B.Tech.(III Sem.)(R11) Suppl.

A.Y. 2019-20

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

B.Tech. (III Semester) (R11) Supplementary Examinations, November 2020

(R11 : Applicable for 2012 & 2013 regular admitted batches and 2014 lateral entry admitted batch only)

TIME TABLE

TIME : 10.00 AM to 1.00 PM

DATE	ASE	CE	CSE	ECE	EEE	EIE	IT	ME
02-11-2020 (Monday)	T194 - Engineering Mechanics – II	T367 - Applied Mathematics – III	T188 - Electronic Devices and Circuits	T187 - Electronic Circuits	T180 - Electrical Circuit Analysis-II	T188 - Electronic Devices and Circuits	T188 - Electronic Devices and Circuits	T194 - Engineering Mechanics-II
03-11-2020 (Tuesday)	T330 - Thermodynamics	T377 - Construction Techniques, Equipment and Practices	T285 - Probability and Statistics	T306 - Signals and Systems	T186 - Electromagnetic Fields	T186 - Electro Magnetic Fields	T127 - Basic Electrical Engineering	T330 - Thermodynamics
04-11-2020 (Wednesday)	T319 - Strength of Materials	T395 - Mechanics of Fluids	T162 - Digital Logic Design	T320 - Switching Theory and Digital Logic	T320 - Switching Theory and Digital Logic	T320 - Switching Theory and Digital Logic	T162 - Digital Logic Design	T319 - Strength of Materials
05-11-2020 (Thursday)	T356 - Fluid Mechanics and Fluid Machines	T396 - Mechanics of Solids	T166 - Discrete Mathematical Structures	T199 - Environmental Studies	T181 - Electrical Machines - I	T245 - Managerial Economics and Financial Analysis	T103 - Advanced Data Structures through Java	T250 - Metallurgy & Material Science
06-11-2020 (Friday)	T177 - Electrical & Electronics Engineering	T177 - Electrical and Electronics Engineering	T266 - Object Oriented Programming(C++)	T266 - Object Oriented Programming (C++)	T280 - Power Systems-I	T294 - Pulse and Digital Circuits	T334 - Unix Programming	T177 - Electrical & Electronics Engineering
07-11-2020 (Saturday)	T354 - Elements of Aerospace Engineering	T409 - Surveying	---	T286 - Probability Theory and Stochastic Processes	T205 - Fluid Mechanics and Hydraulic Machinery	T206 - Fluid Mechanics and Thermal Engineering	--	T241 - Machine Drawing

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Date: 17-10-2020

CONTROLLER OF EXAMINATIONS

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
L.B.Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P
B.Tech. III Semester Regular/Supplementary Examinations

T250 – METALLURGY AND MATERIAL SCIENCE
(ME)

Time : 3 hours   Max.Marks : 75

Answer all the questions
All Questions carry equal Marks
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1(a)	Explain the concepts of lattice, basis and crystal structure. How are they related?	[8M]
(b)	Describe the ionic bonding with an example.	[7M]

(OR)

(c)	Explain the importance of Alloying element in metals with Examples.	[8M]
(d)	What conditions favour the formation of substitutional solid solutions? Explain.	[7M]

2(a)	Draw Fe-C phase diagram. Label all the phases and temperatures.	[8M]
(b)	Explain solidification process with the help of cooling curves of pure metal and eutectic alloy.	[7M]

(OR)

(c)	Calculate the amount of pearlite and cementite formed by eutectic reaction in transformed ledeburite in 4.3%C steel at room temperature.	[7M]
(d)	How is Equilibrium diagrams constructed? Explain with an example?	[8M]

3(a)	What is Cast Iron? Classify and Explain different types of cast Irons.	[8M]
(b)	Differentiate between steels and cast irons.	[7M]

(OR)

(c)	Explain the classification of steels on the basis of method of Alloying.	[8M]
(d)	Distinguish between properties and applications of Low carbon steels and medium carbon steels.	[7M]

4(a)	Differentiate between the hot working and cold working.	[7M]
(b)	What is the effect of cold working and hot working process on mechanical properties of material? Explain.	[8M]

(OR)

(c)	What do you understand by heat treatment? Mention the various stages of heat treatment processes.	[7M]
(d)	What is the purpose of surface hardening? Illustrate various surface hardening methods.	[8M]

5(a)	What are Ceramic Materials? Explain the Properties and applications.	[7M]
(b)	Explain about the hand layup process of manufacturing FRP materials.	[8M]

(OR)

(c)	What are various applications of glasses? Explain.	[7M]
(d)	Explain different forms of reinforcements in composites.	[8M]

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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L.B.Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P

B.Tech. III Semester Supplementary Examinations

T330 – THERMODYNAMICS
(ME)

Time : 3 hours　　　　　　　　　　　　　　　　　　　　　　　Max.Marks : 75

Answer all the questions
All Questions carry equal Marks
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1(a)	Two thermometers, one centigrade & other Fahrenheit are immersed in a fluid. After the thermometers reach equilibrium with the third value. Find that identical numerical value shown by the thermometers. What would be the corresponding temperature of the fluid expressed in degrees Kelvin and degrees Rankine?	[7M]
(b)	Discuss the macroscopic & microscopic point of view of thermodynamics .	[8M]
	(OR)	
(c)	Define & explain the concept of zeroth law of Thermodynamics	[5M]
(d)	A spherical ballon of 0.5m diameter contains air at a pressure of 500 kpa. The diameter increases to 0.55m in a reversible process during which P is proportional to diameter. Determine the work done by the air in the ballon during this process.	[10M]
2(a)	Derive the law $pv^n = const$, for an reversible adiabatic process.	[10M]
(b)	What is a PMM1? Why is it impossible?	[5M]
	(OR)	
(c)	Define enthalpy. Why does the enthalpy of an ideal gas depend only on temperature?	[6M]
(d)	A 0.6 Kg copper piece at 100^0 C is dropped in an insulated tank which contains 0.75 kg of liquid water at 25^0 C. Determine the temperature of the system when thermal equilibrium is established. Take specific heat of copper and water are 0.39 KJ/Kg-K and 4.184 KJ/Kg-K respectively.	[9M]
3(a)	A heat engine is supplied with 1130 KJ of heat at constant temperature of 292^0 C and it rejects heat at 5^0 C The following results were recorded. Determine whether the results report a reversible cycle or impossible or irreversible.	[10M]
(b)	What is PMM2? why is it impossible.	[5M]
	(OR)	
(c)	State and prove clausius' theorem.	[10M]
(d)	What are the causes of entropy increase.	[5M]
4(a)	What is a pure substance. Define dryness fraction of steam.	[7M]
(b)	Find the enthalpy, entropy, specific volume and internal energy of steam at 1.4 Mpa and 380^0C	[8M]
	(OR)	
(c)	Find the saturation temperature the changes in specific volume and entropy during evaporation.The latent heat of vapourisation of steam at 1 Mpa.	[15M]
5(a)	Derive the expression for Thermal Efficiency of Otto Cycle?	[7M]
(b)	Consider the ideal Otto, Stirling, and Carnot cycles operating between the same temperature limits. How would you compare the thermal efficiencies of these three cycles?	[8M]
	(OR)	
(c)	Explain the simple Rankine cycle with neat diagram and Write the expression for thermal Efficiency?	[7M]
(d)	Consider a steam power plant operating on the simple ideal Rankine cycle. Steam enters the turbine at 3 MPa and 350°C and is condensed in the condenser at a Pressure . Determine the thermal efficiency of this cycle?	[8M]

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

B.Tech. (VIII Semester) (R11) Supplementary Examinations, September 2020

(R11 : Applicable for 2012 & 2013 regular admitted batches and 2014 lateral entry admitted batch only)

TIME TABLE

TIME : 10.15 AM to 1.15 PM

DATE	ASE	CE	CSE	ECE	EEE	EIE	IT	ME
11-09-2020 (Friday)	T401 - Principles of Management and Ethics	T375 – Construction Management	T221 - Industrial Management	T134 - Cellular and Mobile Communications	T215 - HVDC and FACTS	T218 - Industrial Electronics	T221 - Industrial Management	T300 – Robotics
12-09-2020 (Saturday)	Elective – III T345 - Advanced Propulsion Systems	Elective – III T398 – Modern Construction Systems and Techniques	Elective – III T214 – Human Computer Interface	Elective – II T318 – Spread Spectrum Communication T160 - Digital Design through Verilog T317 – Speech Processing	Elective – III T278 - Power Quality T335-Utilization of Electrical Energy	Elective – III T106 – Advanced Sensors T190 - Embedded Systems Design	Elective – III T214 – Human Computer Interface	Elective – III T263 - Non Conventional Energy Sources
13-09-2020 (Sunday)	Elective – IV T364 – Wind Engineering T348 - Aero Engine Repair and Maintenance	Elective – IV T399 - Pavement Analysis and Design	Elective – IV T138 - Cloud Computing T305 – Service Oriented Architecture	Elective – IV T342 - Wireless Sensor Networks T128 - Biomedical Instrumentation	Elective – IV T168 - Distribution Systems and Automation T155 – Database Management Systems	Elective – IV T128 - Biomedical Instrumentation	Elective – IV T167 - Distributed Systems T339 - Web Services	Elective – IV T288 - Production Planning and Control

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Date: 01-09-2020

CONTROLLER OF EXAMINATIONS

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B.Tech. (V Semester) Supplementary Examinations

T170-DYNAMICS OF MACHINES
(ME)

Time : 3 hours   Max. Marks : 75

Answer all the questions
All Questions carry equal Marks
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1(a) A screw jack is used to raise a load of 10 tonnes. The pitch of single start square threads used for the screw is 30 mm. The mean diameter is 90 mm. Determine the force to be applied at the end of a 1.4 m long handle when the load is lifted with constant velocity and rotates with the spindle. Take μ=0.21. Also calculate the mechanical efficiency of the screw jack.   [7M]

(b) A cone clutch is to transmit 7.5 kW at 900 r.p.m. The cone has a face angle 12⁰. The width of the face is half of the mean radius and the normal pressure between the contact faces is not to exceed 0.09 N/m². Assuming uniform wear and the coefficient of friction between contact faces as 0.2, find the main dimensions of the clutch and the axial force required to engage the clutch.   [8M]

(OR)

(c) A single plate clutch, having two active surfaces, transmits 10 kW of power and the maximum torque developed is 120 Nm. Axial pressure is not to exceed 100 kN/m². Outer diameter of the friction plate is 1.3 times the inner diameter. Determine these diameters and the axial force exerted by the springs. Assume uniform wear and take coefficient of friction as 0.25.   [15M]

2(a) Name different types of dynamometers. Explain function of prony brake.   [7M]

(b) In a band and block Brake, the band is lined with 14 blocks, each of which subtends an angle of 20⁰at the drums centre. One end of the band is attached to the fulcrum of the brake lever and the other to a pin 150mm from the fulcrum. Find the force required at the end of the lever 1m long from the fulcrum to give a torque of 4KN-m. The diameter of the brake drum is 1m and the co efficient of friction between the blocks and the drum is 0.25.   [8M]

(OR)

(c) A bicycle and rider of mass 100 kg are travelling at the rate of 16 kmph on a level road. A brake is applied to the rear wheel which is 0.9 m in diameter and this is the only resistance acting. How far will the bicycle travel and how many turns will it make before it comes to rest. The pressure applied on the brake is 100 N and co-efficient of friction is 0.2.   [8M]

(d) Can a block brake become self locking? If so derive the condition for self locking.   [7M]

3(a) Describe with neat sketch the bevis-gibson a flashlight torsion dynamometer.   [7M]

(b) A differential band brake acting on the 3/4th of the circumference of a drum of 450mm diameter is to provide a braking torque of 300Nm. One end of the band is attached to a pin 100mm from the fulcrum of the lever and the other end to another pin 25mm from the fulcrum on the other side of it where the operating force is also acting. If the operating force is applied at 500mm from the fulcrum and the coefficient of friction is 0.25 and the two values of the operating force corresponding to the two directions of rotation of the drum. [8M]

(OR)

(c) A rear engine automobile is traveling along a track of 100m mean radius. Each of the four road wheels have a Moment of inertia 1.5kg m² and effective diameter of 60cm. Engine rotating parts have a Moment of inertia 1kg m².The engine axis is parallel to the rear axle, and the crank shaft rotates in the same sense as the road wheels. The gear ratio Engine to back axle is 3:1. The vehicle weighs 10K N and has centre of gravity 40 cm above the road level. The width of the track of the vehicle is 1.5m.Determine the limiting speed of the vehicle around the curve for all four wheels to maintain contact with the road surface if this is not cambered. [15M]

4(a) A single cylinder I.C. Engine, working on the 4-stroke cycle, develops 75 kW at 360 rpm. The fluctuations of energy can be assumed to be 0.9 times the energy developed per cycle. If the fluctuation of speed is not to exceed 1%, and the maximum centrifugal stress in the flywheel is to be 5.5 MN/m², estimate the mean diameter and the cross sectional area of the rim. The rim material has a density of 7.2 mg /m3. [15M]

(OR)

(b) The tuning-moment diagram for a multi cylinder engine has been drawn to a vertical scale of 1mm=650 N-m and a horizontal scale of 1 mm=4.5⁰. The areas above and below the mean torque line are -28, +380, -260, +310, -300, +242, -380, +265 and -229mm².The fluctuation of speed is limited to ±1.8% of the mean speed which is 400rpm. The density of the rim material is 7000kg/m³ and width of the rim is 4.5 times its thickness. The centrifugal stress (hoop stress) in the rim material is limited to 6 N/mm².Neglecting the effect of the boss and arms, determine the diameter and cross section of the flywheel rim. [15M]

5(a) A rotating shaft carries four radial masses A = 8 kg, B = C = 6 kg, and D = 5 kg. The mass centers are 30 mm, 40 mm, 40 mm, and 50 mm respectively from the axis of the shaft. The axial distance between the planes of rotation of A and B is 400mm, and that between B and C is 500 mm. The masses A and C are at right angles to each other. Find for a complete balance, (i) the angle between the masses B and D from mass A, (ii) the axial distance between the planes of rotation of C and D, and (iii) the magnitude of mass B. [15M]

(OR)

(b) Explain the terms: variation of tractive force, swaying couple, and hammer blow. [7M]

(c) Prove the relation that Hammer blow = $\pm m_b \times r^* \times \omega^2$ where m_b = Balancing mass placed at a radius of r*, and ω = angular speed of the crank. [8M]

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B.Tech. (V Sem.)(R11) Suppl.

A.Y. 2019-20

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

B.Tech.(V Semester) (R11) Supplementary Examinations, October 2020

(R11 : Applicable for 2012 & 2013 regular admitted batches and 2014 lateral entry admitted batch only)

TIME TABLE

TIME : 10.00 AM to 1.00 PM

DATE	ASE	CE	CSE	ECE	EEE	EIE	IT	ME
20-10-2020 (Tuesday)	T292 – Propulsion – I	T369 – Basic Structural Analysis	T156 - Design and Analysis of Algorithms	T116 - Antennas and Wave Propagation	T235 - Linear and Digital IC Applications	T235 - Linear and Digital IC Applications	T156 - Design and Analysis of Algorithms	T328 - Thermal Engineering
21-10-2020 (Wednesday)	T347 – Aerodynamics – II	T378 – Design of RCC Elements	T123 – Automata Theory and Formal Languages	T237 - Linear Integrated Circuits and Applications	T183 - Electrical Measurements and Instrumentation	T306 - Signals and Systems	T323 - Theory of Computations	T239 - Machine Design - I
22-10-2020 (Thursday)	T113 - Aircraft Systems and Instruments	T380 – Design of Steel Structures	T265 – Object Oriented Analysis and Design	T165 - Digital System Design	T148 - Control Systems	T148 - Control Systems	T267 - Operating Systems	T170 - Dynamics of Machines
23-10-2020 (Friday)	T211 - Heat Transfer	T393 – Irrigation and Water Resources Engineering	T284 - Principles of Programming Languages	T146 - Computer Organization	T146 - Computer Organization	T146 - Computer Organization	T308 - Software Engineering	T207 - Fluid Power Engineering
27-10-2020 (Tuesday)	T132 - CAD/CAM	T407 – Soil Mechanics	T254 - Microprocessor and Interfacing	T321 - Telecommunication Switching Systems and Networks	T140 - Communication Systems	T254 - Microprocessor and Interfacing	T254 - Microprocessor and Interfacing	T242 - Machine Tools
28-10-2020 (Wednesday)	T250 - Metallurgy and Material Science	T412 – Water Supply Engineering	T314 - Software Testing Methodologies	T158 - Digital Communications	T344 - Linear System Analysis	T287 - Process Control Instrumentation	---	T221 - Industrial Management
29-10-2020 (Thursday)	---	---	---	T290 - Professional Ethics	T290 - Professional Ethics	T290 - Professional Ethics	---	---

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CONTROLLER OF EXAMINATIONS

PRINCIPAL

Date: 07-10-2020

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L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. VIII Semester ~~Regular~~/Supplementary Examinations

T300-ROBOTICS
(ME)

Time : 3 hours   Max. Marks : 75

Answer all the questions
All Questions carry equal Marks
****

1(a)	Explain the main robot anatomy with neat sketch.	[7M]
(b)	Describe the types of joints used in Robots.	[8M]
	(OR)	
(c)	What is an end effector? What type of end effector is required for pick and place robot?	[7M]
(d)	Explain the different tools used as end-effectors.	[8M]
2(a)	Find the rotation matrix representing a roll of 45^0 followed by yaw of 60^0 followed by a pitch of 90^0.	[8M]
(b)	The coordinates of point P in frame {1} are $[3.0\ 2.0\ 1.0]^T$. The position vector P is rotated about the Z-axis by 45^0. Find the coordinates of point Q, the new position of point P.	[7M]
	(OR)	
(c)	What is a forward kinematics problem? Explain Denavit-Hartenberg convention for selecting frames of reference in robotic application.	[15M]
3(a)	Determine the singularities of a wrist manipulator.	[15M]
	(OR)	
(b)	Derive an expression for relation between joint torques and the end-effector torques/forces.	[15M]
4(a)	Explain the following three steps of trajectory planning i. Task Description ii. Selecting and employing a trajectory planning iii. Computing the trajectory	[8M]
(b)	Enumerate the relative merits and demerits of joint space over Cartesian space trajectory planning of robots.	[7M]
	(OR)	
(c)	What are the various methods used to enter the programming command into the Controller command?	[7M]
(d)	Explain with examples WAIT, SIGNAL and DELAY commands with respect to lead through programming.	[8M]
5(a)	What are the most commonly available devices for sensing the position?	[7M]
(b)	Explain about position sensors and describe its importance in the field of Robotics.	[8M]
	(OR)	
(c)	Discuss the applications of robots used in the field of arc welding operations.	[7M]
(d)	Write the applications of robots in the field of health care.	[8M]

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