos \Theta)/ (g \times a_s)$
Option B:	$(l_s \times A^2 \times \omega \times r \cos \Theta)/ (g \times a_s)$
Option C:	$(l_s \times A \times \omega^2 \times r \cos \Theta)/ (g \times a_s)$
Option D:	$(l_s \times A \times \omega \times r \cos \Theta)/ (2 \times g \times a_s)$
Q6.	Air vessel used in reciprocating pump to obtain
Option A:	continuous supply of water at uniform rate
Option B:	increase in supply of water
Option C:	reduction of suction head
Option D:	rise in delivery head
Q7.	In a reciprocating pump (where the atmosperic pressure is 10.3 m of water,

	Suction head is H_s, Acceleration head on the suction side is H_{as} and h_{fs} is the frictional head in the suction pipe), the absolute pressure head at the beginning of the suction stroke is given as
Option A:	10.3 - (H_s +H_{as})
Option B:	10.3 - (H_s + h_{fs})
Option C:	10.3 + (H_s + H_{as})
Option D:	10.3 - (H_s - H_{as})
Q8.	The absolute pressure head in terms of meters of water to avoid the separation in a reciprocating pump should be greater than
Option A:	10.33 m
Option B:	7.52 m
Option C:	2.5 m
Option D:	5 m
Q9.	A double acting reciprocating pump running at 40 rpm, delivers 0.016755 m^3/s of water. The suction and delivery heads are 5 m and 20 m respectively. Calculate power required to run the pump.
Option A:	6.1635 kW
Option B:	2.0545 kW
Option C:	4.109 kW
Option D:	8.228 kW
Q10.	In a centrifugal pump, the liquid enters the pump
Option A:	at the top
Option B:	at the bottom
Option C:	at the center
Option D:	from sides
Q11.	A centrifugal pump gives maximum efficiency when its blades are
Option A:	Bent forward
Option B:	Bent backward
Option C:	Straight
Option D:	Wave shaped
Q12.	In a centrifugal pump the regulating valve is provided on
Option A:	The suction pipe
Option B:	The delivery pipe
Option C:	The casing
Option D:	The impeller
Q13.	The foot valve helps
Option A:	priming the pump
Option B:	to remove the foreign material from liquid before entering the suctionpipe
Option C:	Stopping the pump
Option D:	Starting the pump
Q14.	In centrifugal pump the static lift means

Option A:	suction lift
Option B:	delivery lift
Option C:	summation of suction and delivery lifts
Option D:	summation of suction and delivery
Q15.	When the casing in a centrifugal pump decelerates the flow, what increases?
Option A:	Pressure
Option B:	Temperature
Option C:	Volume
Option D:	Flow rate
Q16.	Axial flow fans are classified as
Option A:	Centrifugal and propeller
Option B:	Vane axial and centrifugal
Option C:	Forward and backward curved centrifugal
Option D:	Tube axial and rotary positive displacement
Q17.	Which of the following is created by blowers?
Option A:	Air flow
Option B:	Water flow
Option C:	Wastewater flow
Option D:	Vacuum flow
Q18.	Backward curved centrifugal fan is generally suitable for
Option A:	High pressure, high flow
Option B:	High pressure, medium flow
Option C:	Medium pressure, high flow
Option D:	Medium pressure, Medium flow
Q19.	The ratio of actual whirl velocity to the ideal whirl velocity in the centrifugal compressor is called as _____.
Option A:	velocity factor
Option B:	slip factor
Option C:	work factor
Option D:	work Coefficient
Q20.	In a centrifugal compressor, the ratio of the increase in pressure in rotor blades to total increase in pressure in the stage is called
Option A:	Pressure ratio
Option B:	Pressure coefficient
Option C:	Degree of reaction
Option D:	Slip factor
Q21.	In a centrifugal compressor, an increase in speed at a given pressure ratio causes.....
Option A:	Increase in flow
Option B:	Decrease in flow
Option C:	Decrease in efficiency

Option D:	Increase in flow and decrease in efficiency
Q22.	In centrifugal compressor, the outlet angle between relative velocity and blade velocity for forward curved blades ……
Option A:	Less than 90 degree
Option B:	greater than 90 degree
Option C:	equal to 90 degree
Option D:	greater than 180 degree
Q23.	The function of _____ is to convert high kinetic energy of gases into pressure energy.
Option A:	impeller
Option B:	diffuser
Option C:	casing
Option D:	Strainer
Q24.	The volumetric efficiency of a compressor
Option A:	Increases with decrease in compression ratio
Option B:	Decreases with decrease in compression ratio
Option C:	Increases with increase in compression ratio
Option D:	Decreases with increase in compression ratio
Q25.	The overall efficiency of the compressed air system is the
Option A:	Ratio of shaft output of the air motor to the shaft input to the compressor
Option B:	Ratio of shaft input to the compressor to the shaft output of air motor
Option C:	Product of shaft output of air motor and shaft input to the compressor
Option D:	Ratio of shaft input of the air motor to the shaft input to the compressor

University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev2016 (CBCGS)
Examination: Final Year, Semester VII
Course Code: MEDLO7034 and Course Name: Computational Fluid Dynamics
Time: 1 hour Max. Marks: 50

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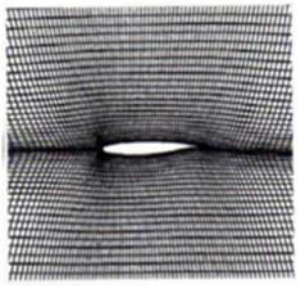
Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	CFD is the third approach for fluid flow analysis. What are the other two approaches?
Option A:	Theoretical and experimental
Option B:	Physical and Mathematical
Option C:	Numerical and experimental
Option D:	Experimental and physical
Q2.	CFD packages solve the algebraic equations of flow using _____ method.
Option A:	Direct
Option B:	Iterative
Option C:	Analytical
Option D:	Trial and error
Q3.	 Identify type of Grid
Option A:	C type
Option B:	H type
Option C:	O type
Option D:	X type
Q4.	_____expressions are used when data to the left of a point at which a derivative is desired are not available
Option A:	Forward difference
Option B:	Backward difference
Option C:	Central difference
Option D:	End difference
Q5.	Which of these properties limit the time-step size in the explicit schemes?
Option A:	Convergence
Option B:	Stability
Option C:	Consistency
Option D:	Error

Q6.	The ratio of logest edge length to shortest edge length is called
Option A:	Aspect ratio
Option B:	Skewness
Option C:	Smoothness
Option D:	Orthogonality
Q7.	Triangular element is commonly used in
Option A:	Structured grid
Option B:	Unstructured grid
Option C:	Static grid
Option D:	Dynamic grid
Q8.	The numerical method for solving the differential equations by approximating them with defference equations is called
Option A:	Finite volume
Option B:	Finite difference
Option C:	Finite element
Option D:	Exact method
Q9.	Among the unknowns of a flow field, some of the properties are given below. Which set contains only thermodynamic properties?
Option A:	Density, pressure, specific internal energy, temperature
Option B:	Density, velocity, specific internal energy, temperature
Option C:	Velocity, pressure, specific internal energy, temperature
Option D:	Density, pressure, specific internal energy, Velocity
Q10.	The final equation of Reynolds transport theorem can be used to derive _____ form of the conservation laws in fixed regions.
Option A:	Eucledian
Option B:	Lagrangian
Option C:	Eulerian
Option D:	Cartesian
Q11.	Initial conditions are used for _____ problems.
Option A:	time-dependent problems
Option B:	boundary value problems
Option C:	control volume problems
Option D:	finite difference problems
Q12.	The velocity components in the nodes which are not at the boundary are found using _____
Option A:	energy equation
Option B:	continuity equation
Option C:	equations of state
Option D:	momentum equation
Q13.	Which of these theorems is used to transform the general diffusion term into

	boundary based integral in the FVM?
Option A:	Gauss divergence theorem
Option B:	Stokes' theorem
Option C:	Kelvin-Stokes theorem
Option D:	Curl theorem
Q14.	In the absence of any source or sink, the steady-state diffusion problem is governed by _____
Option A:	Fourier series
Option B:	Linear interpolation
Option C:	Taylor series
Option D:	Second order interpolation
Q15.	Which of these higher-order schemes is conservative?
Option A:	Upwind
Option B:	TVD
Option C:	QUICK
Option D:	Power law scheme
Q16.	While solving a recursive equation $\Phi_j=A_j\,\Phi_{(j+1)}+C_{j'}$ using Thomas algorithm, in which order are the values of A_j and $C_{j'}$ found?
Option A:	Backwards
Option B:	Forward
Option C:	Simultaneously
Option D:	Depends on the problem
Q17.	The SIMPLE algorithm used for transient problems is
Option A:	implicit and iterative
Option B:	implicit and direct
Option C:	explicit and iterative
Option D:	explicit and direct
Q18.	One of the neighbour coefficients yielded by the upwind scheme for convection is
Option A:	zero
Option B:	cannot predict
Option C:	negative
Option D:	positive
Q19.	The order of accuracy of the central differencing scheme is
Option A:	fourth-order
Option B:	third-order
Option C:	second-order
Option D:	first-order
Q20.	Which statement is correct?
Option A:	The second-order upwind scheme is never stable
Option B:	The second-order upwind scheme is always stable
Option C:	The second-order upwind scheme is conditionally stable

Option D:	The second-order upwind scheme is always unstable
Q21.	The staggered grid can be used to overcome
Option A:	decoupling of pressure and velocities
Option B:	coupling of pressure and velocities
Option C:	interpolation problems
Option D:	boundedness problems
Q22.	How is pressure calculated in a compressible flow?
Option A:	Pressure correction equation
Option B:	Equation of state
Option C:	Momentum equation
Option D:	Energy equation
Q23.	What is the difference between the SIMPLE and the SIMPLER algorithms?
Option A:	No velocity-correction equation
Option B:	No relaxation factor
Option C:	Pressure is directly calculated
Option D:	No pressure-correction equation
Q24.	What is Reynolds stress?
Option A:	Stress due to velocity fluctuations
Option B:	Tangential component of pressure
Option C:	Stress due to pressure fluctuations
Option D:	Normal component of viscosity
Q25.	Under which condition does the inviscid steady flow become elliptic?
Option A:	M=1
Option B:	M<1
Option C:	M>1
Option D:	M>5

University of Mumbai

Examination 2020 under cluster

Program: BE _____ Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

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

Time: 1 hour Max. Marks: 50

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

Q1.	_____ can be explained as, tragic set of events which consequently cause damage to property and life?
Option A:	Hazards
Option B:	Vulnerability
Option C:	Disaster
Option D:	Risk
Q2.	Which natural disaster is a sudden and violent shaking of the ground, sometimes causing great destruction, as a result of movements within the earth's crust or volcanic action?
Option A:	Earthquake
Option B:	Tsunami
Option C:	Thunderstorm
Option D:	Flooding
Q3.	Which of the following is not a component of disaster management cycle?
Option A:	Preparedness
Option B:	Response
Option C:	Construction
Option D:	Recovery
Q4.	What is EMS?
Option A:	Emergency medical services
Option B:	Effective mitigation system
Option C:	Emergency management system
Option D:	Effective management system
Q5.	N.D.R.F Stands for
Option A:	National Disaster Response Fund
Option B:	Natural Disaster Relief Fund
Option C:	National Dedicated Relief Fund
Option D:	National Dynamic Response Fund
Q6.	Risk can be dealt with following ways except:

Option A:	Risk acceptance
Option B:	Risk avoidance
Option C:	Risk reporting
Option D:	Risk reduction
Q7.	Which of the following is not a man-made hazard?
Option A:	Leakage of Toxic waste
Option B:	War
Option C:	Drought
Option D:	Environmental Pollution
Q8.	Which of the following are not the causes of manmade disaster?
Option A:	Technological
Option B:	Transportation
Option C:	Landslides
Option D:	Production errors
Q9.	Who heads the crisis management Committee
Option A:	Prime Minister
Option B:	President
Option C:	Cabinet Secretory
Option D:	Ministry Of Environment
Q10.	EMS technology helps in aread which are prone to effective disaster management except:
Option A:	Trials of evacuation and general disaster plans
Option B:	Training volunteers
Option C:	Construction of shelter
Option D:	Prevention of next emergency
Q11.	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
Q12.	The risk mapping and control does not depend on:
Option A:	The efforts taken by an organization
Option B:	Money
Option C:	Vulnerability analysis
Option D:	The action plans
Q13.	Tsunami’s can occur only during
Option A:	Evening
Option B:	Afternoon
Option C:	Any time of the day or night
Option D:	Morning

Q14.	Under which ministry Disaster Management Authority comes
Option A:	Ministry Of Environment
Option B:	Ministry of Foreign Affaires
Option C:	Ministry of Pollution
Option D:	Ministry of Home Affairs
Q15.	Which of the following components is not the part of EMS?
Option A:	Communication
Option B:	Recovery
Option C:	Budget
Option D:	Materials requirement
Q16.	Which the first step adopted for the assessment of the requests made by the state government to CENTRAL Government.
Option A:	Central Govt directly sends funds to State Govt
Option B:	The central team is deputed to make the on the spot assessment
Option C:	Finance Ministry Guides Cental Govt to relese funds
Option D:	Union Home Secretary visits State Govt affected by Disaster
Q17.	What is CBDM?
Option A:	Customers biased disaster management
Option B:	Cluster based disaster management
Option C:	Community based disaster management
Option D:	Consumer based disaster management
Q18.	The Richter scale expresses an earthquakes
Option A:	Magnitude
Option B:	Location
Option C:	Duration
Option D:	Depth
Q19.	Who is not first responder
Option A:	Police
Option B:	SDRF
Option C:	Fire and Medical Services
Option D:	NDRF
Q20.	Which of the following component of EMS does not add a value to disaster management?
Option A:	Emergency medical services
Option B:	Hazardous Materials Management
Option C:	Prevention of disaster
Option D:	Response and Recovery
Q21.	Prompt and effective response minimizes loss of life and property.
Option A:	Prompt and effective response
Option B:	Resource Allocation

Option C:	Planning
Option D:	Financing
Q22.	Floods can be prevented by
Option A:	Afforestation
Option B:	Cutting the forest
Option C:	Tilling the land
Option D:	Removing the top soil
Q23.	Which amongst the following ensures accurate documentation of all aspects of disaster events for creating good historical records for future research and mitigation planning
Option A:	NDMA
Option B:	MoUD
Option C:	NDRF
Option D:	NIDM
Q24.	The point of the earth's surface directly above the point where an earthquake occurs is called
Option A:	Focus
Option B:	Epicenter
Option C:	Fracture
Option D:	Fault
Q25.	Which committee recommend financial assistance to various disaster acrros country
Option A:	National Executive Committee
Option B:	Finance Committee
Option C:	Central Committee
Option D:	Cabinet Committee

University of Mumbai

Examination 2020

Program: _____

Curriculum Scheme: Rev 2016

Examination: Semester VII

Course Code: ILO7012 and Course Name: Reliability Engineering

Time: 1 hour Max. Marks: 50

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

Q1.	If A and B are two events such that P(a) =0.3, P(b) = 0.6, and P(A/~B) is _____
Option A:	0.3
Option B:	0.5
Option C:	0.8
Option D:	0.2
Q2.	Previous probabilities in Bayes Theorem that are changed with help of new available information are classified as _____
Option A:	Independent Probabilities
Option B:	Posterior probabilities
Option C:	Interior probabilities
Option D:	Dependent probabilities
Q3.	Let X be a random variable with probability distribution function f(x)=0.2 for |x|<1 =0.1 for 1<|x|<4 =0 otherwise The probability P(0.5 < x <5) is _____
Option A:	0.3
Option B:	0.5
Option C:	0.4
Option D:	0.8

Q4.	If 'm' is the mean of a Poisson Distribution, the standard deviation is given by _____.
Option A:	$\sqrt{m}$
Option B:	m^2
Option C:	m
Option D:	$\frac{m}{2}$
Q5.	What is the mean time to failure if time to failure of a gadget follows Weibull distribution with scale =1000 hours and shape = 0.5?
Option A:	2500 hours
Option B:	1500 hours
Option C:	3000 hours
Option D:	2000 hours
Q6.	The failure density function f(t) is defined as the derivative of the
Option A:	Failure probability
Option B:	Intensity
Option C:	Pass probability
Option D:	Density
Q7.	Mean time between failures can be defined as:
Option A:	$\frac{total\ number\ of\ failure}{total\ operation\ time}$
Option B:	$\frac{total\ operation\ time}{total\ number\ of\ failure}$

Option C:	$\frac{total\ operation\ time}{total\ number\ of\ components}$
Option D:	$\frac{total\ number\ of\ components}{total\ operation\ time}$
Q8.	A component with time to failure T has constant failure rate $z(t) = \lambda = 2.5 \times 10^{-5}[hours]^{-1}$ Determine the probability that the component survives a period of 2 months without failure.
Option A:	0.815
Option B:	0.965
Option C:	0.911
Option D:	0.864
Q9.	The system reliability of the parallel system
Option A:	Is greater than the reliability of any subsystem
Option B:	Is equal to the reliability of the best subsystem
Option C:	Decreases as more redundant subsystem are added to the system
Option D:	Increase if the subsystem with the lowest reliability is removed
Q10.	Consider a four component system of which the components are independent and identically distributed with Constant Failure Rate (CFR). If $R_2(100) = 0.95$, find the individual component Mean Time to Failure?
Option A:	0.128
Option B:	0.0128
Option C:	0.000128
Option D:	1

Q11.	What failure rate must each component of a series system have, so that the probability that the system operates beyond 1000 hours is 0.9917 (Assume that all three components are independent, operate simultaneously, and have identical constant failure rates.)
Option A:	0.00278 per hour
Option B:	2.78×10^{-6} per hour
Option C:	2.78×10^{-5} per hour
Option D:	0.0287 per hour
Q12.	The components each with a reliability of 0.9 are placed in series. What is the reliability of the system?
Option A:	0.729
Option B:	0.986
Option C:	0.458
Option D:	0.589
Q13.	If the probability of a car starting on a sub-zero morning is 0.5 and we have two such cars. What is the probability that at least one of the cars will start on a sub-zero morning?
Option A:	0.92
Option B:	0.75
Option C:	0.81
Option D:	0.60
Q14.	Calculate the system unavailability, if the failure rate of a system is 2 failures/year and the average repair time is 20 hours.
Option A:	14.97 hr/yr
Option B:	18.47 hr/yr
Option C:	39.81 hr/yr

Option D:	32.17 hr/yr
Q15.	Which of the following approach is not the redundancy approach?
Option A:	Unit redundancy
Option B:	Component redundancy
Option C:	Strong component should be identified and strengthened for reliability
Option D:	Mixed redundancy
Q16.	For the successful operation of the system, the reliability of the system will be much better due to _____
Option A:	Absence of redundant element and proper operation one element
Option B:	Presence of redundant element and improper operation one element
Option C:	Absence of redundant element and improper operation one element
Option D:	Presence of redundant element and proper operation one element
Q17.	In unit redundancy, for improving the reliability of the system, a similar system should be added to the existing system in _____
Option A:	Series
Option B:	Both series and parallel
Option C:	parallel
Option D:	No connection
Q18.	Redundant system consisting of two or more component connected in parallel and both components were operating simultaneously is called _____
Option A:	Standby redundancy
Option B:	Active redundancy
Option C:	Sitting redundancy
Option D:	Inactive redundancy

Q19.	In order to maintain maintainability in the system, repair time must _____
Option A:	Be increased
Option B:	Be reduced
Option C:	Be kept constant
Option D:	Keeps on changing
Q20.	While discussing the concept of parts interchangeability, "if new part does not meet the required functional substitution then,
Option A:	It should be fractionally interchangeability
Option B:	It should not be physically interchangeability
Option C:	It should be physically interchangeability
Option D:	It should not be fractionally interchangeability
Q21.	The inherent availability can be calculated for repairable system as:
Option A:	$A_I = \frac{MTBF}{MTTF + MTTR}$
Option B:	$A_I = \frac{MTTF}{MTTF + MTTR}$
Option C:	$A_I = \frac{MTTF}{MTBF+MTTR}$
Option D:	$A_I = \frac{MTTF}{MTTF + MTTR}$
Q22.	Risk priority number is
Option A:	Product of severity (S), Occurrence (O) & Detection (D)
Option B:	Sum of severity (S), Occurrence (O) & Detection (D)

Option C:	Maximum of Severity (S), Occurrence (O) & Detection (D)
Option D:	Minimum of Severity (S), Occurrence (O) & Detection (D)
Q23.	Failure mode and effect analysis (FMEA) provide a checklist procedure. Which of the following question is NOT likely to feature on the checklist?
Option A:	What would be the cost of avoiding failure be?
Option B:	How likely is such a failure to be detected before it affects the customer?
Option C:	What is the likelihood that failure will occur?
Option D:	What would the consequences of the failure be?
Q24.	Which of the following is not the advantage of Event Tree Analysis are:
Option A:	Structured, rigorous and methodical approach
Option B:	Can be effectively performed on varying levels of design detail
Option C:	Permits probability assessment
Option D:	Partial successes/failure are distinguishable
Q25.	What is the probability of an impossible event?
Option A:	0
Option B:	1
Option C:	Not defined
Option D:	Insufficient data

University of Mumbai
Online Examination 2020

Program: BE Engineering
Curriculum Scheme: R-2016
Examination: Final Year Semester VII
Course Code: ILOC 7015 Course Name: Operations Research
Time: 1 hour Max. Marks: 50

Question Paper Set No._01

Note: Each question is for 2 marks.

		Multiple Choice Questions (MCQ)
		ALL questions are compulsory. There are 25 questions, each question carries 2 mark.
1.	Queuing models measure the effect of:	
	a)	Random arrivals
	b)	Random service
	c)	Effect of uncertainty on the behaviour of the queuing system
	d)	Length of queue.
2.	If the number of arrivals during a given time period is independent of the number of arrivals that have already occurred prior to the beginning of time interval, then the new arrivals follow ----------distribution.	
	a)	Erlang
	b)	Poisson
	c)	Exponential
	d)	Normal
3.	An M/M/8 system is a system with --	
	a)	Generic M channel system, exponential arrivals, and Poisson service time.
	b)	Eight channel system, Poisson arrivals, and Exponential service time.
	c)	M channel system with Exponential arrivals and Poisson service times.
	d)	Eight channel system with Binomial arrival times and normally distributed service times
4.	As simulation is not analytical model, therefore result of simulation must be viewed as	
	a)	Unrealistic
	b)	Exact
	c)	approximation
	d)	simplified
5.	Monto-Carlo simulation	
	a)	Randomness is the key requirement
	b)	The model is of deterministic nature
	c)	The random numbers can be used to generate the value of input variables only, if the sampled distributed is uniform
	d)	None of these
6.	While assigning random numbers in Monte-Carlo simulation, it is	
	a)	Not necessary to assign the exact range of random number interval as the probability
	b)	Necessary to develop a cumulative probability distribution
	c)	Necessary to assign the particular appropriate random numbers
	d)	Not necessary to develop a cumulative probability distribution

7.	Which of the following is a property of a dynamic programming problem?	
	a)	Optimal substructure
	b)	Non-Overlapping sub problems
	c)	Local Optimal choice
	d)	The given problem can be reduced to the 3-SAT problem
8.	When a problem is solved using the top-down approach of dynamic programming, it usually …….	
	a)	Decreases both, the time complexity and the space complexity
	b)	Increases the time complexity and decreases the space complexity
	c)	Increases both, the time complexity and the space complexity
	d)	Increases the space complexity and decreases the time complexity
9.	Which of the following problems should be solved using dynamic programming?	
	a)	Long Integer Multiplication
	b)	Reliability problems
	c)	Spanning Tree
	d)	Matrix Multiplication
10.	When Minimax and Maximin criteria matches, then	
	a)	Fair game is exists
	b)	Unfair game is exists
	c)	Mixed strategy exists
	d)	Saddle point exists.
11.	The games with saddle points are:	
	a)	Probabilistic in nature
	b)	Normative in nature
	c)	Stochastic in nature
	d)	Deterministic in nature
12.	The size of the Payoff matrix of a game can be reduced by using the principle of	
	a)	Saddle point
	b)	Dominance
	c)	Game transpose
	d)	Game Inverse
13.	If orders are placed with size the EOQ, then the re-order costs component is	
	a)	Equal to the holding cost component
	b)	Greater than the holding cost component
	c)	Less than the holding cost component
	d)	Either greater or less than the holding cost component
14.	Which cost can vary with order quantity	
	a)	Unit cost only
	b)	Re-order cost
	c)	Holding cost only
	d)	All of these
15.	Annual demand for product costing Rs. 100 per piece is Rs. 900 Ordering cost per order is Rs. 100 and inventory holding cost is Rs.2 per unit per year. The economic lot size is	
	a)	200
	b)	300
	c)	400
	d)	500
16.	Consider the following 7 jobs J1, J2, J3, J4, J5, J6 and J7. They are processed on machines A and B in the order AB. The processing times on machine A for the 7 jobs are	

	[3, 12, 13, 4, 10, 11, 9] and the processing times on machine B for the 7 jobs are [8, 9, 8, 6, 13, 1, 3]. The optimum sequence of the jobs will have the first job going to machine A as -	
	a)	J1
	b)	J3
	c)	J7
	d)	J6
17.	Travelling Salesman Problem can be solved using: a-Simplex Method, b-Assignment Method, c-Dynamic Programming, d- Waiting line Method	
	a)	Only a
	b)	Only b
	c)	Only c
	d)	With b and d
18.	The Vogel approximation method is used for solving transportation problems as it gives -	
	a)	neither optimum nor feasible solution
	b)	both optimum and feasible solution
	c)	Optimum but infeasible solution
	d)	Feasible but non-optimum solution
19.	In the Dual Simplex Method, the Initial Table represents a solution -	
	a)	that is feasible but not Optimal
	b)	that is both feasible and optimal
	c)	that is optimal but not feasible
	d)	neither optimal nor feasible
20.	For a Maximization LPP, if a constraint has a surplus variable, the artificial variable added in the Dual Simplex Method will have -	
	a)	positive large co-efficient in the objective function
	b)	negative large co-efficient in the objective function
	c)	zero co-efficient in the objective function
	d)	artificial variables are not required in Dual Simplex Method
21.	If the primal LPP is Maximization, the dual of the dual for the primal LPP is	
	a)	Minimization
	b)	Maximization
	c)	Can be Minimization or Maximization
	d)	Infeasible
22.	The optimal solution in a linear programming model will	
	a)	always be a slack variable
	b)	always be a surplus variable
	c)	always occur at an extreme point
	d)	always be outside the feasible solution space
23.	A company produces two products: Product A and Product B. Each product must go through two processes. Each Product A produced requires 2 hours in Process 1 and 5 hours in Process 2. Each Product B produced requires 6 hours in Process 1 and 3 hours in Process 2. There are 80 hours of capacity available each week in each process. Each unit of Product A produced generates $6.00 in profit for the company. Each unit of Product B produced generates $9.00 in profit for the company. If A = the number of units of Product A to produce each week and B = number of units of Product B to produce each week, then the capacity constraint for Process 2 would be	
	a)	$5A + 3B \geq 80$
	b)	$6A + 3B \leq 80$
	c)	$5A + 3B \leq 80$
	d)	$5A + 3B < 80$

24.	A company produces two products: Product A and Product B. Each product must go through two processes. Each Product A produced requires 2 hours in Process 1 and 5 hours in Process 2. Each Product B produced requires 6 hours in Process 1 and 3 hours in Process 2. There are 80 hours of capacity available each week in each process. Each unit of Product A produced generates $6.00 in profit for the company. Each unit of Product B produced generates $9.00 in profit for the company. The optimal weekly profit for the company would be	
	a)	$125
	b)	$150
	c)	$156
	d)	$162
25.	The following transportation table shows the cost of shipping one unit from each source to each destination in the upper right hand corner of each cell, as well as the supply capacities and demand requirements:	

		Destination			
		Los Angeles	New York	Houston	Supply
Source	Memphis	5	4	2	6,000
	Boise	3	6	4	3,000
	Omaha	6	5	3	8,000
	Demand	5,000	7,500	4,500	17,000

The optimal solution is:

		Destination		
		Los Angeles	New York	Houston
Source	Memphis	**0**	**1500**	**4500**
	Boise	**3000**	**0**	**0**
	Omaha	**2000**	**6000**	**0**

The total amount shipped from Boise to Los Angeles is:

	a)	3
	b)	6
	c)	3,000
	d)	5,000

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University of Mumbai

Examination 2020 under cluster

Program: BE Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: ILO7018 and Course Name: Energy Audit and Management

Time: 1 hour Max. Marks: 50

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

Q1.	Choose the correct source of renewable energy.
Option A:	Natural gas
Option B:	Coal
Option C:	Tidal
Option D:	Nuclear
Q2.	Primary energy content of all fuels are generally expressed in terms of
Option A:	KW
Option B:	KVA
Option C:	KVAR
Option D:	Ton of oil equivalent (toe)
Q3.	Which of the following is a form of secondary energy?
Option A:	Steam
Option B:	Petrol
Option C:	Crude oil
Option D:	Coal
Q4.	The objective of Energy Management is to
Option A:	Minimize energy costs
Option B:	Minimize production
Option C:	Minimize duration of work
Option D:	Minimize manpower
Q5.	Energy Audit is the key to a systematic approach for decision-making in the area of
Option A:	Time management
Option B:	Water management.
Option C:	Pollution management
Option D:	energy management
Q6.	The verification, monitoring and analysis of use of energy and its report with recommendations is
Option A:	Energy monitoring

Option B:	Energy Conservation
Option C:	Energy Audit
Option D:	energy management
Q7.	Bench-mark in Energy Audit refers to:
Option A:	Trend of energy use
Option B:	Profit margin in energy business
Option C:	Reference point for managing energy in organization
Option D:	Energy Losses
Q8.	Energy Audit can be classified into the following types.
Option A:	Short Audit and Lengthy Audit
Option B:	Preliminary Audit and Secondary Audit
Option C:	Feasible Audit and non-feasible Audit
Option D:	Preliminary Audit, targeted energy audit and Detailed Audit
Q9.	For charging Maximum demand charges, maximum demand is measured in
Option A:	kWh
Option B:	kVA
Option C:	kVAr
Option D:	KV
Q10.	Power factor is ratio of
Option A:	Active power to apparent power
Option B:	Active power to reactive power
Option C:	Reactive power to apparent power
Option D:	Apparent power to active power
Q11.	Maximum demand controller is used to
Option A:	Switch off non-essential loads in a logical sequence
Option B:	Controls the power factor of the plant
Option C:	Switch off essential loads in a logical sequence
Option D:	Exceed the demand of the plant
Q12.	For which among the following consumers was penalty imposed for low power factor before 1st April, 2020
Option A:	Residential
Option B:	Industrial
Option C:	Agricultural
Option D:	BPL customers
Q13.	The basic functions of electronic ballast exclude one of the following:
Option A:	To ignite the lamp
Option B:	To reduce lumen output of the lamp
Option C:	To supply power to the lamp

Option D:	To stabilize the gas discharge
Q14.	Find the **odd** retrofit group for illumination from the following
Option A:	capacitor based control
Option B:	photo-sensors
Option C:	timer based control
Option D:	Occupancy sensors
Q15.	Motor loading calculation is based on
Option A:	Ideal load of motor
Option B:	actual operating load of motor
Option C:	90 % load of motor
Option D:	future load of the motor
Q16.	The motor input power Pi in pump can be measured by using
Option A:	Stroboscope
Option B:	Efficiency meter
Option C:	Portable power analyzer.
Option D:	Tachometer
Q17.	One Tons of refrigeration (TR) is equivalent to
Option A:	3420 Btu/h
Option B:	3024 kCal/h
Option C:	1200 thermal kW
Option D:	3024 kW/ton
Q18.	What does a LEED rating reflect?
Option A:	The cost of a building
Option B:	How green a building is
Option C:	The carbon footprint of a building's occupants
Option D:	The location of a building
Q19.	What is the name for the procedure used to clear buildings of contaminants before they are occupied?
Option A:	Flush-out
Option B:	Infiltration
Option C:	Ventilation
Option D:	Ex-filtration
Q20.	Which of the following trap has intermittent discharge for large load
Option A:	Inverted bucket
Option B:	Float
Option C:	Thermostatic
Option D:	Bimetallic

Q21.	Which is the best steam for an industrial process heating
Option A:	Dry saturated steam
Option B:	Wet steam
Option C:	Dry steam
Option D:	Superheated steam
Q22.	Which one is the most efficient equipment having Star rating
Option A:	2 star
Option B:	5 star
Option C:	4 star
Option D:	1 star
Q23.	Which one is NOT the reason of incomplete combustion
Option A:	Shortage of air
Option B:	Excess of fuel
Option C:	Poor distribution of fuel
Option D:	GCV of fuel
Q24.	The heat loss from the surface is expressed in
Option A:	Watt
Option B:	Watt/sq. meter-deg K
Option C:	Watt/sq. meter-deg C
Option D:	Joules
Q25.	Which is the purpose of insulation
Option A:	To facilitate free flow of heat
Option B:	Offers better process control by maintaining process temperature
Option C:	Reduce temperature of steam
Option D:	Refrigerated surface below due point

University of Mumbai

Examination 2020 under cluster

Program: BE____ _____ Engineering
Curriculum Scheme: Rev2016
Examination: Fourth Year Semester VII
Course Code: ILO7011 and Course Name: Product Life Cycle Management
Time: 1hour Max. Marks: 50

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

Q1.	The PLC describes the stages a new product goes through in the---
Option A:	Introduction phase
Option B:	Test Market
Option C:	Product Development
Option D:	Market Place
Q2.	In introduction stage of PLC sales grow slowly and
Option A:	Competition becomes tough
Option B:	Profit is Minimal
Option C:	More Investors needed
Option D:	Profit is Maximum
Q3.	Marketing Objective for the maturity stage of PLC is
Option A:	Maintain Brand Loyalty
Option B:	Stress Differentiation
Option C:	Harvest
Option D:	Deletion
Q4.	PLC stage where Competitors appears is
Option A:	Introduction phase
Option B:	Decline Phase

Option C:	Maturity
Option D:	Growth
Q5.	The stage when the cost of gaining new Buyers increases
Option A:	Growth
Option B:	Introduction
Option C:	Maturity
Option D:	Pre-Investment
Q6.	Color and size of the product, brand and packaging are considered as,
Option A:	Chemical features of product
Option B:	Physical features of product
Option C:	Product designing
Option D:	Product manufacture
Q7.	Developing a unique superior product with high quality, new features, and high value in use is _____ in new product development strategy.
Option A:	New product development process
Option B:	Typical reasons for failure
Option C:	Success factors
Option D:	Product concept
Q8.	Reason of product failure associated with its feature is due to,
Option A:	Good quality of product
Option B:	Good quantity of product
Option C:	Poor quality of product
Option D:	Poor quantity of product

Q9.	Which of the following is the first step of product development process?
Option A:	Production ramp-up
Option B:	Prototyping
Option C:	Product design
Option D:	Identification of customer needs
Q10.	In which of the following stage of Product Development Process, a detailed specification for the product development and pricing is established?
Option A:	Launch
Option B:	Testing
Option C:	Feature specification
Option D:	Idea screening
Q11.	Product data management is the activity of _____
Option A:	Managing product data.
Option B:	Invention data recording.
Option C:	Managing computer for data.
Option D:	Manipulation of data.
Q12.	A _____ is a high-level data model that shows, from the user viewpoint, the main entities and the relationships between them. It may also define the entities, and show their attributes and structure
Option A:	Physical data model
Option B:	Conceptual data model
Option C:	Entity-relationship model
Option D:	Logical data model

Q13.	A_____ is a very detailed model that is specific to the technology (e.g., database). It shows how the data will be physically stored and accessed.
Option A:	Logical data model
Option B:	Conceptual data model
Option C:	Physical data model
Option D:	Entity relationship model
Q14.	Virtual product development is the Practice of _____ and developing the products in entire 2D/3D environment
Option A:	prototyping
Option B:	producing
Option C:	protecting
Option D:	purchasing
Q15.	____ is not the component of virtual product development
Option A:	Virtual product design
Option B:	Virtual product simulation
Option C:	Virtual product manufacturing
Option D:	shop floor manufacturing
Q16.	_____is not a part of digital manufacturing
Option A:	virtual plant design
Option B:	virtual process planning
Option C:	virtual assembly visualization
Option D:	realistic manufacturing
Q17.	Sustainability Science is the study of the concepts of sustainable development and--------- ___ .

Option A:	Environmental Science
Option B:	General Science
Option C:	Social science
Option D:	Geo science
Q18.	UN decade of education for Sustainable development
Option A:	2002-11
Option B:	2003-12
Option C:	2004-13
Option D:	2005-14
Q19.	Number of sustainable development goals (SDGs) by UN are
Option A:	15
Option B:	16
Option C:	17
Option D:	18
Q20.	LCA stands for
Option A:	life cycle assessment
Option B:	life cycle analogy
Option C:	Life cycle assurance
Option D:	Life cycle Array
Q21.	Product is the ultimate objective of variety reduction
Option A:	Simplification
Option B:	Standardization
Option C:	Specialization
Option D:	Socialization

Q22.	An attractive idea must be developed into a
Option A:	Product idea
Option B:	product concept
Option C:	Test market
Option D:	Product image
Q23.	There are _____ basic components of an EDM/PDM system
Option A:	NINE
Option B:	SEVEN
Option C:	SIX
Option D:	FIVE
Q24.	Select suitable potential reasons why to implement PDM
Option A:	Data missing in hard drives, systems not responding, less data is stored
Option B:	Life cycle is managed, less systems available, data is sufficient
Option C:	Data is not centralized, CAD versions are not supported, messed up with data in mapping
Option D:	Data is available but extended facility is not existing.
Q25.	Select suitable reasons, so that PDM can lead to major benefits
Option A:	Huge investments may attract more profits
Option B:	Eases data availability, no data is missing, data storage is done
Option C:	Generates revenues, quality of product improves
Option D:	Reduces product development times by 25%, reduces cost by 15%.

University of Mumbai

Examination 2020 under cluster

Program: BE Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: **ILO7014** Course Name: **Design of Experiments**

Time: 1 hour Max. Marks: 50

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

Q1.	_____ is a vital part of the scientific (or engineering) method
Option A:	Evaluation
Option B:	Experimentation
Option C:	Estimation
Option D:	Authentication
Q2.	The general approach to planning and conducting the experiment is called the _____.
Option A:	Strategy of experimentation
Option B:	Method of experimentation
Option C:	Preparation of experimentation
Option D:	Outline of experimentation
Q3.	The basic principles of experimental design are____.
Option A:	Randomization, repetition, blocking
Option B:	Replication, blocking randomization
Option C:	Randomization, repetition, factorization
Option D:	Optimization, blocking, factorization
Q4.	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 most influential variables on the response y is called
Option A:	Process control
Option B:	Robust design
Option C:	Process characterization
Option D:	Process optimization

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Q5.	The strategy which fails to consider any possible interaction between the factors is called
Option A:	Multiple factors at a time (MFAT)
Option B:	one-factor-at-a-time (OFAT)
Option C:	Best guess
Option D:	Best fit
Q6.	Which of the following is a correct expression for a multiple linear regression model having three regressor variables?
Option A:	$y = x_1 + \beta_2 x_2 + \beta_3 x_3 + \epsilon$
Option B:	$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \epsilon$
Option C:	$y = \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3$
Option D:	$y = \beta_0 - \beta_1 x_1 + \beta_2 x_2 - \beta_3 x_3 + \epsilon$
Q7.	The _____is typically used to estimate the regression coefficients in a multiple linear regression model.
Option A:	Method of least squares
Option B:	Method of Jacobians
Option C:	Runge-Kutta Method
Option D:	Method of Moments
Q8.	In multiple linear regression problems, certain _____ about the model parameters are helpful in measuring the usefulness of the model.
Option A:	tests of hypotheses
Option B:	tests of uniqueness
Option C:	tests of convergence
Option D:	tests of divergence
$Q9.$	How many dependent variables does a two-way ANOVA have?
Option A:	Four
Option B:	Two
Option C:	Three
Option D:	One
Q10.	The analysis of variance will have _____ parts
Option A:	One
Option B:	Three
Option C:	Two
Option D:	Four

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Q11.	In Split spot design, Randomization is done in _____ stages
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q12.	In field experiments certain factors may require _____ plots than for others.
Option A:	Lesser
Option B:	Same
Option C:	Larger
Option D:	Small
Q13.	The key idea used for the successful implementation of fractional factorial design are _____.
Option A:	Sparsity of effects principle, randomization, repetition
Option B:	Sparsity of effects principle, projection property, sequential experimentation
Option C:	Sparsity of effects principle, projection property, randomization
Option D:	Sparsity of effects principle, projection property, randomization, repetition
Q14.	When we estimate A, B, and C with complementary one-half fraction, we are really estimating _____.
Option A:	(A X BC, B X AC, C X AB)
Option B:	(A + BC, B + AC, C + AB)
Option C:	(A – BC, B – AC, C – AB)
Option D:	(A – BC, B X AC, C + AB)
Q15.	ANOVA is a statistical method of comparing the _____ of several populations
Option A:	Variance
Option B:	Standard deviations
Option C:	Means
Option D:	Mean deviation
Q16.	In a factorial experiment _____.
Option A:	Testing one factor at a time
Option B:	Cannot estimate interactions
Option C:	all possible combination of factor levels are tested
Option D:	Levels are not tested
Q17.	Factorial designs allow us to study both _____ effects of the independent variables on the dependent(s).
Option A:	Main and interactive

Option B:	Rank order and correlational
Option C:	Symbiotic and dichotomous
Option D:	Dependent and independent
Q18.	What statistical procedure is used to assess the statistical significance of the main effects and the interaction(s) in a factorial design?
Option A:	Analysis of covariance
Option B:	Correlation
Option C:	T-test
Option D:	Analysis of variance
Q19.	Which of the following item is required to be considered in logistics of testing?
Option A:	a plan to acquire materials needed for various test combinations
Option B:	regression model
Option C:	Taguchi Orthogonal Array
Option D:	missing runs
Q20.	Which of the following is an example of a plan for identifying results of the experimental trials?
Option A:	conducting missing trials
Option B:	tagging parts with trial and repetition numbers
Option C:	confounding
Option D:	preparing data sheets
Q21.	Large 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
Q22.	Consistent results within a trial can be achieved with _____.
Option A:	good data sets
Option B:	bad data sets
Option C:	sample data sets
Option D:	conducting missing trials
Q23.	Which of the following is known as a structured approach for determining the ”best” combination of inputs to produce a product or service _____.
Option A:	Taguchi approach
Option B:	signal to noise ratio

Option C:	design of experiments
Option D:	linear regression
Q24.	The factors whose values are hard-to-control during normal process or use conditions are called as-
Option A:	control factors
Option B:	noise factors
Option C:	random factors
Option D:	robust factors
Q25.	Which of the following is not an example of common types of noise factors?
Option A:	environmental factors
Option B:	customer usage
Option C:	Degradation that occurs through usage and environmental exposure
Option D:	cake mixture ingredients