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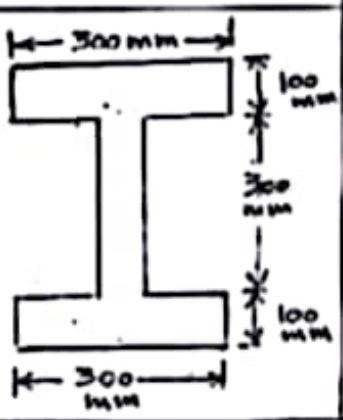
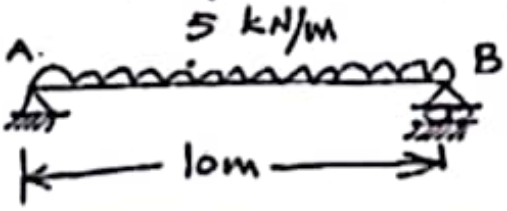
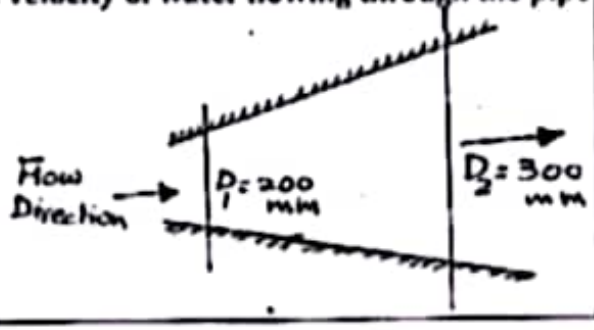
QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – FIRST YEAR, 2023 OF 22-BATCH, B.E (EL/ACE)

SUBJECT: APPLIED MECHANICS

Dated: 05.05.2023 | Maximum Marks: 60 | Time Allowed: 3 Hours.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.	QUESTION	CLO	Taxonomy Level	PLO	Marks
Q. 01	An I-section, symmetric about both axis as shown in figure, has the following dimensions in mm units : Bottom flange = 300 × 100 Top flange = 300 × 100 Web = 300 × 50 Determine mathematically the position of centre of gravity of the section. 	1	C2	1	12
Q. 02	Define any three of followings: 1. Free vibration and vibration energy 2. Conditions of equilibrium 3. Centre of gravity 4. Main features of important types of pumps and hydraulic turbines 5. Transmission of power by belts, ropes and gears.	1	C2	1	12
Q. 03	A case of simply supporetd beam of uniformly distributed load of 5 kN/m is acting over span of 10 m. Calculate support reactions at both ends A & B as shown in figure. Also Draw shear force and Bending moment diagram neatly. 	2	C3	1	12
Q. 04	An overhead transmission line has to proposed and built at Sector A, Quaid-e-Awam University of Engineering, Science and & Technology, Nawabshah for a span of 220 m, the conductor weighing 804 kg/km. Calculate the maximum sag if the ultimate tensile strength of the conductor is 5,758 kg. Assume a safety factor of 2.	2	C3	1	12
Q. 05	The diameters of a pipe at the sections 1-1and 2-2 are 200 mm and 300 mm respectively. If the velocity of water flowing through the pipe a section 1-1 is 4m/s, find: (i) Discharge through the pipe, and (ii) Velocity of water at section 2-2 	2	C3	1	12

Good Luck

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – FIRST YEAR, 2023 OF 22-BATCH, B.E (EL/ACE)

SUBJECT: APPLIED CALCULUS

d: 11.05.2023 Maximum Marks: 60 Time Allowed: 3 Hours.

E: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

	QUESTION	CLO	Taxonomy Level	
a)	Find limits of the following by relating it to a derivative. i) $\lim_{h\to 0}\frac{1-3\sqrt{1+h}}{h}$ ii) $\lim_{x\to 0}\frac{(1+2x)^{10}-1}{x}$ iii) $\lim_{x\to 0}\frac{\sqrt{\cos x}-1}{x}$	1	C1	
b)	For the function $f(x)=\begin{cases} ax+b, & x>0 \\ 1-x+x^2, & x\le 0, \end{cases}$ a and b constants, i) find all values of a and b for which the function will be continuous; ii) find all values of a and b for which the function will be differentiable.	1	C1	
c)	Where are the following functions discontinuous? i) $\sec x$ ii) $\frac{1+x^2}{1-x^2}$ iii) $\frac{d}{dx}\lvert x\rvert$	1	C1	
a)	Evaluate each of the following. i) $\frac{d}{dt}\left(\frac{3t}{\ln t}\right)\Big\rvert_{e^2}$ ii) $\lim_{u\to 0}\frac{3u}{\tan 2u}$ iii) $\int\frac{x-4}{(x+1)(x^2+4)}dx$ iv) $\int_0^1\frac{dx}{(4+x^3)^{\frac{1}{2}}}$	1	C1	
b)	Prove that the following with the help of linear approximations at $x\approx 0$: i) $\sin x\approx x$ ii) $\cos x\approx 1$ iii) $e^x\approx 1+x$ iv) $\ln(1+x)\approx x$ v) $(1+x)^r\approx 1+rx$	1	C1	
c)	Derive the formula for quadratic approximation, also find the quadratic approximation of the following nonlinear functions at $x\approx 0$; i) $f(x)=\frac{e^{-2x}}{\sqrt{1+x}}$ ii) $f(x)=\ln(x+1)$ ii) $f(x)=(1+2x)^{10}$	3	C3	
a)	Derive a reduction formula relating $\int_0^1 x^{2n}e^{-x^2}dx$ to $\int_0^1 x^{2n-2}e^{-x^2}dx$	2	C2	
b)	Find the volume of the solid obtained by rotating about the y-axis (that's the y-axis) the area under the graph of $y=e^x$ and over the interval $0\le x\le 1$	2	C2	
a)	Let $x(t)=\cos^3 t$, $y(t)=\sin^3 t$, $0\le t\le \pi/2$ be a parametric representation of a curve. Compute: i) the arclength of the curve. ii) the surface area formed by rotating the curve around the x-axis.	3	C2	
b)	A circular metal disc of radius a has a non-constant density δ (units: gms/cm^2); the density at a pomt P on the disc is given by $\delta=r^2$, where r is the distance of the point from the center of the disc. Set up and evaluate a definite integral giving the total mass of the disc.	3	C2	
a)	Determine whether the following functions are goes to Divergence or Convergence with respect to their given limits i) $\int_0^\infty\frac{dx}{\sqrt{x^3+1}}$ ii) $\int_0^\infty e^{-x^2}dx$ iii) $\int_3^\infty\frac{(x+10)dx}{x^2+1}$	3	C2	
b)	Explain Taylor's Series and Taylor's Formula. Also, Find the Taylor series for $\tan^{-1}x$ and e^x around $x=0$ by using term-by-term differentiation or integration on the appropriate geometric series. Give enough terms to make the pattern clear.	3	C2	

The End

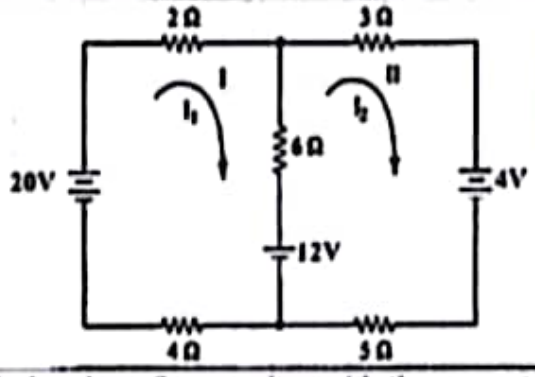
QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – FIRST YEAR, 2023 OF 22-BATCH, B.E (EUACE)

SUBJECT: APPLIED PHYSICS

Dated: 08.05.2023 Maximum Marks: 60 Time Allowed: 3 Hours

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No		CLO	Taxonomy Level	PLO	Mark
01(a)	What do you know about open short circuit and short circuit? What are their consequences in electric circuit?	1	C1	1	04
01(b)	What is the effect of temperature on resistance? Describe positive temperature coefficient, negative temperature coefficient and temperature coefficient (constant) of the resistance.	1	C1	1	04
01(c)	A 100 V lamp has a resistance of 230 Ω. Find the current taken by the lamp and its power rating is watts. Also, calculate the energy it will consume in 75 minutes.	3	C3	2	04
02(a)	Explain Kirchoff's Current Law (KCL) and Kirchoff's Voltage Law (KVL). What are the applications of KCL and KVL in an electric circuit?	1	C1	1	06
02(b)	Calculate the current flowing through the resistors in the circuit shown in the following figure. 	3	C3	2	06
03(a)	Explain charging and discharging of a capacitor with the support of relevant circuits, graphs and equations.	1	C1	1	06
03(b)	What is the charge on a 4μF capacitor charged by 12 V for a time t=RC, consider R=1.4 kΩ. Calculate the time constant τ? Also, describe mathematically, when there will be maximum current and zero current while discharging the above capacitor? Present your results with the help of appropriate graphs.	3	C3	2	06
04(a)	Define the following: a. Electromagnet b. Magnetic flux c. Reluctance d. Magnetic field strength	1	C1	1	04
04(b)	What do you understand by the phenomenon of 'Force on a current carrying conductor when placed in a magnetic field'; what are the factors upon which the magnitude of the force depends? Also, explain the applications of the above mentioned phenomenon.	2	C2	1	04
04(c)	Explain Faraday's laws of electromagnetic induction. What are the applications of electromagnetic induction in the field of electrical engineering?	2	C2	1	04
05(a)	With the help of suitable waveforms explain the following: i. Cycle ii. Time Period (T) iii. Peak value iv. Instantaneous value v. Pulsating DC	1	C1	1	06
05(b)	i. The frequency of a typical AC system is 60 Hz. How much time will be required to complete ten cycles? ii. The supply voltage of a single phase AC system (pure sinusoidal) is measured as 215 V (r.m.s), what would be the peak value and peak-to-peak value?	3	C3	2	06

Wish you good luck.

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QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – FIRST YEAR 2023 OF 22-BATCH, B.E (EL/AC

SUBJECT: COMPUTING FUNDAMENTALS

Dated: 15.05.2023 Maximum Marks: 30 Time Allowed: 02 Ho

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.		QUESTION	CLO	Taxonomy Level	PLO	Ma
Q. 01	(a)	Discuss the following terms with suitable examples: 1. Process Management 2. Main Memory Management 3. Database Base Management System	2	C1	2	0
	(b)	Briefly define Computer Information System (IS) with its types.	2	C1	2	0
Q. 02	(a)	Identify the key differences between following terms: 1. Local Area Network and Wide Area Network 2. Star Topology and Bus Topology 3. Wired and Wireless Networks	2	C2	2	0
	(b)	Briefly describe following Security threats: 1. Virus 2. Worms	2	C2	2	0
Q. 03	(a)	Explain the features of Python Programming Language. Also define its data types, variables and operators.	3	C2	3	0
	(b)	State the difference between Algorithm and Flowchart.	3	C2	3	0
	(c)	Explain with the help of Python Code decision making statements.	3	C2	3	0

Good Luck

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – FIRST YEAR 2023 OF 22-BATCH, B.E (EL/ACE)

SUBJECT: FUNCTIONAL ENGLISH

Dated: 18.05.2023 Maximum Marks: 30 Time Allowed: 02 Hours

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.	QUESTION	CLOs	Taxonomy Level	PLOs	Mark
. 01	Write paragraphs on any TWO of the following topics: (word limit: 40-50). 1. Reading hobby. 2. Morning walk. 3. Rainy day.	2	C2	2	10
. 02	Describe précis writing. What are the characteristics of a good Précis?	3	C2	2	10
03	Explain reading skills with suitable examples. Mention and explain various reading strategies to help out reading practice.	3	C2	2	10

Good Luck

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QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – FIRST YEAR (1ST) 2023, 22-BATCH, B.E (EL/ACE)

SUBJECT: APPLIED PHYSICS

Dated: 13.02.2023 Maximum Marks: 20 Time Allowed: 01 Hour.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No		CLO	Taxonomy Level	Marks
01(a)	Explain Ohm's Law with the help of appropriate graphs and mathematical expressions.	1	C1	04
01(b)	What are the factors upon which the resistance of a resistor depends?	1	C1	03
01(c)	A color-coded resistor has first band red, second band violet, third band orange and fourth band silver. Find the resistance value (ohm) and the percentage tolerance.	1	C1	03
02(a)	Define the following: i. Charge ii. E.M.F iii. Power iv. Conductance	1	C1	05
02(b)	The following are the details of load on a circuit connected through an Energy meter. i. Six lamps of 100W each working for 9.5 hours per day. ii. Four fluorescent tubes 40W each working for 30 minutes per day. iii. Two 1000W electric heaters working for 3 hours and 25 minutes per day. iv. One motor of 2 h.p working for 45 minutes per day If each unit of energy costs 22.75 rupees, what will be the electricity bill for the month of January?	2	C3	05

—The End—

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QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – FIRST YEAR (1ST) 2023, 22-BATCH, B.S (EL,ACE)

SUBJECT: FUNCTIONAL ENGLISH

Dated: 17.02.2023 Maximum Marks: 20 Time Allowed: 45 Minutes.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.		Question	CLO	Taxonomy Level	PLO	Ma
Q. 01		What is the role of punctuation marks in composition? Describe the correct use of punctuation marks with suitable examples.	1	C2	2	1
Q. 02		Vocabulary plays an important role in speaking and writing skills. By keeping this statement in mind, discuss the techniques & strategies to improve vocabulary by providing some examples.	1	C2	2	10

The End

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QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – FIRST YEAR (1ST) 2023, 22-BATCH, B.E (EL, ACE)

SUBJECT: APPLIED CALCULUS

Dated: 15.02.2023 Maximum Marks: 20 Time Allowed: 01 Hour.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q.		QUESTION	CLO	Taxonomy Level	PLOs
Q. 01	(a)	Find limits of the following by relating it to a derivative. i) $\lim_{h\to 0}\frac{1-3\sqrt{1+h}}{h}$ ii) $\lim_{x\to 0}\frac{(1+2x)^{10}-1}{x}$ iii) $\lim_{x\to 0}\frac{\sqrt{\cos x}-1}{x}$	1	C1	1
	(b)	For the function $f(x)=\begin{cases} ax+b, & x>0 \\ 1-x+x^2, & x\le 0, \end{cases}$ a and b constants, i) find all values of a and b for which the function will be continuous; ii) find all values of a and b for which the function will be differentiable.	1	C1	1
	(c)	Where are the following functions discontinuous? a) $\sec x$ b) $\frac{1+x^2}{1-x^2}$ c) $\frac{d}{dx}\lvert x\rvert$	1	C1	1
Q. 02	(a)	Evaluate each of the following. a) $\frac{d}{dt}\left(\frac{3t}{\ln t}\right)\Big\rvert_{e^2}$ b) $\lim_{u\to 0}\frac{3u}{\tan 2u}$ c) $\frac{d^3}{dx^3}\sin(kx)$ d) $\frac{d}{d\theta}3\sqrt{a+k\sin^2\theta}$ The letters a and k represent constants.	1	C1	1
	(b)	Sketch the curve $y=\sin^{-1}x, -1\le x\le 1$, and derive the formula for its derivative from that for the derivative of $\sin x$.	1	C1	1
Final	(c)	Derive the formula for linear and quadratic approximation, also linearize the following nonlinear functions near $x=0$; i) $f(x)=\frac{e^{-2x}}{\sqrt{1+x}}$ ii) $f(x)=\ln(x+1)$ iii) $f(x)=(1+2x)^{10}$	3	C3	1

The End

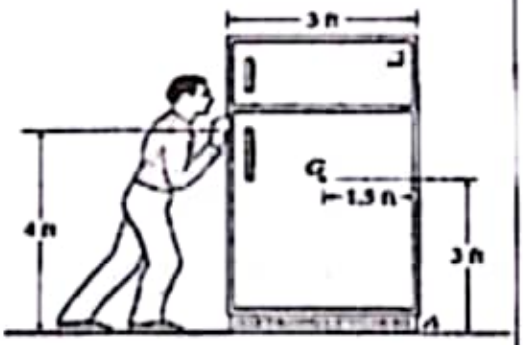
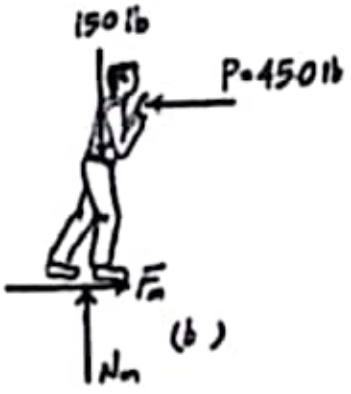
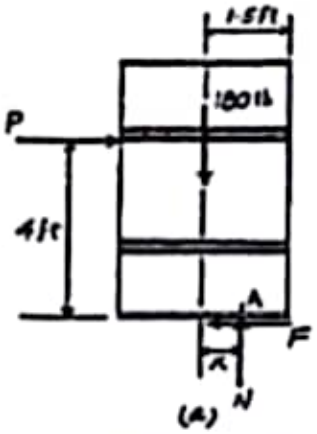
QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – FIRST YEAR (1ST) 2023, 22-BATCH, B.E (EL/ACE)

SUBJECT: APPLIED MECHANICS

Dated: 14.02.2023 Maximum Marks: 20 Time Allowed: 01 Hour

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.		Question	CLO	Taxonomy Level	PLO
Q. 01	(a)	A 25 kg child stands at a distance r = 1.0 m from the axis of a rotating merry-go-round as shown in figure 3. The merry-go-round can be approximately as a uniform solid disk with a mass of 500 kg and a radius of 2.0 m. Find the moment of inertia of this system.	1	C2	1
	(b)	A simple manometer containing mercury is used to measure the pressure of water flowing in a pipeline. The mercury level in the open tube is 60mm higher than that on the left tube as shown in figure. If the height of water in the left tube is 50 mm. Determine the pressure in the pipe in terms of head of water.	1	C2	1
Q. 02		The refrigerator has a weight of 180 lb and rests on a tile floor for which u= 0.25. If the man pushes horizontally on the refrigerator in the direction shown. Determine (a) the smallest magnitude of horizontal force needed to move it. (b) If the man has a weight of 150 lb, determine the smallest coefficient of friction between his shoes and the floor so that he does not slip   	1	C2	1

The End

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QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – FIRST YEAR (1ST) 2023, 22-BATCH, B.E (EL, ACE)

SUBJECT: COMPUTING FUNDAMENTALS

ed: 13.02.2023 Maximum Marks: 10 Time Allowed: 45 Minutes

TE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.		Question	CLO	Taxonomy Level	PLO	Marks
01	(a)	Draw a block diagram to illustrate the basic organization of Computer system, and explain the functions of various computer Units?	1	C1	1	05
	(b)	List out the various Computer generations along with the key invention. Briefly explain the different ways in which computers can be Categorized/ classified?	1	C1	1	
02	(a)	Differentiate between Characteristics of Primary and Secondary Storage of a Computer System.	1	C1	1	
	(b)	Briefly describe the importance of Operating System? Differentiate System software and Application software.	2	C2	2	05
	(c)	Find out the Binary, Octal equivalent of the following Binary Numbers: a. (1101011)2 =( )8 b. (3057)8 =( )2	1	C1	1	

The End