LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram-521 230 :: NTR Dist. :: A.P
Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada

B.Tech. (II Semester) (R17) Semester End Examinations (Supplementary) - November 2025
(2018 & 2019 Regular admitted batches only)

TIME TABLE

R17

TIME : 02.00 PM to 05.00 PM **A.Y. 2025-26**

DATE	13-11-2025 (Thursday)	14-11-2025 (Friday)	15-11-2025 (Saturday)	17-11-2025 (Monday)	18-11-2025 (Tuesday)
ASE	17FE02 - Professional Communication-II	17FE06 - Transformation Techniques and Vector Calculus	17FE14 - Applied Chemistry	17EE50 - Basic Electrical and Electronics Engineering	17ME02 - Engineering Mechanics
CE	17FE02 - Professional Communication - II	17FE06 - Transformation Techniques and Vector Calculus	17FE14 - Applied Chemistry	17CE02 - Applied Mechanics	17CE03 - Surveying
CSE	17FE02 - Professional Communication-II	17FE06 - Transformation Techniques and Vector Calculus	17FE12 - Applied Physics	17EE52 - Basic Electrical Engineering	17CI02 - Digital Logic Design
ECE	17FE02 - Professional Communication-II	17FE06 - Transformation Techniques and Vector Calculus	17FE12 - Applied Physics	17EC03 - Analog Electronic Circuits	17EC04 - Digital Electronic Circuits
EEE	17FE02 - Professional Communication - II	17FE06 - Transformation Techniques and Vector Calculus	17FE14 - Applied Chemistry	17ME51 - Thermal and Hydro Prime Movers	17EE01 - Electronic Circuits and Devices
EIE	17FE02 - Professional Communication-II	17FE06 - Transformation Techniques and Vector Calculus	17FE12 - Applied Physics	17EI01 - Material Science and Engineering	17EC02 - Electronic Devices and Circuits
IT	17FE02 - Professional Communication - II	17FE06 - Transformation Techniques and Vector Calculus	17FE12 - Applied Physics	17EE52 - Basic Electrical Engineering	17CI05 - Data Structures
ME	17FE02 - Professional Communication - II	17FE06 - Transformation Techniques and Vector Calculus	17FE14 - Applied Chemistry	17EE52 - Basic Electrical Engineering	17ME02 - Engineering Mechanics

Note: Any omissions or clashes in the time table may please be informed to the Controller of Examinations immediately.

Date: 24-10-2025

CONTROLLER OF EXAMINATIONS

PRINCIPAL

Copy to: 1. Vice-Principal, Deans & HoDs 2. T&P cell, Transport in-charge & Librarian
3. Canteen, PD, Security & Hostels 4. Coordinator-Disciplinary 5. Notice Boards

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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B.Tech. (II Semester) Supplementary Examinations

17FE06-TRANSFORMATION TECHNIQUES AND VECTOR CALCULUS

(Common to All)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Solve $\frac{d^2y}{dt^2} - 4\frac{dy}{dt} - 12y = e^{3t}$, given that $y(0) = 1, y'(0) = -2$ applying Laplace transformations.	6M	CO1	L3
(b)	Find $L\{e^{2t}sin2tcos3t\}$.	6M	CO1	L2
	(OR)			
2(a)	Define Laplace transform and hence find $L[t(coshat - 2sinhat)]$	6M	CO1	L2
(b)	Using convolution theorem evaluate $L^{-1}\left[\frac{1}{(s^2+1)(s^2+4)}\right]$	6M	CO1	L3
3(a)	Find (i) $Z(1+(-2)^n)$ (ii) $Z\left[\frac{1}{n+1}\right]$	6M	CO2	L2
(b)	Find the inverse Z-transform of $\frac{z}{(z^2+11z+24)}$	6M	CO2	L3
	(OR)			
4(a)	Find (i) $Z\{e^n \cos n\alpha\}$ (ii) $Z\{e^n \sin n\alpha\}$	6M	CO2	L2
(b)	Converting into partial fractionsfind the inverse Z-transform of $\frac{2z}{(z-1)(z-2)}$.	6M	CO2	L3
5(a)	Evaluate $\int_{-1}^{1}\int_{0}^{z}\int_{x-z}^{x+z}(x+y+z)dxdydz$	6M	CO3	L2
(b)	Evaluate $\int_{0}^{1}\int_{1}^{2-x} xy\,dy\,dx$ by change of order of integration.	6M	CO3	L3
	(OR)			
6(a)	Evaluate $\int_{0}^{2\pi}\int_{0}^{b}\int_{-h}^{h}(z^2 + r^2\sin\theta)dzdrd\theta$	6M	CO3	L3
(b)	Evaluate $\iint_R (4xy - y^2)dxdy$ where R is the rectangle bounded by x=1,x=2,y=0,y=3.	6M	CO3	L2
7(a)	Find the directional derivative of ϕ = xy^2+yz^3 at the point (2,-1,1) in the direction of the normal to the surface $xlogz - y^2 = -4$ at (-1,2,1)?	6M	CO4	L2
(b)	Prove that curl (gradØ) = $\overline{0}$.	6M	CO4	L1
	(OR)			
8(a)	Find the directional derivative of the scalar point function of $f = 2xy + z^2$ at the point (1, -1, 3) in the direction of $\vec{i} + 2\vec{j} + 2\vec{k}$.	6M	CO4	L2
(b)	If $\vec{f} = xy^2\vec{i} + 2x^2yz\vec{j} - 3yz^2\vec{k}$ find $curl\,\vec{f}$ at (1, -1, 1).	6M	CO4	L1
9.	Verify by Green's theorem in the plane for $\int_C (x^2 - xy^3)dx + (y^2 - 2xy)dy$ where C is the Square with vertices (0,0) , (2,0) , (2,2) and (0,2).	12M	CO4	L3
	(OR)			
10.	Verify Stoke's Theorem for $\vec{F} = \left(x^2 + y^2\right)\vec{i} - 2xy\vec{j}$ taken around the rectangle bounded by the lines $x = \pm a,\ y = 0,\ y = b$.	12M	CO4	L3

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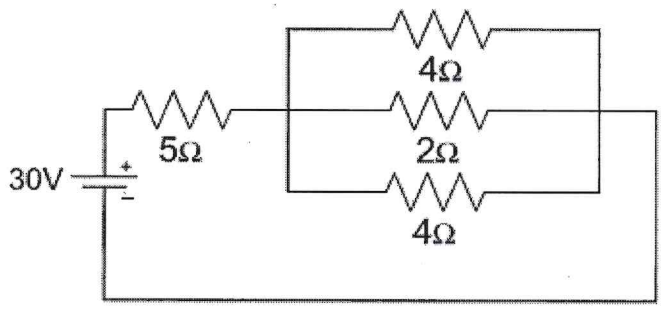
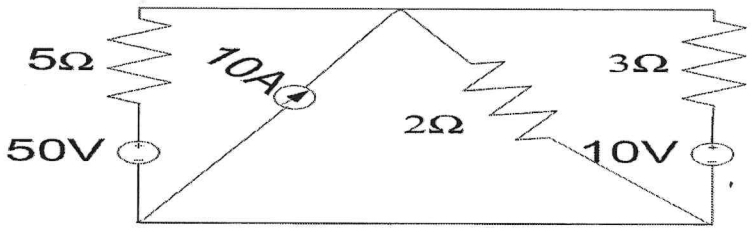
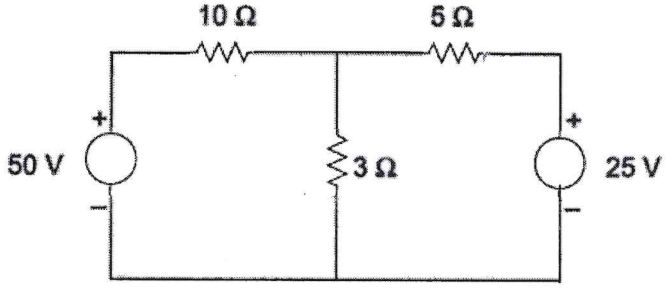
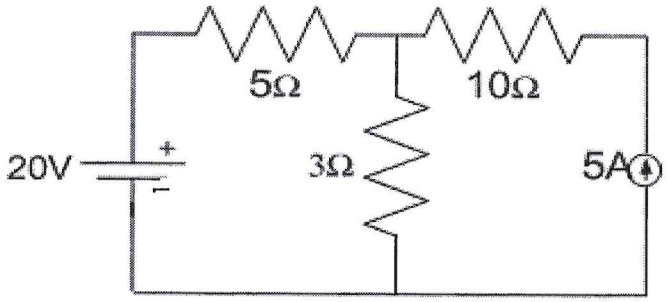
B.Tech. (II Semester) Supplementary Examinations

17EE52-BASIC ELECTRICAL ENGINEERING
(CSE,IT&ME)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Define Ohm's Law and List the applications of it.	6M	CO1	L1
(b)	Determine the total current in the circuit. 	6M	CO1	L3
	(OR)			
2(a)	Summarize the types of energy sources used in electrical circuits.	4M	CO1	L1
(b)	Using source transformation, find the power delivered by the 50V voltage source in the circuit shown below: 	8M	CO1	L3
3(a)	State Norton's theorem and discuss the steps followed to determine the load current.	6M	CO2	L2
(b)	For the resistive network shown in the fig, find the current through 3Ω resistor using superposition theorem. 	6M	CO2	L3
	(OR)			

4(a)	Illustrate the steps involved in solving the mesh analysis with an example.	6M	CO2	L1
(b)	Determine the current passing through 5 ohm resistor using superposition theorem. 	6M	CO2	L2
5(a)	Derive the current and power expression of AC through pure Resistance and Capacitance.	6M	CO3	L3
(b)	A 50Ω resistor and a 75mH inductor are connected in series across a 400V, 50Hz supply. Find the impedance of the circuit, voltage across the resistor, voltage across the inductor, apparent power, active power and reactive power.	6M	CO3	L3
	(OR)			
6(a)	Derive the current and power expression of AC through pure Resistance and Capacitance.	6M	CO3	L3
(b)	Derive the impedance and power expression of AC through Series R-L Circuit.	6M	CO3	L3
7(a)	List the common features of rotating electrical machines.	6M	CO4	L2
(b)	Discuss the elementary concept of a generator.	6M	CO4	L1
	(OR)			
8(a)	Discuss the Classification of rotating machines in detail.	6M	CO4	L2
(b)	Illustrate the faradays laws of electromagnetic induction.	6M	CO4	L2
9(a)	A 4-pole, 3-phase induction motor operates from a supply whose frequency is 50 Hz. Calculate (i) The speed at which the magnetic field of the stator is rotating. (ii) The speed of the rotor when the slip is 0.04. (iii) The frequency of the rotor currents when the slip is 0.03. (iv)The frequency of the rotor currents at standstill.	6M	CO5	L3
(b)	Discuss the working of PMMC instruments.	6M	CO5	L2
	(OR)			
10(a)	Illustrate the construction details of single-phase transformer.	8M	CO5	L1
(b)	Enumerate on the classification of measuring instruments.	4M	CO5	L1

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B.Tech. (II Semester) Supplementary Examinations

17ME51-THERMAL AND HYDRO PRIME MOVERS
(EEE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What is thermodynamic system? What is the difference between a closed system and a open system? Give few examples for closed and open systems.	6M	CO1	L1
(b)	Show that the COP of a heat pump is greater than the COP of a refrigerator by unity, when working between same temperatures.	6M	CO1	L2
	(OR)			
2(a)	List the similarities, dissimilarities between heat and work transfer.	6M	CO1	L2
(b)	A domestic food freezer maintains a temperature of -15^{0}C the ambient air temperature is 30^{0}C. If heat leaks into the freezer at continuous rate of 1.75kJ/sec. Estimate the least power necessary to pump this heat to ambient continuously.	6M	CO1	L3
3(a)	Illustrate the working of open cycle gas turbine with a neat sketch.	6M	CO2	L2
(b)	During the trial of a four- stroke cycle gas engine the following data were recorded, Area of indicator diagram = 565.8 mm^2 Length of indicator diagram = 74.8 mm Spring index = 0.9 bar/mm Cylinder diameter = 220 mm Stroke length = 430 mm Number of explosions / min = 100 Determine indicated mean effective pressure and indicated power.	6M	CO3	L4
	(OR)			
4(a)	A 6 cylinder four stroke gas engine with a stroke volume of 1.75 litres develops 26.3 kW at 504 rpm. The m.e.p is 6 bar. Find the average number of times each cylinder misfires in one minute.	6M	CO3	L5
(b)	Explain the working of four stroke SI engine with a neat sketch.	6M	CO3	L2
5(a)	Distinguish pressure compounding and velocity compounding.	6M	CO2	L2

(b)	A single row impulse turbine develops 132.4 KW at a blade speed of 175m/sec using 2kg of steam per second. Steam leaves the nozzle at 400 m/sec. Velocity coefficient of the blade is 0.9. Steam leaves the turbine blade axially. Evaluate nozzle angle, blade efficiency and exit angle.	6M	CO2	L3
	(OR)			
6(a)	Explain the construction of velocity triangle for a single stage impulse turbine.	6M	CO2	L2
(b)	In a single stage impulse turbine steam issues from the nozzle with a velocity of 850m/sec. The nozzle angle is 20^0. Mean blade velocity is 350m/sec and the blades are equiangular. The mass flow rate is 1000kg/min. The friction factor is 0.8. Determine (i) Power developed in kW (ii) Blade angles (iii) Axial thrust on the bearings.	6M	CO2	L3
7(a)	Elucidate variation of viscosity with respect to temperature in fluids.	6M	CO1	L2
(b)	The water is flowing through a pipe having diameter 20cm and 10m at section 1 and 2 respectively. The rate of flow through pipe is 35liters/sec. The section 1 is 6m and above datum and section 2 is 4m above datum. If pressure at section 1 is 39.24 N/cm^2, find the intensity of pressure at section 2.	6M	CO4	L3
	(OR)			
8(a)	Derive an expression for rate of flow through venturimeter.	6M	CO4	L2
(b)	30cm diameter pipe carrying water, branches into two pipes of diameters 20cm and 15cm respectively. If the average velocity in the 30cm diameter pipe is 2.5m/s. Evaluate the discharge in the pipe and velocity in 15cm pipe if the average velocity in 20cm pipe is 2m/s.	6M	CO4	L3
9(a)	Give the comparison between Francis turbine and Kaplan turbine.	6M	CO5	L4
(b)	Outline the schematic diagram of a Pelton wheel turbine and explain briefly its construction and working.	6M	CO5	L2
	(OR)			
10(a)	Outline the schematic diagram of a Kaplan turbine and explain briefly its construction and working.	6M	CO5	L2
(b)	A pelton wheel is to be designed for the following specifications: Shaft power = 9560 kW; Head = 350m; speed = 750 rpm; overall efficiency = 85%; jet diameter not to exceed 1/6 of the wheel diameter. Determine the following (i) the wheel diameter (ii) Diameter of the jet (iii) the number of jets required.	6M	CO5	L5

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B.Tech. (II Semester) Supplementary Examinations

17EC04-DIGITAL ELECTRONIC CIRCUITS
(ECE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Examine the following for the given unsigned binary numbers by taking the 2's complement of the subtrahend 110110 – 10000.	6M	CO1	L3
(b)	Interpret the Boolean expression to minimum literals (i) $F=\overline{(\overline{X}\cdot\overline{Y}+Z)}+Z+XY+WZ$ (ii) $F=\overline{A}\cdot\overline{C}+ABC+A\cdot\overline{C}+A\cdot\overline{B}$	6M	CO1	L2
	(OR)			
2(a)	Convert the following to Decimal and then to Binary (i) $AB6_{16}$ (ii) 247_9 (iii) 463_8	6M	CO1	L3
(b)	Identify the minimal SOP expression for the given Boolean function using K-map, F= ∑m (4,5,9,13,15)+ ∑d(0,1,7,11,12).	6M	CO1	L3
3(a)	Minimize the function F(A,B,C) = ∑m(1,3,4,5,6,7) using Kmap and implement the minimized function with basic gates.	6M	CO2	L3
(b)	Realize AND, NOT, OR, NOR logic gates using NAND gate.	6M	CO2	L2
	(OR)			
4(a)	Reduce the function F=πM(0,1,2,3,4,7) using k-map and implement it in NOR logic.	6M	CO1	L2
(b)	Implement Y= ∑m(1,4,5,6,7) in SOP form using AOI logic.	6M	CO1	L2
5(a)	Design the combinational circuit of 2 bit comparator.	6M	CO3	L2
(b)	Implement the logic design of 8 x 4 ROM using suitable decoder size.	6M	CO3	L2
	(OR)			
6(a)	Design a combinational logic circuit for full-adder.	6M	CO3	L3
(b)	Implement the function $F(A,B,C,D)=\overline{A}\cdot\overline{D}+ACD+\overline{B}CD+\overline{A}\cdot\overline{C}\cdot D$ using 8x1 multiplexer.	6M	CO3	L2
7(a)	Explain briefly about JOHNSON counter and draw using JK flip-fops.	6M	CO2	L2
(b)	Construct 2-bit asynchronous down counter using JK flipflops.	6M	CO3	L3
	(OR)			
8(a)	Design 3 bit ring counter using D flipflops.	6M	CO4	L2
(b)	Derive the excitation tables for SR flip flop and JK flipflop.	6M	CO4	L2
9(a)	What are the advantages and limitations of ASM chart?	6M	CO4	L1
(b)	Design an ASM chart to for the sequence detector 100.	6M	CO4	L3
	(OR)			
10(a)	Draw the diagram of mealy type state machine for serial adder and explain is operation.	6M	CO4	L3
(b)	What are the capabilities and limitations of finite state machines? explain.	6M	CO4	L1

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B.Tech. (II Semester) Supplementary Examinations

17EE01-ELECTRONIC CIRCUITS AND DEVICES
(EEE)

9.22

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explicate the V-I characteristics of a Zener diode, define avalanche breakdown and Zener breakdown.	6M	CO1	L2
(b)	Determine the thermal voltage for a diode at a temperature of 20°C. For the same diode, find the diode current if I_s=40 nA, n= 2 and the applied bias voltage is 0.5 V.	6M	CO1	L4
	(OR)			
2(a)	In your own words, define an intrinsic material, a negative temperature coefficient, and covalent bonding.	6M	CO1	L1
(b)	Describe in your own words how diffusion and transition capacitances differ.	6M	CO1	L1
3(a)	Compare Half wave rectifier, full wave rectifier & Bridge rectifiers in terms of all parameters.	6M	CO2	L4
(b)	Derive the Ripple factor of L-section filter.	6M	CO2	L1
	(OR)			
4(a)	Describe the operation of half wave rectifier with the help of circuit diagram and waveforms.	6M	CO2	L2
(b)	A half wave rectifier Vi=100 Sin wt , RL=900 ohms . RF = 100 ohms. Calculate (i) Peak load current (ii) DC Load Current (iii) AC load current (iv) DC load Voltage (v) PIV.	6M	CO2	L3
5(a)	Differentiate between BJT and FET .	6M	CO3	L1
(b)	In an NPN Silicon Transistor α=0.995 , I_E=10 mA and leakage current I_{CBO}=0.5 µA , Determine I_{CEO} .	6M	CO3	L4
	(OR)			
6(a)	Explain the working of NPN and PNP Transistors with neat sketches.	6M	CO2	L2
(b)	Derive the Relationship between current amplification factors of common base, common emitter and common collector configurations.	6M	CO2	L3
7(a)	Analyze the diode compensation for instability in transistor against variation of V_{BE} .	6M	CO3	L2
(b)	Discuss the factors effecting Q-point.	6M	CO3	L2
	(OR)			
8(a)	Explain with the help of circuit diagram how V_{BE} , Ico can be compensated using thermistor due to changes in temperature.	6M	CO3	L2
(b)	Explain how stability can be achieved using collector to base biasing and Derive stability factor **'S'**.	6M	CO3	L2
9(a)	Give the constructional features of Schottky diode with applications.	6M	CO5	L2
(b)	What is SCR? Explain the volt-ampere characteristics. Define holding current and latching current.	6M	CO5	L4
	(OR)			
10(a)	From the h-parameter representation of CE transistor amplifier deduce the expressions for current gain and voltage gain.	6M	CO2	L3
(b)	Illustrate the working principle of SCR with its characteristics.	6M	CO1	L2

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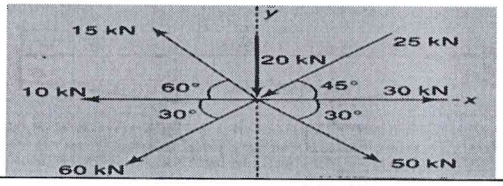
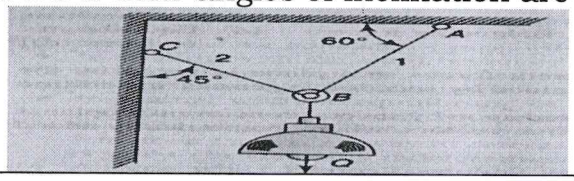
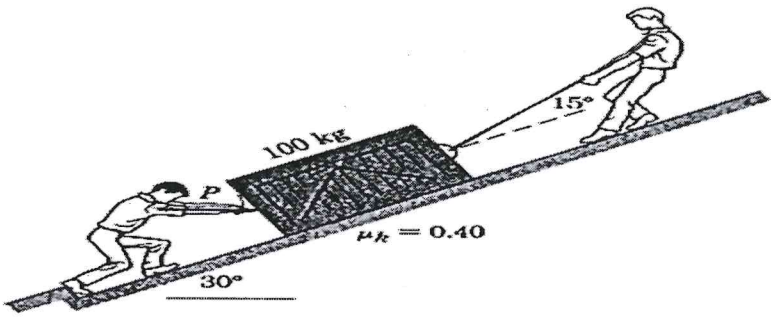
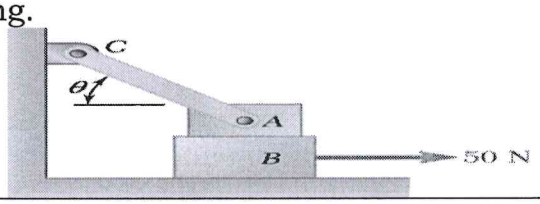
B.Tech. (II Semester) Supplementary Examinations

17ME02-ENGINEERING MECHANICS
(ASE&ME)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Write characteristics of force with an example.	6M	CO1	L3
(b)	Find the magnitude and direction of the force F to be added to the system of coplanar concurrent forces shown in figure to maintain equilibrium. 	6M	CO1	L3
	(OR)			
2(a)	The sum of two concurrent forces P and Q is 270 N and their resultant is 180 N. The angle between the force P and resultant is 90⁰. Find the magnitude of each force.	6M	CO1	L3
(b)	An electric- light fixture of weight Q = 178 N is supported as shown in figure. Determine the tensile forces S_1 and S_2 in the wires BA and BC if their angles of inclination are as shown. 	6M	CO1	L3
3(a)	A body of weight 1000N is to be pulled up an inclined plane of angle 20⁰. Coefficient of friction between body and plane is 0.28. Find the effort required when it is parallel to the inclined plane.	6M	CO2	L3
(b)	Two men are sliding a 100 kg crate up an incline as shown in figure. If the lower man pushes horizontally with a force of 600 N and if the coefficient of kinetic friction is 0.40, determine the tension T which the upper man must exert in the rope to maintain motion of the crate. 	6M	CO2	L3
	(OR)			

4.	The 8-kg block *A* is attached to link *AC* and rests on the 12-kg block *B*. Knowing that the coefficient of static friction is 0.20 between all surfaces of contact and neglecting the mass of the link, determine the value of 'θ'for which motion of block *B* is impending. 	12M	CO2	L3
5(a)	State and prove perpendicular axis theorem.	6M	CO3	L3
(b)	Find the moment of inertia of an aluminium pipe of 120mm outer diameter and 90 mm inner diameter and 2.5 m long w.r.to its rotational axis and other geometric axes. Density of aluminium is considered as 2560kg/m^3.	6M	CO3	L3
	(OR)			
6(a)	Derive the centre of gravity co-ordinates of hemisphere from first principles.	6M	CO3	L2
(b)	Calculate the moment of inertia of a steel sphere 350mm diameter with respect to a centroidal axis. The density of steel is 7830kg/m^3.	6M	CO3	L3
7(a)	Derive from fundamentals all the three kinematic equations of linear motion having constant acceleration.	6M	CO4	L2
(b)	A particle under a constant deceleration is moving in a straight line and covers a distance of 20 m in first two seconds and 40 m in next 5 seconds. Calculate the distance it covers in the subsequent 3 seconds and the total distance covered, before it comes to rest.	6M	CO4	L3
	(OR)			
8(a)	Draw the motion curves of displacement - time, velocity - time, acceleration - time. Briefly explain.	6M	CO4	L2
(b)	A man, starting from rest, accelerates his speed at 2 m/s^2 in a running track for 100m run. Find (i) the velocity at 100 m distance (ii) time taken to reach 100m.	6M	CO4	L2
9(a)	Derive the expressions for velocity and acceleration of a particle subjected to a force as a function of velocity.	6M	CO5	L2
(b)	A ball of weight 10 N is dropped down from a height of 6m. What is the work done by the self-weight of the body when it is reached the ground level?	6M	CO5	L3
	(OR)			
10(a)	Differentiate rigid body with particle. What are the idealized assumptions in Engineering Mechanics?	6M	CO5	L2
(b)	The rotation of a fly wheel is governed by the relation $\alpha=10t-t^2$ where α is in radians/$s^2$and t is in seconds. How many revolutions will the flywheel make, starting from rest, before it momentarily stops prior to reversing its direction?	6M	CO5	L3

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