Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14HUM102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

PRINCIPLES OF MANAGEMENT

(Common to CE, EEE, ECE, CSE, CSIT, IT)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	M.B.O	1M
	ii.	Green management	1M
	iii.	Decision making styles	1M
	iv	Sunk cost	1M
	v.	Selection	1M
	vi	Change management	1M
	vii.	Leader	1M
	viii.	Functions of communication	1M
	ix.	Marketing	1M
	x.	Feed back control	1M

Q.2(A)	Define management? Can you make use of the facts to explain importance of management?	10M
	OR	
Q.2(B)	How would you summarize corporate social responsibility with suitable examples?	10M
Q.3(A)	Classify the various decision making biases and errors.	10M
	OR	
Q.3(B)	Elaborate on the procedure of strategic management process.	10M
Q.4(A)	Based on what you know, how would you explain change management?	10M
	OR	
Q.4(B)	Define human resource management? Classify the various functions of HRM.	10M
Q.5(A)	Define leader? Elaborate various theories of leadership.	10M
	OR	
Q.5(B)	What is your opinion of inter-personal communication?	10M
Q.6(A)	Why do you think value chain management is very important for a Business organization?	10M
	OR	
Q.6(B)	Define marketing and classify the various functions of marketing.	10M

END

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14MAT104

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

PROBABILITY & STATISTICS

(Common to All)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	Define conditional probability.	1M
	ii.	If X is number of heads when a coin is tossed three times, find its mean.	1M
	iii.	Define Covariance.	1M
	iv.	In a binomial distribution mean is 5 and variance is 4, then find P(X=1)	1M
	v.	Area of normal curve between $\mu-3\sigma$ and $\mu+3\sigma$ is _____	1M
	vi.	Define Marginal probability distribution.	1M
	vii.	Define an unbiased estimator.	1M
	viii.	What is Type-I error?	1M
	ix.	Give an example of right tailed test.	1M
	x.	Define correlation.	1M

Q.2(A) i. State and Prove Multiplication rule of probability. 5M

ii. Assume that in a nuclear accident 30% of the workers are exposed to LD_{50} and die; 40% of the workers die; and 68% are exposed to LD_{50} or die. What is the probability that a randomly selected worker is exposed to the LD_{50}? 5M

OR

Q.2(B) A drug is used to maintain a steady heart rate in patients who have suffered a mild heart attack. Let X denotes the number of heart beats per minute obtained per patient 10M

x	40	60	68	70	72	80	100
$f(x)$	0.01	0.04	0.05	0.80	0.05	0.04	0.01

Find the (i) $p(68 \le X \le 72)$ (ii) Distribution function (iii) average heart beat of the patients (iv) variance of heart beats

Q.3(A) Define Poisson distribution and find its mean and variance through Moment generating function. 10M

OR

Q.3(B) Find the Moment generating function of Gamma Distribution and then find mean and variance of the distribution. 10M

Q.4(A) Let X denotes the number of grams of Hydrocarbons emitted by an automobile per mile. Assuming that X is normal with mean 1 and S. D. 0.25 grams. Find the probability that randomly selected automobile will emit (i) between 0.9 and 1.54 grams (ii) greater than 1.5 grams. 10M

OR

Q.4(B) State and prove Chebychev's inequality. 10M

Q.5(A) Show that $S^2 = \frac{1}{n-1}\sum_{i=1}^{n}(X_i - \bar{X})^2$ is an unbiased estimator of population variance 10M

OR

Q.5(B) Given the following bivariate probability distribution, obtain (i) Marginal distributions of X and Y (ii) the conditional distribution of X given Y=2 5M 5M

X\Y	0	1	2
-1	1/15	3/15	2/15
0	2/15	2/15	1/15
1	1/15	1/15	2/15

Q.6(A) Samples of students were drawn from two colleges and their weights in kilograms during the lockdown period of COVID-19 are gathered and shown below 10M

	Mean	S.D	Sample size
College-A	65	10	500
College-B	62	15	200

Make a large sample test to test the significance of difference between the means at 5% level of significance.

OR

Q.6(B) The heights (in centimetres) and weight (in kilograms) of 10 basketball players on a team are: 10M

Height (X)	186	189	190	192	193	193	198	201	203	205
Weight (Y)	85	85	86	90	87	91	93	103	100	101

Calculate correlation coefficient

***** END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14CE105

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

ANALYSIS OF STRUCTURES - I

(Civil Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	(i)	What are the conditions of equilibrium?	1M
	(ii)	What is meant by Conjugate beam?	1M
	(iii)	Define fixed beam.	1M
	(iv)	Mention different methods to find slopes and deflections of the different beams.	1M
	(v)	Write the applications of equations of equilibrium?	1M
	(vi)	Continuous beam is indeterminate beam. How?	1M
	(vii)	Write expression for strain energy due to bending?	1M
	(viii)	Write one application of Castigliano's first theorem.	1M
	(xi)	What is the condition to get maximum bending moment at the given section?	1M
	(x)	What is mean by influence line diagram?	1M

Q.2(A) Discuss about the Stability of the structures. 10M

OR

Q.2(B) Explain about the idealized structure. 10M

Q.3(A) Derive the expression for maximum slope and maximum deflection of a cantilever beam subjected to UDL over the entire span using double integration method. 10M

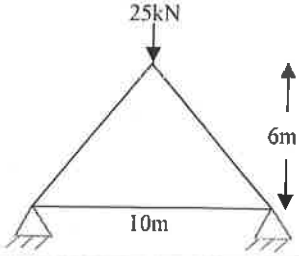
OR

Q.3(B) A simply supported beam of span 10m is subjected to two concentrated loads of 120kN and 80kN at 3m and 6m from left support. Calculate deflection under the loads and maximum deflection. Take E=2*10^5N/mm^2 and I=16*10^8 mm^4. 10M

Q.4(A) Derive the expression for strain energy stored in a beam when subjected to bending moment. 10M

OR

Q.4(B) Find the horizontal and vertical deflections of the joint C of a pin jointed truss shown below. Area of members are AB=250mm^2 and AC=BC=400mm^2. Take E=2x10^{5}N/mm^2. 10M



Q.5(A)	A fixed beam of span 6m carries point loads 20kN and 15kN at distances 2m and 4m from the left end. Find the fixed end moments and reactions at the supports. Draw SFD and BMD.	10M

OR

Q.5(B)	Derive the expression for theorem of three moments.	10M

Q.6(A)	Two wheel loads of 20kN and 10kN spaced at 3m apart cross a girder of 10m span, with the 10kN load leading, from left to right. Find maximum absolute SF and BM.	10M

OR

Q.6(B)	Derive the expression for finding reactions of simply supported beam using Influence lines and find the same if the beam is of span 6m and subjected to point load of 60kN at 2m from left support.	10M

***** END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14CE107

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

FLUID MECHANICS II

(Civil Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	**Draw** the diagram for forces exerted by jet on vertical plate	1M
	ii.	**Write** the formula for critical velocit	1M
	iii.	**Define** boundary layer theory	1M
	iv.	**Explain** the Froude number (Fe) for critical flow?	1M
	v.	**Write** dimensional unit of Chezy's constant?	1M
	vi.	**State** the Darcy Weisbach equation.	1M
	vii.	**Describe** Prandtl mixing length theory.	1M
	viii.	**Differentiate** subcritical and supper critical flow	1M
	ix.	**Compare** the flow regimes as per Reynolds's number	1M
	x.	**Explain** the reaction turbine?	1M
Q.2(A)	A fluid of viscosity 0.97 poise and relative density 0.9 is flowing in a horizontal circular pipe of diameter 100 mm and length 10 m. **Calculate** the differences of pressure at the two ends of pipe, if 100 kg of oil collected in the tank in 30 seconds.		10M
	OR		
Q.2(B)	Derive the expression for darcy Weisbach equation.		10M
Q.3(A)	**Define** momentum thickness and **derive** the expression for it.		10M
	OR		
Q.3(B)	For the velocity profile $\frac{u}{U} = 2\left(\frac{y}{\delta}\right) - \left(\frac{y}{\delta}\right)^2$, find the thickness of boundary layer at the end of plate and drag force on one side of a plate 1 m long and 0.8 m wide when placed in water flowing with a velocity of 150 mm per second. **Calculate** the value of co-efficient of drag also. Take μ for water = 0.01 poise.		10M
Q.4(A)	**Write** the note on a. Critical Depth b. Critical Velocity c. Minimum specific energy in terms of critical depth		10M
	OR		
Q.4(B)	**Compute** the discharge through a trapezoidal channel of width 8 m and side slope of 1 horizontal to 3 vertical. The depth of flow of water is 2.4 m and value of Chezy's constant, C= 50. The slope of bed of channel is given 1 in 4000.		10M

Q.5(A)	**Draw** the general layout of a hydroelectric power plant. Also, explain gross head and net head on it.	10M
	OR	
Q.5(B)	i. **Calculate** the forces exerted by a jet of water of diameter 75 mm on a stationary flat plate, when the jet strikes the plate normally with velocity of 20m/s. ii. Water is flowing through a pipe at the end of which a nozzle is fitted. The diameter of nozzle is 100 mm and the head of water at the centre nozzle is 100 m. find the forces exerted by the jet of water on a fixed vertical plate. Take the co-efficient of velocity as 0.95.	10M
Q.6(A)	**Define** specific speed and **articulate** the expression for the specific speed for a pump.	10M
	OR	
Q.6(B)	The diameter of a centrifugal pump, which is discharging 0.03 m^3/s of water against a total head of 20 m is 0.40 m. The pump is running at 1500 r.p.m. **Compute** the head, discharge and ratio of powers a geometrically similar pump of diameter 0.25 m when it is running at 3000 r.p.m.	10M

*** END***

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14CE108-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Sem (R14) (2017 admitted) – MOOCS Supplementary End Semester Examinations April 2021

DIGITAL LAND SURVEYING AND MAPPING

(Civil Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	List out types of Chain.	1M
	ii.	List out the assumption in Plane Surveying	1M
	iii.	What is GIS?	1M
	iv.	What is GPS User Segment?	1M
	v.	List out types of surveying?	1M
	vi.	Write the principles of surveying.	1M
	vii.	What is Contouring?	1M
	viii.	List out parts of Total Station.	1M
	ix.	Define Automated Mapping.	1M
	x.	What is mapping?	1M
Q.2(A)		Brief about Operations of Surveying.	10M
		OR	
Q.2(B)		Write in detail about Overview of Digital Land Surveying.	10M
Q.3(A)		Explain in about GPS User Segment.	10M
		OR	
Q.3(B)		Write in detail about the Principle of GPS Positioning & GPS Observables.	10M
4Q.(A)		Write in detail about Handling & Setting of Total Station.	10M
		OR	
Q.4(B)		Write in detail about the different types of contouring.	10M
Q.5(A)		What is mapping? Explain in detail about the mapping.	10M
		OR	
Q.5(B)		Write the Basics of Vertical Representation.	10M
Q.6(A)		Explain about Detailing of Digital Land Surveying.	10M
		OR	
Q.6(B)		What is control point? Explain the method control point establishment in detail.	10M

*** END***

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14EEE108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

CONTROL SYSTEMS

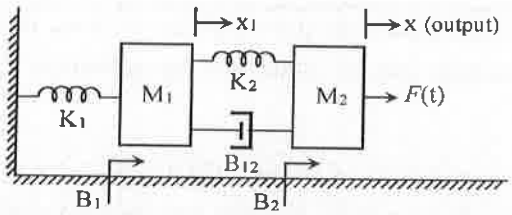
(EEE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

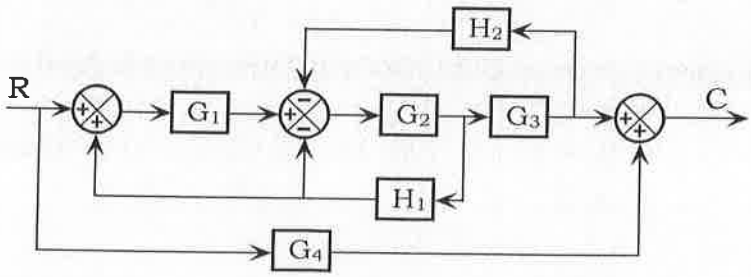
Q.1	i.	Missile launching and guidance system is an example of _____ control system.	1M
	ii.	Write the expression for force acting on a mass M causing displacement x.	1M
	iii.	Define impulse signal.	1M
	iv.	For a unity feedback system whose open loop transfer function is $G(s) = \frac{10}{(1+0.2s)(1+5s)}$. Find the position error constant.	1M
	v.	Define gain margin?	1M
	vi.	What is compensator? What are different types of compensators?	1M
	vii.	What is the requirement for BIBO stability?	1M
	viii.	How are the locations of roots of characteristic equation related to stability?	1M
	ix.	What are draw backs of transfer function model analysis?	1M
	x.	What are the properties state transition matrix?	1M

Q.2(A) Obtain the transfer function of the mechanical systems shown in Figure. 10M



OR

Q.2(B) Apply block diagram reduction rules to obtain the transfer function for the block diagram shown in figure. 10M



Q.3(A) Derive the expressions for step response of a second order system for different cases of damping ratio. 10M

OR

Q.3(B) A second order servo has unity feedback and an open loop transfer function $G(s) = \frac{500}{s(s+15)}$ 10M

i. Draw a block diagram for the closed loop system.
ii. What is the characteristics equation of the closed loop?
iii. What are the numerical values of natural frequency (wn) and damping ratio (ζ).
iv. Sketch the transient response for a unit step input.
v. Obtain the values of percentage overshoot and the time from the start of the transient to maximum overshoot.
vi. What is the settling time of the system?
vii. If the system is subjected to ramp input of 0.5rad/sec, what is the steady-state error.

Q.4(A) Draw the Bode plot of the unity feedback system with forward gain as $G(s)=\frac{200}{s(s+2)(s+20)}$. Also determine the gain margin, phase margin and comment on the stability of the system. 5M

OR

Q.4(B) The open loop transfer function of a unity feedback system is given by $G(s)=\frac{1}{s(1+s)(1+2s)}$. Sketch the polar plot and determine the gain and phase margin. 10M

Q.5(A) Apply RH criterion to determine the location of roots on the s-plane and hence the stability for the system whose characteristic equation $s^5 + 2s^4 + 2s^3 + 4s^2 + s + 2 = 0$. 10M

OR

Q.5(B) A unity feedback control system has an open loop transfer function $G(s) = \frac{K}{s(s^2+4s+13)}$. Sketch the root locus. 6M

Q.6(A) (i) The transfer function of a system is given by $\frac{Y(s)}{U(s)} = \frac{s^2+3s+2}{s^3+9s^2+26s+24}$. Determine State model. 6M

(ii) determine the eigen values of a linear system with state equation: 4M

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -10 & -9 & -4 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t).$$

OR

Q.6(B) Obtain the state space representation of an armature-controlled DC motor 10M

***** END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14EEE109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

ANALOG ELECTRONICS

(EEE)

Time: 3Hrs **Max Marks: 60**

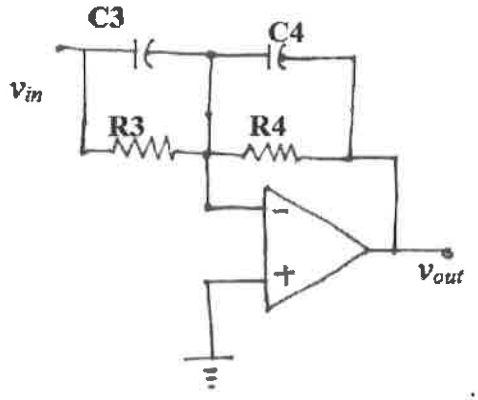
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	(i)	What is CMRR?	1M
	(ii)	What is output voltage of ideal open loop operational amplifier	1M
	(iii)	What is Non inverting comparator? Draw its input and output waveform	1M
	(iv)	Draw the diagram for integrator and hence write output voltage equation	1M
	(v)	What are the conditions for oscillators?	1M
	(vi)	What are the advantages of switching voltage regulator?	1M
	(vii)	What is the theoretical maximum efficiency of class-B power amplifier?	1M
	(viii)	Draw the ideal frequency response of High pass filter	1M
	(xi)	What are the advantages of Flash type ADC	1M
	(x)	What is the resolution of 12V input range 8 bit ADC?	1M

Q.2(A)	(i) With circuit diagram explain Instrumentation amplifier and give its advantages	5M
	(ii) With circuit diagram explain and derive gain relations in inverting amplifier.	5M

OR

Q.2(B)	(i) What is the transfer function of the below circuit and hence. Find the magnitude of the gain when the circuit given below will be independent of the frequency? Assume that C_4=0.2 C_3=0.2 μF and R_4=30 R_3=300 Kohm	8M



	(ii)Write a short note on Programmable gain converter	2M

Q.3(A)	(i)Write a short note on analog multipliers. Discuss how division is carried out using multiplier.	5M
	(ii)Discuss in detail about Sample and Hold circuit.	5M

OR

Q.3(B)	(i) With circuit diagram ,Explain 2 channel analog multiplexer.	4M
	(ii) Explain the operation of Schmitt trigger with a neat diagram.	6M

Q.4(A)	With circuit diagram explain RC phase shift oscillator and derive expression for oscillating frequency.	10M
	OR	
Q.4(B)	(i) Draw the block schematic representation of PLL and discuss its operation.	5M
	(ii) Discuss the operation of series voltage regulator.	5M
Q.5(A)	(i) Draw the II order active - high pass filter and derive its transfer function .	8M
	(ii) Design II order Butterworth active filter with low cut off frequency of 1 Khz . Assume capacitor = 0.1 μF	2M
	OR	
Q.5(B)	(i)Short notes on Class A output stage power amplifier .Derive its efficiency	5M
	(ii) Discuss how maximum efficiency is achieved in Class B output stage power amplifier	5M
Q.6(A)	(i) Discuss about temperature sensor (LM 35)	5M
	(ii) Discuss about pressure sensor (MPX2010)	5M
	OR	
Q.6(B)	(i) Explain the four bit Weighted Resistor DAC with circuit diagrams and derive output voltage expressions.	5M
	(ii) Explain the operation of Successive Approximation analog to digital converter.	5M

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: **14EEE106**

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

ELECTROMAGNETIC THEORY

(Branch of Electrical and Electronics Engineering)

Time: 3Hrs **Max Marks: 60**

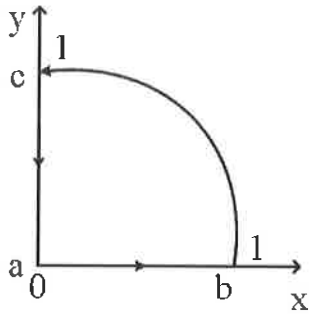
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	Define "Field".	1M
	ii.	What are the applications of Electromagnetic field theory related to electrical engineering?	1M
	iii.	State Coulomb's law of electrostatics.	1M
	iv.	What is the condition of a vector field to be irrotational?	1M
	v.	What is the condition for a vector to be solenoidal?	1M
	vi.	Define capacitance.	1M
	vii.	State and explain coulombs law.	1M
	viii.	Are all the Maxwell's equations independent? Explain.	1M
	ix.	State Divergence theorem.	1M
	x.	Define polarization.	1M

Q.2(A) State and explain Gauss-law of electromagnetics in integral form. 10M

OR

Q.2(B) . Given $\vec{A} = 2r\cos\emptyset\,\vec{I_r} + rI_\emptyset$ in cylindrical co-ordinates. For the contour shown in Figure. Verify stokes theorem. 10M



Q.3(A) Define the following terms: (i) dipole moment, (ii) electric susceptibility, (iii) relative dielectric constant, and (iv) polarization. 10M

OR

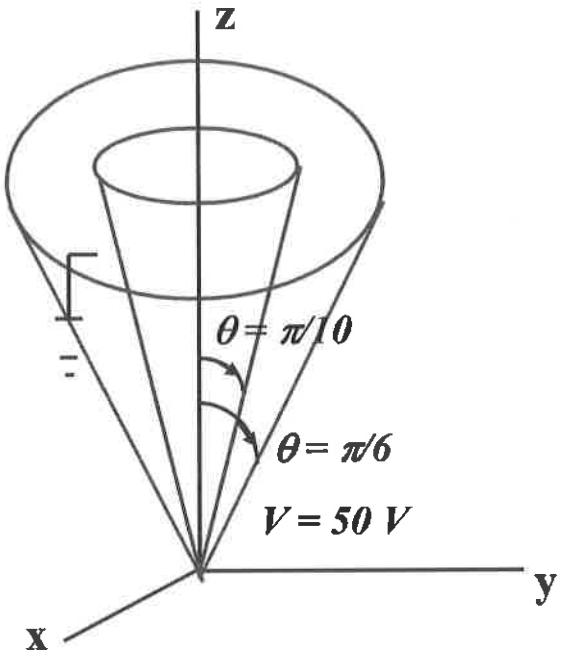
Q.3(B) State and explain gauss law with neat sketch 10M
Find the electric potential at the point at which E=0 when point charge of 3 μc and 5 μc are located at (0, 0) and (0.6, 0) m in XY plane.

Q.4(A) Two infinite and parallel conducting planes are separated d meter, with one of the conductor in the z = 0 plane at V = 0 Volt and the other in the z = d plane at V = V_0 Volt. Assume $\rho_v = 0$ and $\varepsilon = 2\varepsilon_0$ between the conductors. 10M

Find : (a) V in the range 0 < z < d ; (b) $\overline{E}$ between the conductors ; (c) $\overline{D}$ between the conductors.

OR

Q.4(B) Two infinite concentric conducting cone located at $\theta = \pi/10$ and $\theta = \pi/6$ The potential V = 0 V at $\theta = \pi/10$ and V = 50 V at $\theta = \pi/6$. Find V and $\overline{E}$ between the two conductors. 10M



Q.5(A) Derive expression for magnetic flux density at a point due to an infinite long current carrying current. 10M

OR

Q.5(B) A circular loop located on $x^2 + y^2 = 9$, z=0 carries a direct current of 10 A along a_ϕ. Determine H at (0, 0, 4) and (0, 0, 4). 10M

Q.6(A) State and explain the Faraday's laws of electromagnetic induction? 10M

OR

Q.6(B) What are permanent magnets? Explain their characteristics and applications. 10M

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14EEE107

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

MICROPROCESSORS AND INTERFACING

(EEE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	Convert 67_{10} to binary equivalent.	1M
	ii.	Convert 79_8 to decimal equivalent.	1M
	iii.	What is stack pointer?	1M
	iv.	What is the function of INTR pin?	1M
	v.	What is Machine Cycle?	1M
	vi.	Explain the instruction CALL.	1M
	vii.	Give an example of Maskable interrupt for 8086 microprocessor.	1M
	viii.	What is interrupt cycle?	1M
	ix.	What is ICWs?	1M
	x.	Write down the purpose of DMA controller.	1M
Q.2(I)		Explain about bus communication process in microprocessor.	10M
		OR	
Q.2(II)		Explain the components and their functions in microcomputer system.	10M
Q.3(I)		Explain the Architecture of 8086 microprocessor with neat labeled diagram.	10M
		OR	
Q.3(II)		Discuss the register organization of 8086 microprocessor.	10M
Q.4(I)		Draw and briefly explain read cycle and write cycle timing diagram of 8086 for minimum mode.	10M
		OR	
Q.4(II)		What is interrupt and interrupt service routine? Briefly explain the interrupt cycle of 8086 microprocessor.	10M
Q.5(I)		Draw the block diagram of 8254 and explain each block.	10M
		OR	
Q.5(II)		Explain the block diagram of 8255 and discuss each block.	10M
Q.6(I)		Explain about mode set register and status register of 8257.	10M
		OR	
Q.6(II)		Draw the block diagram of 8237 and explain each block.	10M

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14EEE106-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Sem (R14) (2016 admitted) – MOOCS Supplementary End Semester Examinations April 2021

ELECTROMAGNETIC THEORY

(EEE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	State Coulombs law.	1M
	ii.	Calculate the work done in moving another charge $q3=-4$ nC slowly from infinity to origin.	1M
	iii.	An electric dipole is located at origin. The potential due to dipole far away from the region is proportional to	1M
	iv	State whether true or false. In a charge-free region, there is no difference between Poisson and Laplace's equations.	1M
	v.	Find the capacitance per unit length of a coaxial cable with inner and outer radius 4 mm and 5 mm.	1M
	vi	The 'θ'component of $\nabla \times E$, in spherical coordinate system is _____	1M
	vii.	The magnitude of standing wave ratio is given by_____	1M
	viii.	Relation between E and H in uniform plane wave.	1M
	ix.	State wave equation in phasor form.	1M
	x.	What is phase velocity?	1M
Q.2(A)	Two charges Q_1 and Q_2 of mass 1kg each have a charge of +1Coulomb respectively. These charges are separated by a distance of 1m in free space permittivity 8.854×10^{-12} and gravitational constant 6.67×10^{-11} $m^3 Kg^{-1} S^{-2}$. a. Find the magnitude of electrostatic force acting on Q_1 due to Q_2 b. Find the gravitational force acting between them		10M
	OR		
Q.2(B)	A potential in free space is given as $V=kxy^2z^{-1}$ V. For a conservative field what is the volume charge density? What is electric field?		10M
Q.3(A)	(i) An electric field is 6 V/m in +x direction. Calculate the change in potential in carrying a test charge from (1,1,1) to (3,2,4).		5M
	(ii) Electric flux density in a certain region is given by $2x^2 a_x + 6y^2 a_y + Z a_z$ C/m^2.Find the the charge density at point (2,2,1)		5M
	OR		
Q.3(B)	(i) Calculate the potential at point $(r,,\emptyset)$. Consider r=5 m,θ=30^o		5M
	(ii) Find the magnitude of radial component of the electric field generated at a point $P(r,\theta,\emptyset)$, due to the dipole.		5M
Q.4(A)	An electric field inside a dielectric material makes an angle 25^o with the normal to an interface between the material and air. The relative permittivity of the dielectric is 1.8. What angle does the field make with the normal, on the air side of the interface?		10M
	OR		

Q.4(B) Find the magnetic intensity inside an infinitely long straight wire of radius 5 mm, carrying a current 200 mA, at a distance 3 mm from the wire axis. Assume the current density in the wire is constant. 10M

Q.5(A) A transmission line is terminated in a pure inductance, which presents load impedance jZo. The frequency is 1 GHz and the phase velocity is given by 0.67c Find the reflection coefficient of T-line 10M

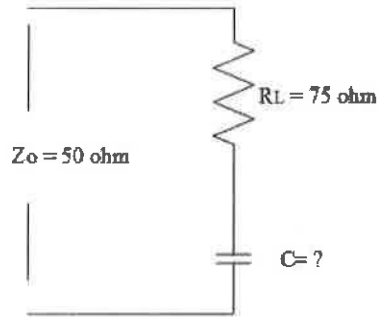
a) The magnitude of standing wave ratio is given by?

b) Find the distance from the load to the nearest voltage maximum.

OR

Q.5(B) Derive wave equation from Maxwell equation for electric and magnetic fields in dielectric fields 10M

Q.6(A) A 50 ohm lossless transmission line is connected to a load composed of a 75 ohm resistor is series with an unknown capacitance C, as shown in figure below. If at 10 MHz the VSWR is measured to be 3, determine C. 10M



OR

Q.6(B) (i) Define the following 10M

a. Group velocity b. Phase Velocity c. Snell's Law

(ii) Differentiate between Reflection and Refraction

(iii) What is TE and TM modes in wave guides?

END

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14ME107

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

MACHINE DESIGN - I

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

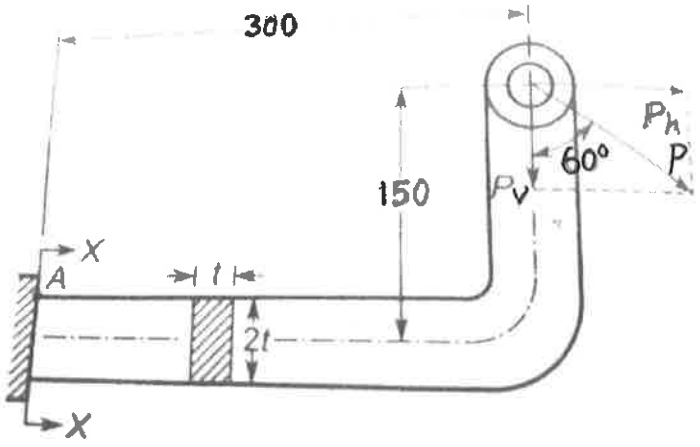
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	What is Factor of safety? Explain the same for ductile and brittle materials.	1M
	ii.	Draw stress-strain diagram for ductile material and indicate yield stress, upper yield point, lower yield point, ultimate tensile stress and fracture.	1M
	iii.	Define eccentric loading condition.	1M
	iv.	Define endurance limit.	1M
	v.	What is difference between temporary and permanent fastening?	1M
	vi.	What do you mean by bolt of uniform strength?	1M
	vii.	Define various types of welded joint	1M
	viii.	Define size and throat thickness of a welded joint	1M
	ix.	Define spring index?	1M
	x.	What do you mean by free and solid length of a spring?	1M

Q.2(A) State and derive "distortion-energy theory" in theory of failure. 10M

OR

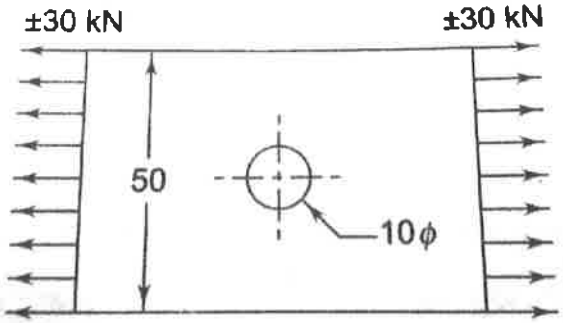
Q.2(B) A wall bracket with a rectangular cross section is shown in Figure. The depth of the cross section is twice of the width. The force P acting on the bracket at 60° to the vertical is 5 kN. The material of the bracket is grey cast iron FG 200 and the factor of safety is 3.5. Determine the dimensions of the cross sections of the bracket. Assume maximum normal stress theory of failure. 10M



Q.3(A) Define "notch sensitivity" and derive the relation between notch sensitivity factor "q", theoretical stress concentration factor K_t and fatigue stress concentration factor K_f. What is the value of "q" for material having "no notch sensitivity" and "fully sensitive to notch". 10M

OR

Q.3(B) A plate made of steel 20C8 (S_{ut} =440N/mm$^{2)}$ in hot-rolled and normalized condition is shown in Figure. It is subjected to a completely reversed axial loading of 30 kN. The notch sensitivity factor "q" can be taken as 0.8 and expected reliability is 90%. Take size factor as 0.85, surface finish factor as 0.67 and reliability factor as 0.897 (for reliability of 90%). The theoretical stress concentration factor is 2.51. The factor of safety is 2. Determine the plate thickness for infinite life. 10M

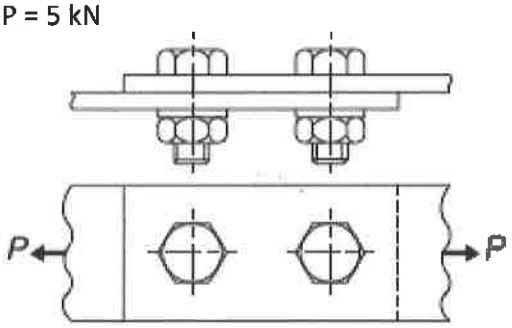


Q.4(A) State and derive "Strength Equations" for 10M

a. Shear failure of rivets.
b. Tensile failure of the plate between rivets.
c. Crushing failure of plate.

OR

Q.4(B) Two plates are fastened by means of two bolts as shown in Figure. The bolts are made of plain carbon steel 30C8 (Syt = 400 N/mm2) and the factor of safety is 5. Determine the size of the bolts if, P = 5 kN 10M



Q.5(A) i. Write the expression of resultant shear stress in case of welded joint subjected to eccentric bending moment. 2M

ii. Derive expression $I_{xx} = bt\frac{d^2}{4}$; in case of welded joint subjected to eccentric bending moment. 8M

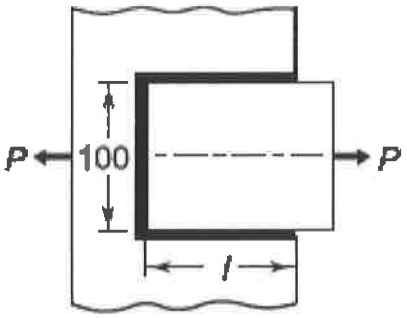
Here

$I_{xx} = moment\ of\ inertia\ about\ X - axis\ of\ all\ welds\ based\ on\ throat\ area.$

B=width of weld, D= height of weld, t= thickness of weld

OR

Q.5(B) A steel plate, 100 mm wide and 10 mm thick, is joined with another steel plate by means of single transverse and double parallel fillet welds, as shown in Figure. The strength of the welded joint should be equal to the strength of the plates to be joined. The permissible tensile and shear stresses for the weld material and the plates are 70 and 50 N/mm^2 respectively. Find the length of each parallel fillet weld. Assume the tensile force acting on the plates as static. 10M



Q.6(A) Write "Stress and Deflection" Equations for spring. Derive expression for load-stress equation and load-deflection equation. 10M

OR

Q.6(B) It is required to design a helical compression spring subjected to a maximum force of 1250 N. The deflection of the spring corresponding to the maximum force should be approximately 30 mm. The spring index can be taken as 6. The spring is made of patented and cold-drawn steel wire. The ultimate tensile strength and modulus of rigidity of the spring material are 1090 and 81 370 N/mm^2 respectively. The permissible shear stress for the spring wire should be taken as 50% of the ultimate tensile strength. Design the spring and calculate: 10M

a. wire diameter;
b. mean coil diameter;
c. number of active coils;
d. total number of coils;

*** END***

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14ME108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

DYNAMICS OF MACHINERY

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	What are the various kinds of friction?	1M
	ii.	What type of brakes commonly used in railway trains and motor cars?	1M
	iii.	Define coefficient of fluctuation of energy	1M
	iv.	Give the applications of gyroscopic couple	1M
	v.	What is meant by hunting of governor?	1M
	vi.	How are governors classified?	1M
	vii.	Why rotating masses are to be dynamically balanced?	1M
	viii.	Distinguish the static and the dynamic balancing.	1M
	ix.	Name any two isolating materials.	1M
	x.	What is transmissibility ratio?	1M

Q. 2 (A)	A body, resting on a rough horizontal plane required a pull of 180 N inclined at 30º to the plane just to move it. It was found that a push of 220 N inclined at 30º to the plane just moved the body. Determine the weight of the body and the coefficient of friction.	10M
	OR	
Q.2 (B)	A conical pivot supports a load of 20 kN, the cone angle is 120º and the intensity of normal pressure is not to exceed 0.3 N/mm^2. The external diameter is twice the internal diameter. Find the outer and inner radii of the bearing surface. If the shaft rotates at 200 r.p.m. and the coefficient of friction is 0.1, find the power absorbed in friction. Assume uniform pressure.	10M
Q.3(A)	An aeroplane makes a complete half circle of 50 metres radius, towards left, when flying at 200 km per hr. The rotary engine and the propeller of the plane has a mass of 400 kg and a radius of gyration of 0.3 m. The engine rotates at 2400 r.p.m. clockwise when viewed from the rear. Find the gyroscopic couple on the aircraft and state its effect on it.	10M
	OR	
Q.3(B)	The turning moment diagram for a petrol engine is drawn to the following scales: Turning moment, 1 mm = 5 N-m; crank angle, 1 mm = 1°. The turning moment diagram repeats itself at every half revolution of the engine and the areas above and below the mean turning moment line taken in order are 295, 685, 40, 340, 960, 270 mm2. The rotating parts are equivalent to a mass of 36 kg at a radius of gyration of 150 mm. Determine the coefficient of fluctuation of speed when the engine runs at 1800 r.p.m.	10M

Q.4(A)	The arms of a Porter governor are each 250 mm long and pivoted on the governor axis. The mass of each ball is 5 kg and the mass of the central sleeve is 30 kg. The radius of rotation of the balls is 150 mm when the sleeve begins to rise and reaches a value of 200 mm for maximum speed. Determine the speed range of the governor. If the friction at the sleeve is equivalent of 20 N of load at the sleeve, determine how the speed range is modified.	10M
	OR	
Q.4(B)	A Proell governor has equal arms of length 300 mm. The upper and lower ends of the arms are pivoted on the axis of the governor. The extension arms of the lower links are each 80 mm long and parallel to the axis when the radii of rotation of the balls are 150 mm and 200 mm. The mass of each ball is 10 kg and the mass of the central load is 100 kg. Determine the range of speed of the governor.	10M
Q.5(A)	A, B, C and D are four masses carried by a rotating shaft at radii 100, 125, 200 and 150 mm respectively. The planes in which the masses revolve are spaced 600 mm apart and the mass of B, C and D are 10 kg, 5 kg, and 4 kg respectively. Find the required mass A and the relative angular settings of the four masses so that the shaft shall be in complete balance.	10M
	OR	
Q.5(B)	A single cylinder reciprocating engine has speed 240 r.p.m., stroke 300 mm, mass of reciprocating parts 50 kg, mass of revolving parts at 150 mm radius 37 kg. If two-third of the reciprocating parts and all the revolving parts are to be balanced, find: 1. The balance mass required at a radius of 400 mm, and 2. The residual unbalanced force when the crank has rotated 60° from top dead centre.	10M
Q.6(A)	Discuss briefly with neat sketches the longitudinal, transverse and torsional free vibrations.	10M
	OR	
Q.6(B)	The mass of a single degree damped vibrating system is 7.5 kg and makes 24 free oscillations in 14 seconds when disturbed from its equilibrium position. The amplitude of vibration reduces to 0.25 of its initial value after five oscillations. Determine: 1. stiffness of the spring, 2. logarithmic decrement, and 3. damping factor, i.e. the ratio of the system damping to critical damping.	10M

*** END***

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14ME109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – March 2021

APPLIED THERMODYNAMICS

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	What is the function of economizer?	1M
	ii.	What is induced draught in a thermal power plant?	1M
	iii.	Draw T-s diagram of a Carnot vapour cycle?	1M
	iv.	Write the name of a water tube boiler.	1M
	v.	Draw the p-v diagram of a single stage compression process with clearance volume.	1M
	vi.	What is the COP of a heat pump?	1M
	vii.	Write the two advantages of multi-stage compression.	1M
	viii.	Define Mach number.	1M
	ix.	Draw the T-s diagram of gas turbine plant cycle.	1M
	x.	What is the function of diffuser?	1M

Q.2(A) Explain the working procedure of any fire tube boiler with a neat diagram. 10M

OR

Q.2(B) A chimney of height 32 m is used for producing a draught of 16 mm of water. The temperatures of ambient air and flue gases are 27^0C and 300^0C respectively. The coal burned in the combustion chamber contains 81% carbon, 5% moisture and remaining ash. Neglecting losses and assuming the value of burn products equivalent to the volume of air supplied and complete consumption of fuel, find the percentage of excess air supplied? 10M

Q.3(A) Consider a steam power plant operating on the ideal Rankine cycle. Steam enters the turbine at 3 MPa and 350°C and is condensed in the condenser at a pressure of 75 kPa. Determine 10M

(*a*) the thermal efficiency of this power plant,
(b) thermal efficiency if the condenser pressure is reduced to 10 kPa

OR

Q.3(B) A refrigerator uses refrigerant-134a as the working fluid and operates on an ideal vapor-compression refrigeration cycle between 0.14 and 0.8 MPa. If the mass flow rate of the refrigerant is 0.05 kg/s, determine the 10M

(a) rate of heat removal from the refrigerated space
(b) power input to the compressor
(c) rate of heat rejection to the environment, and
(d) COP of the refrigerator

Q.4(A) Explain the working principle of a reaction steam turbines with a schematic diagram. 10M

OR

Q.4(B) In a De-laval turbine, the steam issues from the nozzles with a velocity of 1200 m/s. The nozzle angle is 20^0. Mean blade velocity is 400 m/s. The inlet and out let angle of blade is same. The mass flow rate is 1000 kg/ min. Friction factor is 0.8. Determine 10M

(i) Blade angles
(ii) Power developed in kW
(iii) Blade efficiency

Q.5(A) Explain the working of a rotary compressor with a neat sketch. 10M

OR

Q.5(B) A single-stage, double-acting compressor has a free air delivery of 14 m^3/min. measured at 1.013 bar and 15^0C. The delivery pressure is 7 bar and speed are 300 rpm. Index of compression and expansion, n = 1.3. The clearance volume is 5% of the swept volume. Calculate 10M

(i) Indicated power required
(ii) Volumetric efficiency

Q.6(A) Summarize the advantages and disadvantages of Turbojet and Turboprop engines. 10M

OR

Q.6(B) An air standard Brayton cycle has pressure ratio of 4 and inlet conditions of 1 bar pressure and 27°C temperature. Find the air flow rate required for 100 kW power output if the maximum temperature in the cycle is 1000°C. 10M

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14ME110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – MAR2021

PRODUCTION TECHNIQUES – I

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	Why the patterns are required in casting process?	1M
	ii.	What do you mean by gating ratio?	1M
	iii.	State the applications of mechanical press?	1M
	iv	Differentiate between piercing and punching	1M
	v.	What do you mean by optimum cutting condition?	1M
	vi	What is Ra in surface finish?	1M
	vii.	What is the difference between brazing and soldering?	1M
	viii.	Name the two shielding gases used in TIG and MIG welding?	1M
	ix.	Mention the application of powder metallurgy?	1M
	x.	Define sintering.	1M

Q.2(A)	What are the probable reasons behind defective castings? Explain 5 casting defects in details	10 M
	OR	
Q.2(B)	Explain in details the working principle of sand casting process with neat sketch.	10 M
Q.3(A)	What is extrusion? Explain hot and cold extrusion in details	10 M
	OR	
Q.3(B)	Mention the application of deep drawing operations and explain their working, merits and demerits.	10 M
Q.4(A)	Explain the principle of centerless grinding. Explain "Through feed", "Infeed", & "End feed" methods of centerless grinding. Where are they used?	10 M
	OR	
Q.4(B)	Explain the lapping and super finishing with neat sketch.	10 M
Q.5(A)	Discuss Gas welding in details	10 M
	OR	
Q.5(B)	Explain the various types of joints and positions generally used in welding process.	10 M
Q.6(A)	Explain the detailed steps involved in Powder Metallurgy technique.	
	OR	
Q.6(B)	What are the different types of rapid prototyping process and explain their applications.	10 M

END

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14ME110-M3

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Sem (R14) (2017 admitted) – MOOCS Supplementary End Semester Examinations April 2021

MANUFACTURING PROCESS TECHNOLOGY

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	What are the different pattern materials?	1M
	ii.	How the pattern allowance helps in casting.	1M
	iii.	Mention the defects in forging.	1M
	iv	State the applications of rolling operation?	1M
	v.	What do you mean by optimum condition?	1M
	vi	Differentiate hot and cold forming.	1M
	vii.	Define soldering?	1M
	viii.	Name the shielding gases used in MIG?	1M
	ix.	Define porosity.	1M
	x.	Define sintering.	1M
Q.2(A)		Explain the different defects in casting process.	10 M
		OR	
Q.2(B)		Explain in details the working principle of die casting process with neat sketch.	10 M
Q.3(A)		Explain the working principle of drawing and its applications.	10 M
		OR	
Q.3(B)		Explain the extrusion process with neat sketch and their applications.	10 M
Q.4(A)		Explain the principle of centerless grinding. Explain "Through feed", "Infeed", & "End feed" methods of centerless grinding. Where are they used?	10 M
		OR	
Q.4(B)		Explain the working principle of internal grinding with neat sketch.	10 M
Q.5(A)		Explain the working principle of resistance spot welding with neat diagrams	10 M
		OR	
Q.5(B)		How defects can be detected by NDT methods?	10 M
Q.6(A)		How the composite are classified ? and explain the different types of composites with examples?	
		OR	
Q.6(B)		Explain the detailed steps involved in Powder Metallurgy technique.	10 M

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Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14ME107-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Sem (R14) (2015 admitted) – MOOCS Supplementary End Semester Examinations April 2021

MACHINE DESIGN – PART 1

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	Which theory of failure is the best suited to ductile material?	1M
	ii.	Define principal stress.	1M
	iii.	Differentiate the static and dynamic loading condition?	1M
	iv.	Explain the term "creep failure".	1M
	v.	What is distortion energy?	1M
	vi.	What do you mean by stress concentration factor?	1M
	vii.	Define fluctuating stress.	1M
	viii.	What is fracture toughness of a material?	1M
	ix.	What do you mean by non-zero mean stress condition?	1M
	x.	Give an example of fluctuating fatigue.	1M
Q.2(A)	i.	What is strain energy? Write its mathematical expression in case of "tension", "bending" and "torsion".	5M
	ii.	What is stiffness? Write its mathematical expression in case of "tension", "bending" and "torsion".	5M
		OR	
Q.2(B)		What are the procedures for designing a component? Explain its schematic diagram.	10M
Q.3(A)	i.	Define stress concentration factor in case of plate having an elliptical hole.	5M
	ii.	What will be the value of stress concentration factor if ellipse becomes circle?	5M
		OR	
Q.3(B)		State and derive "maximum principal stress theory" in theory of failure.	10M
Q.4(A)		State and derive distortion energy theory.	10M
		OR	
Q.4(B)		Explain ductile to brittle transition temperature. Also provide any two examples of the phenomena.	10M
Q.5(A)		How do you calculate fatigue strength (for finite life) in case of components subjected to reversed stresses? Explain its mathematical approach by using Cartesian co-ordinate using $\log_{10}(S_f)$ Vs $\log_{10}N$. Here S_f is the fatigue strength and N is the no cycles.	10M
		OR	
Q.5(B)		Define "fluctuating stresses", "repeated stresses" and "reversed stresses" with help of stress vs time diagram. What do you mean by a standard rotating beam specimen? Why rotating beam specimen is used?	10M

Q.6(A) Explain Goodman's diagram for non zero mean stress and also explain Miner's rule. 10M

OR

Q.6(B) A forged steel bar, 50 mm in diameter, is subjected to a reversed bending stress of 250 N/mm^2. The bar is made of 40C8 (S_{ut} = 600 N/mm^2). Calculate the life of the bar for a reliability of 90%. 10M

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14ME110-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Sem (R14) (2014 admitted) – MOOCS Supplementary End Semester Examinations April 2021

MANUFACTURING PROCESS TECHNOLOGY – PART I

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.1	i.	Mention the tool materials used in AJM process.	1M
	ii.	Classify unconventional processes.	1M
	iii.	What do you understand by oblique cutting?	1M
	iv.	State the few assumptions were made by merchant theory.	1M
	v.	List out the functions of runner.	1M
	vi.	Write the elements of gating and sprue system.	1M
	vii.	Define elastic deformation.	1M
	viii.	Classify the joining processes.	1M
	ix.	Name some lubrication used in forming operations?	1M
	x.	Define tool wear.	1M
Q.2(A)		Discuss the influence process parameters and applications of EDM.	10M
		OR	
Q.2(B)		State the working principle of EBM and ECM.	10M
Q.3(A)		Explain the mechanism for chip formation and What factors are responsible for formation of these different types of chips?	10M
		OR	
Q.3(B)		Bring out the characteristics of thermal wear and mechanical chipping.	10M
Q.4(A)		Explain about green sand molding process and detailed procedure with neat sketch.	10M
		OR	
Q.4(B)		Discuss TIG and MIG with a neat figure.	10M
Q.5(A)		Discuss the concept and applications of centrifugal casting.	10M
		OR	
Q.5(B)		Explain pouring and solidification processes in castings with detailed sketch.	10M
Q.6(A)		Explain the principle of solid state welding process.	10M
		OR	
Q.6(B)		Describe in details about rapid prototyping and its applications.	10M

*** END***

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14ECE105

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

SIGNALS & SYSTEMS

(ECE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	State shifting property of impulse function	1M
	ii.	When the discrete signal is said to be even	1M
	iii.	Sketch the signal t u(t-2).	1M
	iv	Fourier Transform of 1 is?	1M
	v.	Define Fourier transform pair.	1M
	vi	What is aliasing effect?	1M
	vii.	What is difference between DFT and DTFT	1M
	viii.	Write any two applications of Z-transform	1M
	ix.	What is difference between DFT and ZT	1M
	x.	What is linear convolution	1M
Q.2(A)	i) Evaluate the following integrals		6M
	$i)\ \int_{-\infty}^{\infty} e^{-\propto t2}\,\delta(t-10)dt$ ii) $\int_0^5 \delta(t)\,\sin 2\pi t\,dt$ iii) $\int_{-\infty}^{\infty}[\delta(t)\cos t+\delta(t-1)\sin t]dt$		
	ii) A signal x(t) has energy E, calculate the energy of the signal x(3t) and x(t/3)		4M
	OR		
Q.2(B)	Find the convolution of the following signals using graphical approach $x(t) = e^{-2t}u(t)$; h(t) = u(t+2)		10M
Q.3(A)	i) Prove the following properties of Fourier transform a) Time Scaling Property b) Integration property		5M
	ii) Find Fourier Transform of a) δ(t) b) $u(t)$ c) cos(ω_0t)		5M
	OR		
Q.3(B)	i) Determine the nyquist rate corresponding to each of the following signals [1M+2M+2M] a) x(t) = 1+cos(2000πt)+cos(4000πt) b) x(t) = sin(4000πt)/(πt) c) x(t) = (sin(4000πt)/(πt))^2		5M
	ii) Consider a signal x(t) which is band limited to the frequency ω_0, multiply this signal with an impulse train having sample to sample spacing as T , Find the equation for the spectrum of the sampled signal,also draw the corresponding spectrum.		5M
Q.4(A)	Find Laplace transforms and sketch their ROC of		3M
	i) x (t)=u(t-3)		3M
	ii) x(t) = e^{j5t}u(t)		4M
	iii) Find the inverse Laplace transform of X(s) =(-5s-7)/(s+1)(s-1)(s+2)		

OR

Q.4(B)	i) Define Laplace transform of signal f(t) and its region of convergence and Derive the relation Between Laplace transform and Fourier transform of signal	6M
	ii) Determine the Laplace Transform of the following signals a) δ(t) b) u(t)	4M
Q.5(A)	i) Find Z-Transform of $n^2(\frac{1}{3})^n u[n]$	7M
	ii) What are the advantages and limitations of Z Transforms?	3M

OR

Q.5(B)	i) State and prove integration and differentiation property of Z Transforms	5M
	ii) Find Inverse Z Transform of the following $X(Z)=\frac{1}{(1+z^{-1})^2(1+z^{-1})}$ ROC;|z|>1	5M
Q.6(A)	Compute 8 point DFT of the following sequence using radix-2 DIT FFT $x(n) = \{1, 2, 0, 1, 2, 0, 1, 1, 1\}$	10M

OR

Q.6(B)	Explain Fast Fourier transform.	10M

***** END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14ECE107

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

MICROELECTRONICS AND CIRCUITS

(ECE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	What is a cascaded amplifier? What is the need of it?	1M
	ii.	Draw the circuit model for transresistance amplifiers.	1M
	iii.	What is the purpose of biasing in BJT amplifier circuits?	1M
	iv	What is current source?	1M
	v.	Draw the circuit diagram of a MOS Differential pair.	1M
	vi	What are the applications of current mirror circuit?	1M
	vii.	What are the advantages of negative feedback?	1M
	viii.	State the Nyquist criterion for stability of feedback amplifiers.	1M
	ix.	What is slew rate?	1M
	x.	Write the ideal characteristics parameters of op-amp.	1M
Q.2(A)	(i) Draw and explain the different types of amplifiers with their circuit models. (ii) A voltage amplifier with R_i = 100K and R_O = 1K is excited by a voltage source with R_S= 10K. Load resistance, R_L = 10k. The open circuit voltage gain is 10^3. Determine the voltage amplification factor in dB.		10M
	OR		
Q.2(B)	What is a voltage amplifier? Draw the circuit model for a voltage amplifier and derive the expression for overall voltage gain.		10M
Q.3(A)	A CE amplifier utilizes a BJT having β =100 and V_A = 100V, is biased at I_C = 1mA and has a collector resistance R_C= 5KΩ. Find R_{in}, R_O, and Avo. If the amplifier is fed with a signal source having a resistance of 5 KΩ and a load resistance RL of 5 KΩ is connected to the output terminal, find the resulting A_v and G_v. If V_π is to be limited to 5mV, what are the corresponding V_{sig} and V_o with the load connected?		10M
	OR		
Q.3(B)	Explain with diagram different biasing techniques in MOS Amplifier Circuits.		10M
Q.4(A)	Draw and explain Current Mirror and Steering Circuits of MOSFET.		10M
	OR		
Q.4(B)	Draw MOS differential amplifier circuit. Explain its common mode and differential mode of operations.		10M
Q.5(A)	What are the two general types of feedback and what are the advantages and disadvantages of each type? Explain in detail the four types of feedback topologies?		10M
	OR		
Q.5(B)	What is a Bode plot? Explain the stability study using Bode plots.		10M
Q.6(A)	Explain in detail Dual-Slope A/D Converter Circuits.		10M
	OR		
Q.6(B)	Explain the two stage CMOS op-amp circuit		10M

***** END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14ECE108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

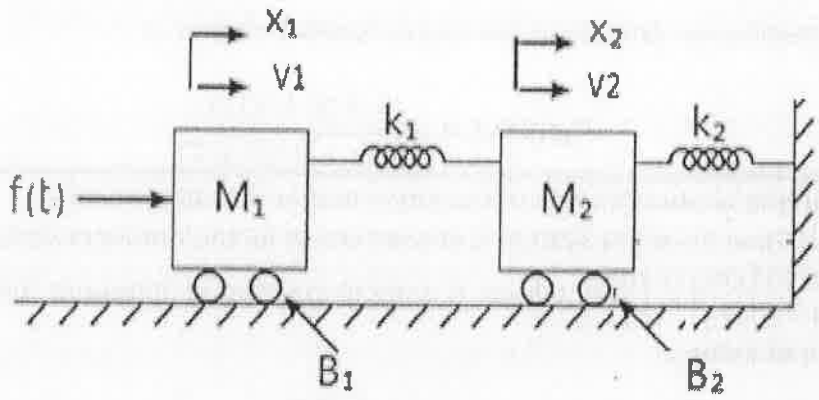
CONTROL SYSTEMS

(ECE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	Write the Mason's gain formula.	1M
	ii.	Write any two differences between open loop and closed loop systems.	1M
	iii.	Write the transfer function of PI and PID controllers.	1M
	iv	Define rise time.	1M
	v.	Define velocity error constant.	1M
	vi	The gain function of the second order time domain system is given by $G(s) = \frac{10}{S(S+2)}$, determine the value of ξ.	1M
	vii.	Define Breakaway point in Root locus.	1M
	viii.	Which are the various compensation schemes used in practice?	1M
	ix.	What is controllability of the system?	1M
	x.	Define state.	1M
Q.2(A)		Write the differential equation governing the mechanical system shown in Fig. Draw the force -voltage and force-current electrical analogous circuits and verify writing mesh and node equations.	10 M



OR

Q.2(B)		Explain the block diagram reduction rules.	10M
Q.3(A)		(i) Obtain the unit step and impulse response of a unity feedback system whose open loop transfer function given below $G(s) = \frac{2S+1}{S^2}$	5M
		(ii)The system shown below is subjected to a unit step input, determine the values of K and T when percentage peak overshot is 25.4% and rise timr is 3 sec.	5M

OR

Q.3(B) Derive the expressions for steady state errors and error constants for various types of systems subjected to step, ramp and parabolic inputs. 10M

Q.4(A) Construct the Bode plot for a unity feedback system characterized by the open loop transfer function and comment on stability. 10M

$$G(s) = \frac{K(1+0.2S)(1+0.025S)}{S^3(1+0.001S)(1+0.005S)}$$

OR

Q.4(B) A unit feedback control system has 10M

$$G(s) = \frac{10}{s(s+1)(s+2)}$$

Draw the nyquist plot .

Q.5(A) (i) Check the stability of the characteristic equations of a closed loop systems is given as 10M

(a) $S^6 + 2S^5 + 8S^4 + 12S^3 + 20S^2 + 16S + 16 = 0$

(b) $S^4 + 6S^3 + 23S^2 + 40S + 50 = 0$

OR

Q.5(B) Draw the root locus for open loop transfer function define as 10M

$$H(s)G(s) = \frac{K(S+1.5)}{s(s+1)(s+5)}$$

Q.6(A) (i) Explain briefly about the state transition matrix and its properties. 4M

(ii) A linear Time invariant system is characterized by the homogeneous equation 6M $\begin{bmatrix}\dot{x_1}\\ \dot{x_2}\end{bmatrix} = \begin{bmatrix}1 & 0\\ 1 & 1\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix} + \begin{bmatrix}0\\ 1\end{bmatrix}u$ where u is unit step input compute solution of state equation and assume

$$x(0) = \begin{bmatrix}1\\ 0\end{bmatrix}.$$

OR

Q.6(B) Obtain the eigen values, eigen vectors and diagonal matrix. 10M

$$[\dot{X}] = \begin{bmatrix}0 & 1 & 0\\ 3 & 0 & 2\\ -12 & -7 & -6\end{bmatrix} X + \begin{bmatrix}1\\ 0\\ 2\end{bmatrix} u, \quad Y = [1 \quad 0 \quad 0]\, x$$

*** END***

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14ECE106

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

MICROPROCESSOR AND INTERFACING

(ECE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	What are the different types of buses used in 8086?	1M
	ii.	Convert $(1111\ 1010)_2$ to Hexadecimal number.	1M
	iii.	What is the size of the address bus of 8086?	1M
	iv	Name the default segment when IP is in use.	1M
	v.	What is meant by 'DQ' in assembler directives?	1M
	vi	Name hardware interrupt pins present in 8086.	1M
	vii.	How many counters are there in 8253?	1M
	viii.	IC 8259 is a _____.	1M
	ix.	What is the function of the DMA control signal HOLD?	1M
	x.	8254 contains _____ number of counters.	1M
Q.2(A)		With a block diagram explain functions of microcomputer components	10M
		OR	
Q.2(B)	i.	Perform the arithmetic operations (+42) + (-13) and (+13) – (-42) in binary using the signed 2's complement representation for negative number.	10M
	ii.	Represent the following decimal numbers in BCD: 13597, 932836 and 99880.	
Q.3(A)		Explain the control transfer instructions and string instructions of 8086 with suitable example.	10M
		OR	
Q.3(B)		i. Explain any three arithmetic instructions of 8086 with examples.	6M
		ii. Explain the role of Stack Segment (SS) and Stack Pointer (SP) registers	4M
Q.4(A)		Draw and explain read cycle and write cycle timing diagram of 8086 in minimum mode.	10M
		OR	
Q.4(B)		What are the flag manipulation and processor control instructions available in 8086 microprocessor.	10M
Q.5(A)		i. Draw and explain the block diagram of 8254 timer.	5M
		ii. Explain control word registers of 8254 timer.	5M
		OR	
Q.5(B)		Describe the pin diagram and architecture of 8255 with neat diagrams.	10M
Q.6(A)		Explain signal description of 8237 DMA controller for data transfer	10M
		OR	
Q.6(B)		Explain the use of logic analyzer as a debugger. Also explain the functioning of emulator for 8086 microprocessor.	10M

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14ECE105-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

PRINCIPLES OF SIGNALS AND SYSTEMS (MOOC)

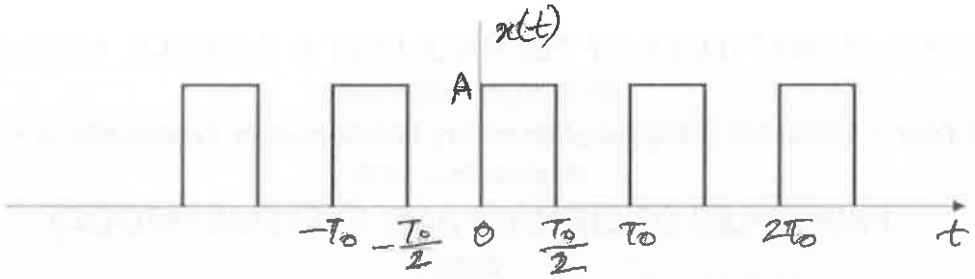
(ECE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	Test the signal $x(n)=\cos(2n)$ is periodic or not.	1M
	ii.	What is the impulse response of two continuous time LTI systems connected in cascaded?	1M
	iii.	State the time shifting property of Laplace Transform	1M
	iv	Define ROC of the Laplace Transform	1M
	v.	What is the relationship between CTFT and Laplace Transform?	1M
	vi	Define transfer function of the continuous time LTI systems	1M
	vii.	Find the DTFT of unit impulse signal $\delta(n)$?	1M
	viii.	State time shifting property of discrete-time Fourier transform	1M
	ix.	Define the FIR filter.	1M
	x.	What is recursive realization in IIR system ?	1M
Q.2(A)	Define and sketch the following continuous time signal (a) Unit Impulse (b) Unit Step (c) Unit ramp		6M
	(ii) Check whether $x(n)=u(n)$ is an energy signal or power signal		4M
	OR		
Q.2(B)	Explain the difference between the following systems. i) Static and Dynamic ii) Linear and non-linear systems. iii) Time varying and time invariant systems. iv) Causal and non-causal v) Stable and unstable		10M
Q.3(A)	(i) Discuss the properties of ROC for Laplace transform.		10M
	(ii) Find the Laplace of the following signal (a) $x(t)=te^{-at}u(t)$ (b) $x(t)=\cos(w_0t)u(t)$		
	OR		
Q.3(B)	(i) Find the inverse Z-transform of $X(z)=\dfrac{z(z+3)}{(z-1)(z-2)(z-3)}$ $(a)\lvert z\rvert>3$, $(b)2<\lvert z\rvert<3$.		8M
	(ii) State the linearity property of Z-transform with associate ROC.		

Q.4(A) (i)Find the Fourier series coefficient of following signal given by 10M



OR

Q.4(B) (i) State and prove any four properties of continuous time Fourier transformation

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Q.5(A) (i) Discuss the existence of discrete time Fourier Transform. 3M

(ii) Determine the DTFT of the signal $x(n) = a^n u(n)$ and plot the magnitude and phase spectrum. 7M

OR

Q.5(B) (i)Discuss the difference between DTFT and DFT. 4M

(ii)State and prove any two properties of DFT. 6M

Q.6(A) (i)Draw the Direct Form I and Direct form II realization of IIR filter by taking an example. 10M

OR

Q.6(B) Obtain cascade form realization of IIR filter implementation 10M

$$H(z) = \frac{1 - \frac{1}{2}z^{-1}}{1 - \frac{7}{8}z^{-1} + \frac{3}{32}z^{-2}}$$

*****END*****

Hall Ticket No: | | | | | | | | | | |

QP Code: 14CSU106/14CSIT106/14IT106

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

DATABASE MANAGEMENT SYSTEMS

(Common to CSE, CSIT, IT)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	What is primary key?	1M
	ii.	What is ER model? List out the various attributes.	1M
	iii.	What is multivalued dependency?	1M
	iv	Distinguish tuple relational and domain relational calculus.	1M
	v.	List out the various aggregate operators.	1M
	vi	What is JDBC?	1M
	vii.	List out the various file access methods.	1M
	viii.	Define B Tree.	1M
	ix.	What is concurrency control?	1M
	x.	What is serializability?	1M
Q.2(A)	Explain in detail about the structure of DBMS with neat diagram.		10M
	OR		
Q.2(B)	i) List out the various differences between file system and dbms. ii) Briefly explain views with examples.		10M
Q.3(A)	Define Normalization. Explain 2NF and 3NF using appropriate examples.		10M
	OR		
Q.3(B)	Elaborate the various operations of Relational Algebra with suitable examples.		10M
Q.4(A)	What is constraint? Explain in detail different types of constraints with examples.		10M
	OR		
Q.4(B)	List and explain DDL and DML commands with examples.		10M
Q.5(A)	Describe in detail hash tables with suitable examples.		10M
	OR		
Q.5(B)	What is indexing? Explain how data insertion and deletion are done using B-Tree indices?		10M
Q.6(A)	What is concurrency? Explain problems raised due to concurrency?		10M
	OR		
Q.6(B)	Demonstrate in detail Undo and Redo Logging.		10M

***** END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 14CSU107

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

OBJECT ORIENTED ANALYSIS & DESIGN PATTERNS

(CSE)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	List the Importance of modeling.	1M
	ii.	Differentiate aggregation and composition with example	1M
	iii.	Mention the steps for modeling of vocabulary of a system with examples	1M
	iv	Define class diagram	1M
	v.	List the types of events.	1M
	vi	State the differences between nodes and components.	1M
	vii.	How Design Patterns Solve Design Problems?	1M
	viii.	Write the Design Pattern elements.	1M
	ix.	Define Behavioral pattern.	1M
	x.	What is the intent of flyweight design pattern?	1M
Q.2(A)		Discuss the Software development life cycle with a neat diagram.	10M
		OR	
Q.2(B)		Illustrate the conceptual model of UML in detail.	10M
Q.3(A)		Draw the use case diagram and the activity diagram for an online airline reservation system. Summarize the purpose of each use case, actor, and its importance. Explain various activity states and action states in the activity diagram.	10M
		OR	
Q.3(B)		Identify the different kinds of actions on messages in interactions and explain them with example.	10M
Q.4(A)		Enumerate the steps to forward engineer and to reverse engineer a deployment diagram.	10M
		OR	
Q.4(B)		Define an event and a signal. Explain briefly about the common modeling techniques of events and signals.	10M
Q.5(A)		Explain the advantages of design patterns and write a short note on use of design patterns.	10M
		OR	
Q.5(B)		With the help of neat diagram, explain the about the MVC that is used to build user interfaces in Smalltalk.	10M
Q.6(A)		Discuss the role of design patterns in solving the design problems while designing a document editor.	10M
		OR	
Q.6(B)		Elaborate the importance of implementation in composite structural pattern.	10M

***** END*****

Hall Ticket No: | | | | | | | | | | | QP Code: 14CSU109/14CSIT109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

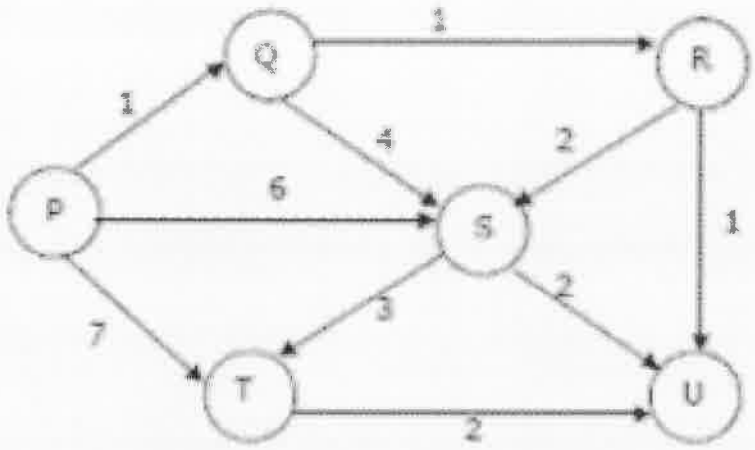
DESIGN AND ANALYSIS OF ALGORITHMS

(Common to CSE, CSIT)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	Define Time Complexity.	1M
	ii.	Distinguish between Algorithm and Psuedocode.	1M
	iii.	List out the steps involved in Greedy Approach of problem solving.	1M
	iv	Compare between Prim's and Kruskal's method of finding minimum spanning tree.	1M
	v.	How do you find the shortest path using the warshall algorithm?	1M
	vi	Is Ford Fulkerson a greedy algorithm?	1M
	vii.	List out different complexity classes of problems.	1M
	viii.	How do you solve NP hard problems?	1M
	ix.	What is multithreaded programming?	1M
	x.	List the applications of Linear Programming.	1M
Q.2(A)		Find out the Time Complexity of an algorithm for finding the maximum and minimum element in an array/list by using Divide & Conquer Recurrence Relation.	10M
		OR	
Q.2(B)		Show that time complexity of quick sort in worst case is θ(nlogn) if we select the partition point at random.	10M
Q.3(A)		Apply single source shortest path algorithm for the following graph	



10M

OR

Q.3(B) Given n= 3 items with their respective weights and profit as follows:
Items(Ii)= {I1, I2, I3}
Weights(Wi)= {4, 5, 7}
Profit(Pi)= {2, 4, 6}, Total Capacity of Knapsack (M)= 10 kg. Find out the optimal solution for the above problem using Dynamic Programming. 10M

Q.4(A) Explain the Ford Fulkerson algorithm for finding the maximum flow in given network. Explain each step with suitable example 10M

OR

Q.4(B) Describe the Kruskal's algorithm to find the Minimum Spanning Tree (MST) for a given graph. Explain each step with suitable example. 10M

Q.5(A) Explain the classes NP-hard and NP-complete. 10M

OR

Q.5(B) Consider the capacity of knapsack M=8 and solve the following Knapsack Problem with Dynamic Programming. 10M

Item i	Value v_i	Weight w_i
1	15	1
2	10	5
3	9	3
4	5	4

Q.6(A) Solve the following linear programming problem graphically: Maximize $Z = 4x + y$ subject to the constraints: $x + y \leq 50$, $3x + y \leq 90$, $x \geq 0$, $y \geq 0$. 10M

OR

Q.6(B) List and explain the LP Problems and Simplex algorithms. 10M

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14CSIT107/14IT107

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Mar' 2021

(Regulations: R14)

SOFTWARE ENGINEERING

(CSIT/IT)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	Define Software and Software Engineering	1M
	ii.	What are the advantages of Prototype model?	1M
	iii.	Explain Domain requirements.	1M
	iv	List out the steps for conducting Component Level Design	1M
	v.	Describe the roll of Software Architecture in project development	1M
	vi	List out the outcome of Unit Testing.	1M
	vii.	Write golden rules for design.	1M
	viii.	How scheduling can be done in project management?	1M
	ix.	What is code review?	1M
	x.	Define Software design. Write different types of software design.	1M
Q.2(A)	(a)Explain the evolving role of software. (b)Describe software myths? Discuss on various types of software myths and trust aspects of these myths.		10M
	OR		
Q.2(B)	For the development of water level management system for skyscrapers, suggest the suitable software engineering process model. Discuss this model with its phases and processes.		10M
Q.3(A)	(a)Discuss how requirements are felicitated and validated in software project. (b)Discuss about various requirements modeling strategies.		10M
	OR		
Q.3(B)	What is SRS? How will you develop requirements model to finalize specifications for college admission system?		10M
Q.4(A)	What is software architectural design? What are its building blocks? Develop software architecture for bus reservation system with proper styles.		10M
	OR		
Q.4(B)	Discuss various steps involved in component based development.		10M
Q.5(A)	(a)Explain about the importance of test strategies in conventional software. (b)Compare Black box testing and White box testing.		10M
	OR		
Q.5(B)	(a)What is the objective of unit testing? Explain. (b)Discuss about all possible levels of software testing.		10M
Q.6(A)	Explain the different Elements of Software Quality Assurance.		10M
	OR		
Q.6(B)	Explain in detail about Software Reliability.		10M

***** END*****

Hall Ticket No: | | | | | | | | | | |

QP Code: 14CSU108-M3/14CSIT108-M1/14IT108-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester Supplementary End Semester Examinations – October 2020

(Regulations: R14)

COMPUTER ARCHITECTURE AND ORGANIZATION (MOOC)

(CSE/CSIT/IT)

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.1	i.	What is the use of Program Counter?	1M
	ii.	Write down the various types of addressing modes	1M
	iii.	Write the hexadecimal equivalent of 11010011001010100 is?	1M
	iv	Convert the number (5.5E) 16 in binary notation?	1M
	v.	Draw the Memory Hierarchy Pyramid	1M
	vi	What is the use of Benchmark Programs in Computer Architecture?	1M
	vii.	Define Amadahl's Law?	1M
	viii.	Difference between Single bus architecture and Multi Bus Architecture?	1M
	ix.	Difference between SRAM and DRAM.	1M
	x.	What is the Purpose of Cache Memory?	1M
Q.2(A)	i) Explain the Little Endian and Big Endian byte ordering conventions.		5M
	ii) Illustrates the difference between various architecture types with the help of examples.		5M
	OR		
Q.2(B)	Explain the various common addressing modes with examples and illustrations		10M
Q.3(A)	Discusses various factors that determine the performance of a CPU.		10M
	OR		
Q.3(B)	Briefly explain the purposes of cache memory and virtual memory.		10M
Q.4(A)	Explains how cache performance directly depends on the Hit Time, Miss Rate, and Miss Penalty.		10M
	OR		
Q.4(B)	Explain the function of a half adder and a full adder.		10M
Q.5(A)	Explain the concept of pipelining with the help of examples.		10M
	OR		
Q.5(B)	Explain how asynchronous data transfer works		10M
Q.6(A)	Explain the role of a bus and the various types of bus that exist inside a computer system.		10M
	OR		
Q.6(B)	Briefly discuss the MIPS32 floating-point registers and some example instructions.		10M

END