



Knowledge Resource & Relay Centre (KRRC)

AIKTC/KRRC/SoET/ACKN/QUES/2019-20/

Date: 02/08/2022School: SoET-CBCSBranch: ALL BRANCHESSEM: I

To,
Exam Controller,
AIKTC, New Panvel.

Dear Sir/Madam,

Received with thanks the following **Semester/Unit Test-I/Unit Test-II (Reg./ATKT)** question papers from your exam cell:

Sr. No.	Subject Name	Subject Code	Format		No. of Copies
			SC	HC	
1	Applied Mathematics- I	FEC101		✓	
2	Applied Physics- I	FEC102			
3	Applied Chemistry- I	FEC103		✓	
4	Engineering Mechanics	FEC104		✓	
5	Basic electrical & electronic Engineering	FEC105		✓	
6	Environmental studies	FEC106		✓	

Note: SC – Softcopy, HC - Hardcopy

(Shaheen Ansari)
Librarian, AIKTC

27/06/2022

Q.P code : 000 95155

University of Mumbai

Examination First Half of 2022 (Summer-2022)

Program: _First Year (All Branches) Engineering-SEM-I

Program No - 1T01821

Applied Mathematics-I

Paper Code(58601)

Time: 2Hour 30 minutes

Marks: 80

Q1. (20 Marks)	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
Q1.	If $y = \sin 2x \cos 3x$ then,
OptionA:	$y_n = \frac{1}{2} \left(5^n \sin \left(5x + \frac{n\pi}{2} \right) - \sin \left(x + \frac{n\pi}{2} \right) \right)$
OptionB:	$y_n = \frac{1}{2} \left(5^n \sin \left(5x + \frac{n\pi}{2} \right) + \sin \left(x + \frac{n\pi}{2} \right) \right)$
OptionC:	$y_n = \frac{1}{2} \left(5^n \sin \left(5x + \frac{n\pi}{2} \right) - \cos \left(x + \frac{n\pi}{2} \right) \right)$
OptionD:	$y_n = \frac{1}{2} \left(5^n \sin \left(5x + \frac{n\pi}{2} \right) + \cos \left(x + \frac{n\pi}{2} \right) \right)$
Q2.	Find the solution of following system of equations given by $2x-3y+7z=5$, $3x+y-3z=13$, $2x+19y-47z=32$.
Option A:	No Solution Exist
Option B:	$x=2, y=4, z=5$
Option C:	$x=2, y=-4, z=5$
Option D:	$x=-2, y=4, z=-5$
Q3:	Find the rank of matrix $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & -1 & -1 \\ 3 & 1 & 1 \end{bmatrix}$.
Option A:	Rank (A)=1
Option B:	Rank (A)=2
Option C:	Rank (A)=3
Option D:	Rank (A)=0

Q4.	The system of equations $2x-2y+z=tx$, $2x-3y+2z=ty$, $-x+2y=tz$, will possess a solution for which values of constant t .
Option A:	$t=1,3$
Option B:	$t=-1,3$
Option C:	$t=1,-3$
Option D:	$t=-1,-3$
Q5.	If $\tanh x = 1/2$, then find the value of x and $\sinh 2x$
Option A:	$x = 1/2 \log(3), \sinh 2x = 4/5$
Option B:	$x = -1/2 \log(3), \sinh 2x = 4/5$
Option C:	$x = 1/2 \log(3), \sinh 2x = 4/3$
Option D:	$x = -1/2 \log(3), \sinh 2x = 4/3$
Q6.	For the unitary matrix $A = \frac{1}{\sqrt{3}} \begin{bmatrix} 1 & 1+i \\ 1-i & -1 \end{bmatrix}$, find A^{-1}
Option A:	$\begin{bmatrix} 1 & 1+i \\ 1-i & -1 \end{bmatrix}$
Option B:	$\frac{1}{\sqrt{3}} \begin{bmatrix} 1 & 1 \\ 1 & -1 \end{bmatrix}$
Option C:	$\begin{bmatrix} 1 & 1+i \\ 1-i & -1 \end{bmatrix}$
Option D:	$\frac{1}{\sqrt{3}} \begin{bmatrix} 1 & 1+i \\ 1-i & -1 \end{bmatrix}$
Q7.	If $u(x, y) = \tan^{-1} \left(\frac{x^2 + y^2}{x - y} \right)$, then find the value of $I = x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$.
Option A:	$I = \frac{1}{4} \sin u$
Option B:	$I = \frac{1}{4} \cos u$
Option C:	$I = \frac{1}{2} \sin 2u$
Option D:	$I = \frac{1}{4} \sin 2u$
Q8.	Simplify $\frac{(\cos 3\theta + i \sin 3\theta)(\cos \theta - i \sin \theta)}{(\cos 5\theta - i \sin 5\theta)}$
Option A:	$(\cos 7\theta + i \sin 7\theta)$
Option B:	$(\cos 3\theta + i \sin 3\theta)$

Option C:	$(\cos 5\theta + i \sin 5\theta)$
Option D:	$(\cos \theta + i \sin \theta)$
Q9.	Find the maxima of $f = x^2 + y^2$, subjected to the condition $x + y = 2$
Option A:	2
Option B:	4
Option C:	5
Option D:	8
Q10.	Find the value of $\log(\sqrt{3} - i)$
Option A:	$\log 4 + i \frac{\pi}{6}$
Option B:	$\log 2 + i \frac{\pi}{6}$
Option C:	$\log 4 - i \frac{\pi}{6}$
Option D:	$\log 2 - i \frac{\pi}{6}$

Q2. (20 Marks)	Solve any Four out of Six (5 marks each)
A	If $u = \log \tan\left(\frac{\pi}{4} + \frac{\theta}{2}\right)$, Prove that i) $\text{Cosh } u = \sec \theta$, ii) $\text{Sin } u = \tan \theta$
B	If $u = \log(\tan x + \tan y + \tan z)$ prove that $\text{Sin } 2x \frac{\partial u}{\partial x} + \text{Sin } 2y \frac{\partial u}{\partial y} + \text{Sin } 2z \frac{\partial u}{\partial z} = 2$
C	Show that $\text{Sin } x \text{Sin } h x = x^2 - 8 \frac{x^6}{6!} + \dots$
D	Prove that $\log(1 + e^{i\theta}) = \log\left(2 \cos \frac{\theta}{2}\right) + i \frac{\theta}{2}$
E	Evaluate $\lim_{x \rightarrow 0} \frac{\text{Sin } x \sin^{-1} x - x^2}{x^6}$
F	Find the Rank of the following matrix by reducing to Normal Form $A = \begin{bmatrix} 1 & -1 & 3 & 6 \\ 1 & 3 & -3 & -4 \\ 5 & 3 & 3 & 11 \end{bmatrix}$

Q3. (20 Marks)	Solve any Four out of Six (5 marks each)
A	Show that $\frac{\sin 5\theta}{\sin \theta} = 16\cos^4\theta - 12\cos^2\theta + 1$
B	Test for consistency the following system & solve them if consistent $\begin{aligned}x_1 - 2x_2 + x_3 - x_4 &= 2 \\x_1 + 2x_2 + 2x_4 &= 1 \\4x_2 - x_3 + 3x_4 &= -1\end{aligned}$
C	Examine the function $u = x^3y^2(12 - 3x - 4y)$ For extreme values.
D	If $y^{1/m} + y^{-1/m} = x$ prove that $(x^2 - 1)y_{n+2} + (2n + 1)xy_{n+1} + (n^2 - m^2)y_n = 0$
E	Using Newton-Raphson method find the root of equation $2x^3 - 3x + 4 = 0$ lying between -2 and -1 correct to four places of decimals.
F	If $u = f\left(\frac{y-x}{xy}, \frac{z-x}{xz}\right)$, then show that $x^2 \frac{\partial u}{\partial x} + y^2 \frac{\partial u}{\partial y} + z^2 \frac{\partial u}{\partial z} = 0$

Q4. (20 Marks)	Solve any Four out of Six (5 marks each)
A	Show that minimum value of $u = xy + a^3\left(\frac{1}{x} + \frac{1}{y}\right)$ is $3a^2$.
B	Find the n^{th} derivative of $\frac{x}{1+3x+2x^2}$
C	Solve $x^5 = 1 + i$ and find the continued product of the roots.
D	Apply Gauss elimination method to solve the equations $x+3y-2z=5, 2x+y-3z=1, 3x+2y-z=6$.
E	If $u = \tan^{-1}\left(\frac{x^2+y^2}{x-y}\right)$ P.T $x^2 \frac{\partial^2 u}{\partial x^2} + 2xy \frac{\partial^2 u}{\partial x \partial y} + y^2 \frac{\partial^2 u}{\partial y^2} = -2\sin^3 u \cos u$
F	For what value of λ the equations $x + 2y + z = 3, x + y + z = \lambda, 3x + y + 3z = \lambda^2$ have a solution and solve them completely in each case.

04/07/2022

QP code :- 00095690

University of Mumbai
Curriculum Scheme: Rev-2016
All Programs

Examination: FE Semester I
Course Code: FEC103 Course Name: Applied Chemistry I

Time: 2 hours

Max. Marks: 60

NOTE: All questions are compulsory

Atomic weights: - H=1, C= 12, O=16, N=14, S=32, Ca= 40, Mg=24, K= 39, Si= 28

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry 2 marks each.
1.	Which of the following is the eutectic composition of Ag-Pb system?
Option A:	2.6% Pb + 97.4% Ag
Option B:	26% Pb + 74 %Ag
Option C:	74 %Pb + 26% Ag
Option D:	97.4% Pb + 2.6% Ag
2.	Which of the following dissolved salt does not contribute to any kind of hardness to the water?
Option A:	KCl
Option B:	Mg(HCO ₃) ₂
Option C:	CaCl ₂
Option D:	Mg(NO ₃) ₂
3.	The chemical reaction between which of the following can give Kevlar Polymer?
Option A:	Hexamethylenediamine + adipic acid
Option B:	Ethylene glycol + Adipic acid
Option C:	Terephthalic acid + p-Amino aniline
Option D:	1,4 phenylenediamine + terephthaloyl chloride
4.	Extrusion molding cannot be used for manufacture of which of the following?
Option A:	Telephone
Option B:	Buckets
Option C:	Pipes
Option D:	Tubes
5.	Which of the following is not a thermoplast?
Option A:	Polyethylene
Option B:	Polyvinyl chloride
Option C:	Bakelite
Option D:	PMMA
6.	In Reverse Osmosis the flow of solvent is through semi permeable membrane from
Option A:	Higher concentration to lower concentration solution
Option B:	Lower concentration to higher concentration solution
Option C:	Equal concentration of solutions
Option D:	Independent of concentration

Q2	Solve any 4 questions out of 6	4 marks each
A	Draw a neat diagram and explain the ion exchange process of demineralization of hard water	
B	Draw a neat diagram and explain compression moulding	
C	Explain phase diagram for one component system	
D	Explain Thin film Lubrication mechanism	
E	a) A water sample contains $\text{Ca}(\text{HCO}_3)_2 = 32.4\text{mg/L}$ $\text{Mg}(\text{HCO}_3)_2 = 29.2\text{ mg/L}$ $\text{CaSO}_4 = 13.6\text{ mg/L}$ Calculate Temporary, Permanent and Total Hardness of the given sample of the water	
F	Explain Vulcanization of rubber	
Q3	Solve any 4 questions out of 6	4 marks each
A	What is the function of plasticizers ,fillers and catalyst in compounding of plastics	
B	Give the preparation, properties and uses of PMMA	
C	Write a brief note on Electro dialysis process of purification of water	
D	Give the advantages and limitations of phase rule	
E	A 50 ml water sample contain 840 ppm of dissolved oxygen. After 5 days the dissolved oxygen value becomes 230 ppm after the sample has been diluted to 80 ml .Calculate the BOD of the water sample.	
F	Explain :- 1) viscosity and viscosity index 2) flash point and fire point	
Q4	Solve any 4 questions out of 6	4 marks each
A	Write four points of comparison between COD and BOD.	
B	What are factors that affect glass transition temperature?	
C	State Gibbs phase rule and explain the terms involved in it by giving two examples.	
D	Give characteristic of good paint	
E	Give comparison between thermoplastic and thermosetting plastic	
F	Explain Setting and hardening of cement	

29/06/2022

Q.P code :- 00095566

University of Mumbai

Curriculum Scheme: Rev2016

All Programs

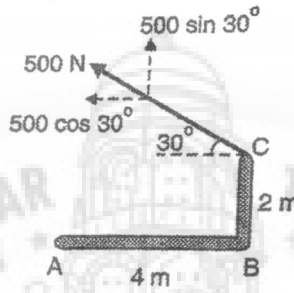
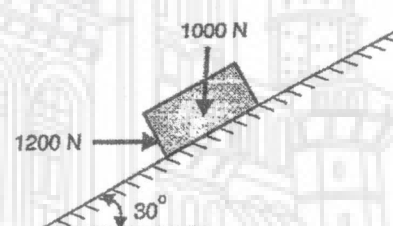
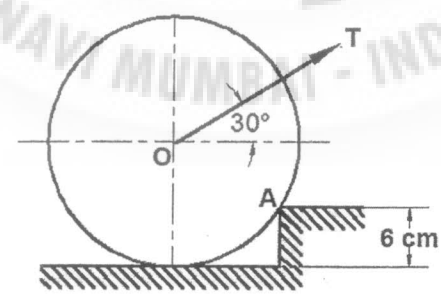
Examination: FE Semester I _FH2022

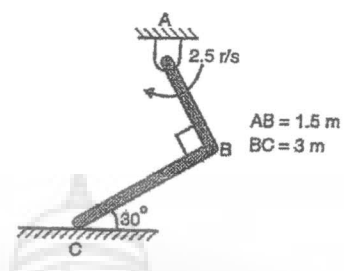
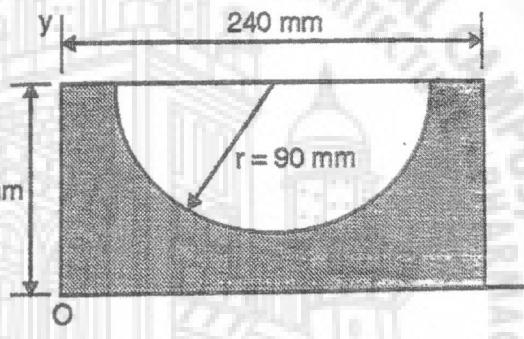
Course Code: FEC104
Time: 2 hour 30 minuteCourse Name: ENGINEERING MECHANICS
Max. Marks: 80

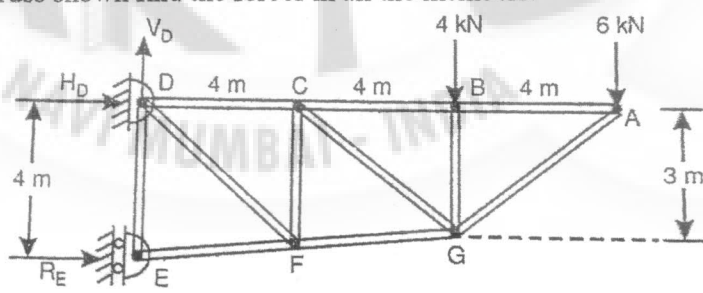
R2016_FE_I_FEC104_QP2

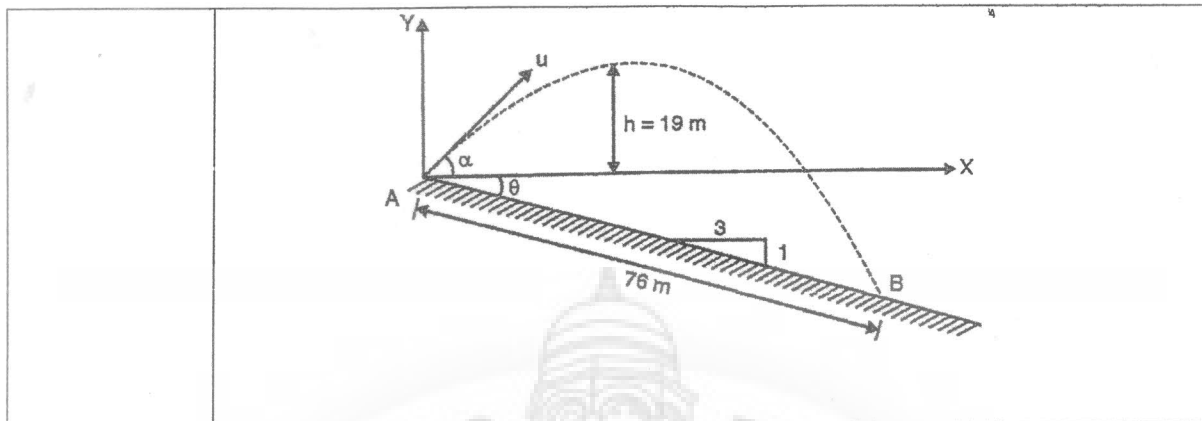
Q 1	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks [20]
1	Two parallel equal forces acting in the opposite direction
Option A:	balance each other
Option B:	constitute a moment
Option C:	constitute a force couple system
Option D:	constitute a moment of the couple
2.	Ratio of limiting friction and normal reaction is _____.
Option A:	Coefficient of friction
Option B:	Angle of friction
Option C:	Sliding friction
Option D:	Coefficient of restitution
3.	Pushing or pulling of a vehicle with same magnitude of force along the same line of action is called as _____.
Option A:	Equilibrium
Option B:	Principle of transmissibility
Option C:	Newtons III law
Option D:	Newtons II law
4	The area under the speed -time graph gives the _____.
Option A:	Distance travelled by the particle
Option B:	Velocity of the particle
Option C:	Acceleration of the particle
Option D:	Momentum of particle
5.	Which of the following statements describes the resultant of two forces?
Option A:	Force that maintains the system in equilibrium
Option B:	Force that has the highest magnitude in the system
Option C:	Force that has the same effect as the two forces
Option D:	Force that has the same effect as one force

6.	Varignon's theorem is used to find _____
Option A:	direction of resultant force
Option B:	location of resultant force
Option C:	magnitude of resultant force
Option D:	nature of resultant force
7.	If an object is dropped from the top of a building and it reaches the ground at $t = 4$ s, then the height of the building is (ignoring air resistance) ($g = 9.8 \text{ m/s}^2$)
Option A:	77.3 m
Option B:	80.5 m
Option C:	79.2 m
Option D:	78.4 m
8.	D' Alembert's principle is used for
Option A:	Reducing the problem of kinetics to equivalent statics problem
Option B:	solving kinematic problems
Option C:	Stability of floating bodies
Option D:	Designing safe structures
9.	What is a free-body diagram?
Option A:	It's a sketch of a moving body that shows internal forces of the body and reaction forces
Option B:	It's a sketch of an undisturbed body that shows external forces of the body
Option C:	It's a sketch of an isolated body that shows external forces of the body and reaction forces
Option D:	It's a sketch of a body in motion that shows bending forces of the body
10.	Which of the following doesn't affect frictional force?
Option A:	Surface roughness
Option B:	Reaction of surface
Option C:	Area of contact
Option D:	Force tending cause motion

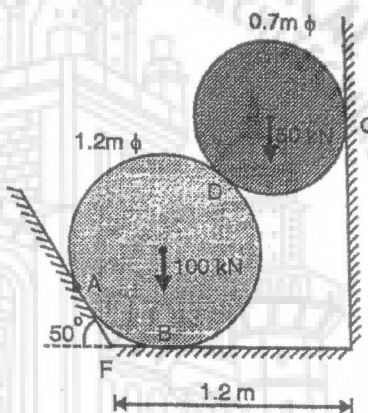
Q 2 20 marks	Solve any four questions out of six	5 marks each
a	Replace the following force system by a force couple system (i) at point A. (ii) at point B	
b	If a horizontal force of 1200 N is applied to block of 1000 N, then block will be held in equilibrium or slide down or move up? Take $\mu = 0.3$	
c	A heavy roller with radius 14 cm and weighing 2000 N is pulled to the right by a pulling force T acting at an angle 30° with respect to horizontal as shown in figure. A 6 cm step stops the rolling motion of the roller. Find the magnitude of force T, to just start the motion of the roller.	

<p>d</p>	<p>At the instant shown in the figure, the rod AB is rotating clockwise at 2.5 rad/sec. If the end C of the rod BC is free to move on a horizontal surface find the angular velocity of rod BC and the velocity of its end point C.</p> 
<p>e</p>	<p>A particle moves in a circular path of 9m radius, calculate after 4 seconds the particles total acceleration and distance travelled if speed is constant at 3 m/s.</p>
<p>f</p>	<p>Locate the centroid of the shaded area w.r.t 'O'</p> 

<p>Q 3 20 marks</p>	<p>Solve any two questions out of three 10 marks each</p>
<p>a</p>	<p>For the truss shown find the forces in all the members.</p> 
<p>b</p>	<p>A ball rebounds at A and strikes inclined plane at point B at a distance of 76 m as shown in fig. If the ball rises to a maximum height $h = 19\text{ m}$ above the point of projection, compute the initial velocity and the angle of projection α.</p>

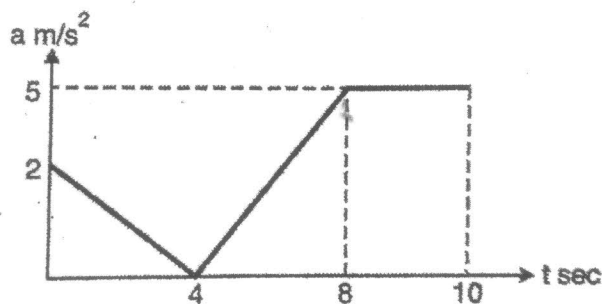


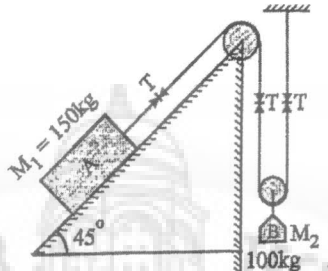
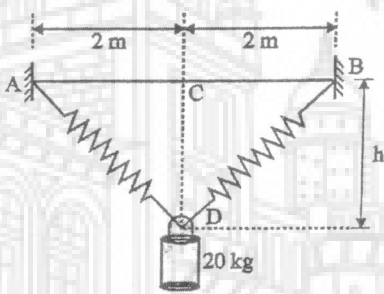
c Two cylinders are kept in a channel as shown in fig. Determine the reactions at all the contact points A, B, C and D. Assume all surfaces smooth

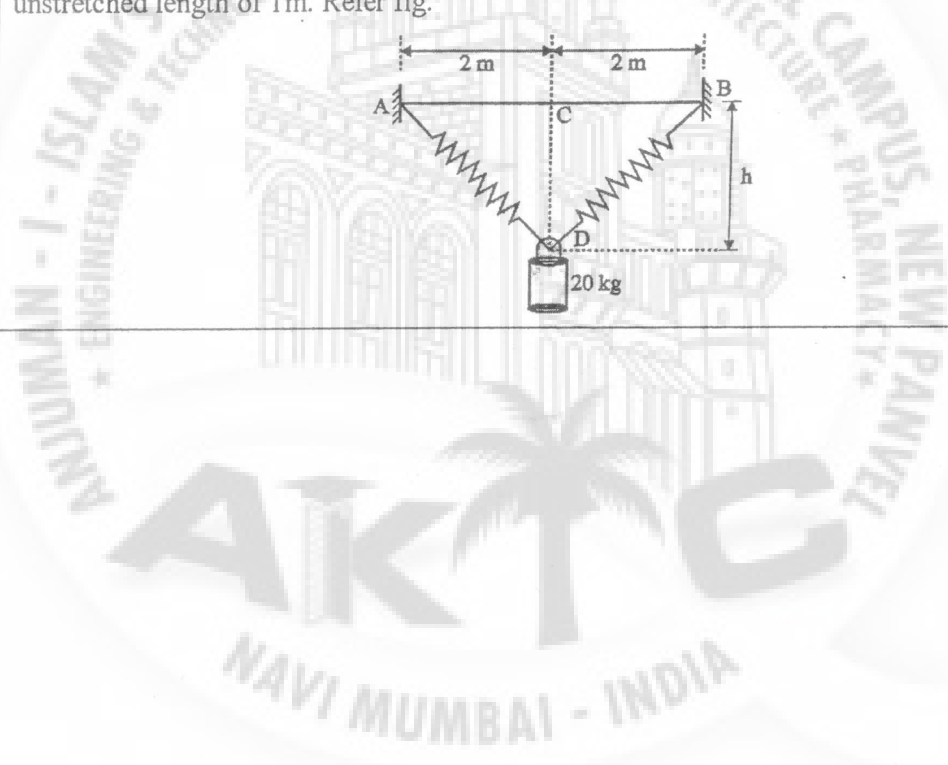


Q 4 (A) Solve any two questions out of three 5 marks each
 10 Marks

- 1 Three concurrent forces $P = 150\text{ N}$, $Q = 250\text{ N}$, and $S = 300\text{ N}$ are acting at 120° with each other. Determine their resultant force magnitude and direction with respect to P . What is their equilibrant?
- 2 Force 5 kN is acting along AB where $A(0,0,-1)\text{m}$ and $B(5,-2,-4)\text{m}$. Another force 8 kN is acting along BC where $C(3,3,4)\text{m}$, Find resultant of two forces and find moment of resultant force about a point $D(0,3,-2)$
- 3 A particle is projected with an initial velocity of 2 m/s along a straight line. The relation between acceleration and time is given in the diagram. Draw $v-t$ diagram.



Q 4 (B) 10 marks	Solve any one question out of two	10 marks each
1	<p>A block of mass $M_1 = 150 \text{ kg}$ resting on inclined plane is connected by a string with another block of mass $M_2 = 100 \text{ kg}$ as shown in fig. If $\mu = 0.2$ find acceleration of A and tension in the string.</p>	
2	<p>If the 20 kg cylinder is released from rest at $h = 0$, determine the required stiffness k of each spring so that its motion is momentarily stops when $h = 0.5 \text{ m}$. Each spring has unstretched length of 1m. Refer fig.</p>	



95557

01/7/2022.

University of Mumbai
Examinations Summer 2022
 Curriculum Scheme: Revised 2016

Examination: First Year Semester I (All Branches)

Course Code: 58603/20189 and Course Name: Basic Electrical Engg.

Time: 2 hour 30 minutes

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The sinusoidal current reaches 15 A first time at $t=3.375$ ms and second time at $t=9.125$ ms. Find maximum value of current.
Option A:	10 A
Option B:	15 A
Option C:	20 A
Option D:	30 A
2.	The sinusoidal current reaches 15 A first time at $t=3.375$ ms and second time at $t=9.125$ ms. Find frequency of current waveform
Option A:	30 Hz
Option B:	40 Hz
Option C:	50 Hz
Option D:	60 Hz
3.	If $1\mu\text{F}$, $2\mu\text{F}$, $4\mu\text{F}$, $6\mu\text{F}$ are connected in parallel, which capacitor will carry maximum current. Supply frequency is constant.
Option A:	$1\mu\text{F}$
Option B:	$2\mu\text{F}$
Option C:	$4\mu\text{F}$
Option D:	$6\mu\text{F}$
4.	If $1\mu\text{F}$, $2\mu\text{F}$, $4\mu\text{F}$, $6\mu\text{F}$ are connected in series, which capacitor will have maximum voltage across it?. Supply frequency is constant.
Option A:	$1\mu\text{F}$
Option B:	$2\mu\text{F}$
Option C:	$4\mu\text{F}$
Option D:	$6\mu\text{F}$
5.	A circuit consists of resistance R and capacitive reactance of $60\ \Omega$ connected in series. Determine the value of R for which p.f of the circuit is 0.8
Option A:	$50\ \Omega$
Option B:	$60\ \Omega$
Option C:	$70\ \Omega$
Option D:	$80\ \Omega$
6.	A transformer has full load copper loss of 64 W, what will be copper loss at half load
Option A:	128 W
Option B:	64 W

Option C:	32 W
Option D:	16 W
7.	If 2 Watt meters are used for 3 phase power measurement, if pf is unity, the relation between two Watt meters reading (W_1 & W_2) is
Option A:	$W_1 = W_2$
Option B:	$W_1 > W_2$
Option C:	$W_1 < W_2$
Option D:	$W_1 = -W_2$
8.	According to Thevenin's theorem, any bilateral network can be replaced by a network with—
Option A:	An independent current source in parallel to the equivalent resistance
Option B:	An independent voltage source in series with the equivalent resistance
Option C:	An independent voltage source in parallel to the resistance
Option D:	An independent current source in series to the equivalent resistance
9.	A circuit contains two un-equal resistances in parallel
Option A:	current is same in both
Option B:	large current flows in larger resistance
Option C:	potential difference across each is same
Option D:	smaller resistance carry smaller current
10.	Three resistance 14.5Ω , 25.5Ω and 60Ω are connected in series across 200 V. What will be the voltage drop across 14.5Ω
Option A:	29 V
Option B:	13.5 V
Option C:	14 V
Option D:	18 V

Q2	
A	Solve any Two 5 marks each
i.	In a particular R-L circuit voltage of 10 V at 25 Hz produces 100 mA, while the same voltage at 75 Hz produces 60 mA. Draw the circuit diagram and insert values of the constants
ii.	Two voltage sources have equal emf's and a phase difference α , when they are connected in series, the voltage is 200 V. when one source is reversed, the voltage is 15 V. Find their emf's and phase angle α
iii.	A 50 KVA, single phase transformer has an efficiency of 98 % at full load, 0.8 pf and 97 % at half full load, 0.8 pf. Determine the full load copper loss and iron loss.
B	Solve any One 10 marks each
i.	Explain how two watt-meters can be used to measure power and power factor in a three phase balanced delta connected load lagging pf.

ii.	
	Find current through 22Ω by mesh analysis

Q3	Solve any Two Questions out of Three	10 marks each
A	<p>Find current through 4Ω by Thevenin's theorem</p>	
B	A 600 KVA, single phase transformer has an efficiency of 92 % at both full load and half load at unity pf. Determine the efficiency at 75% of full load, 0.9 pf lagging	
C	Coil A takes 2 Amps at a power factor of 0.8 lagging with an applied voltage of 10 Volts. A second coil B takes 2 Amps with a power factor of 0.7 lagging with an applied voltage of 5 Volts. What voltage will be required to produce a total current of 2 Amps With A and B in parallel	

Q4	Solve any Two Questions out of Three	10 marks each
A	An equipment consumes 2 KW when connected across a 110 V, 100 Hz supply and takes a lagging current of 25 A. If a capacitor is connected in parallel with equipment to make the pf unity, Determine the value of capacitance	
B	A source of 1MHz is connected across series R L C circuit. The capacitor 'c' is variable. When capacitor is 500 pf. maximum current is passed through circuit. For 600 pf. The current is half of the previous case. Calculate parameters R , L , Bandwidth & Quality factor at resonance.	
C	A 100Ω resistor is connected in series with a choke coil when a 400 V , 50 Hz supply is applied to this combination the voltage across the resistance and the choke coil are 200 V and 300 V respectively. Find the power consumed by the choke coil. Also calculate the power factor of choke coil and power factor of the circuit	

NOTE to the Question Paper Setter:

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry 2 marks each.
1.	What type of food chain is it? dead animals → blowfly maggot → maggots → frog → snake
Option A:	Detrital food chain
Option B:	Grazing food chain
Option C:	Parasitic food chain
Option D:	Decomposer food chain
2.	Which of the following requires maximum energy
Option A:	Decomposer
Option B:	Consumer
Option C:	Primary consumer
Option D:	Secondary consumer
3.	Maximum depletion of Ozone occurs on
Option A:	Equator
Option B:	North Pole
Option C:	South Pole
Option D:	Tropics
4.	Energy-----in an Ecosystem
Option A:	Flows
Option B:	is Released
Option C:	is absorbed
Option D:	is penetrated
5.	Which of the following is the chief component formed in Photochemical smog?
Option A:	Carbon dioxide
Option B:	Peroxyacylnitrate
Option C:	Chlorofluorocarbon
Option D:	Sulphur dioxide
6.	Which of the following is negative impact of dams?
Option A:	decreased rainfall
Option B:	habitat destruction
Option C:	increased atmospheric carbon dioxide and CFCs
Option D:	acid deposition
Q2	(A) Answer 2 questions out of 3(4 marks each) 08 marks
1	Write important functions of central pollution control Board (CPCB).
2	What is ecological succession?
3	What is carbon foot print?
	(B) Answer 1 questions out of 2 (8 marks each)08 marks

1	What is Nuclear Pollution? What are its sources and effects?
2	Explain principle, construction and working of venturi scrubber.
Q.3	(A) Answer 2 questions out of 3(4 marks each)08 marks
1	What is meant by water pollution?
2	What are the limitations of conventional sources of energy?
3	Explain the concept of green building.
	(B) Answer 1 questions out of 2 (8 marks each)08 marks
1	What is hydropower? Draw a suitable diagram and explain how hydropower is generated.
2	Explain how resource utilization as per carrying capacity is an important control measure for sustainable development.
Q.4	(A) Answer 2 questions out of 3(4 marks each)08 marks
1	Explain depleting nature of forests: causes, effects and prevention.
2	Explain the concept of socio-environmental aspects of sustainable development.
3	What are '3R control measures'?
	(B) Answer 1 questions out of 2 (8 marks each)08 marks
1	What is solid waste? Explain solid waste management by incineration.
2	Explain social and economic aspects of sustainable development.

