II-II

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14ME110 – M2

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Sem – MOOCS (R14) Supplementary End Semester Examinations July 2018

MANUFACTURING PROCESS TECHNOLOGY – PART I & II

(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.	What is the function of a Pattern?	1M
	ii.	What is the function of Riser?	1M
	iii.	What is meant by cold working?	1M
	iv.	Name some lubrication used in forming operations?	1M
	v.	Name the various types of machining processes.	1M
	vi.	What are the various abrasive materials used for grinding wheels?	1M
	vii.	Define autogenous weld?	1M
	viii.	List the types of joining process?	1M
	ix.	What are the advantages of ceramics materials?	1M
	x.	Why fixtures are used?	1M
Q.2(A)	What are pattern allowances? How are they provided in a pattern?		10M
	OR		
Q.2(B)	What is casting defect? Explain in detail about the various types of casting defects.		10M
Q.3(A)	Distinguish between the following (i) Forward Extrusion and Backward extrusion (ii) Hot Extrusion and Cold Extrusion		10M
	OR		
Q.3(B)	Describe the principle of forming operation and also explain the various rolling process.		10M
Q.4(A)	Explain the formation of various chips in the machining processes.		10M
	OR		
Q.4(B)	What is the speciality of abrasive machining processes? Explain briefly about various processes using abrasives?		10M
Q.5(A)	Explain the principles of solid state welding processes. Explain any two solid state welding process.		10M
	OR		
Q.5(B)	List the various weld defects, mention their causes and possible remedies.		10M
Q.6(A)	Explain the blow molding process for making of plastic bottles.		10M
	OR		
Q.6(B)	Write about the additive manufacturing process		10M

***** END*****

II-II

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14CSU108-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Jan 2019

(Regulations: R14)

COMPUTER ARCHITECTURE (MOOC)

(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 Part B only

Q.1	i.	Compare MAR and MDR.	1M
	ii.	List out the advantages of multi-bus architecture.	1M
	iii.	What is significance of Auxiliary Memory?	1M
	iv.	What are the difference kinds of cache memory?	1M
	v.	List out the hazards in the pipelining.	1M
	vi.	What is the purpose of pipeline?	1M
	vii.	What is parallelism?	1M
	viii.	Explain out or order execution in detail.	1M
	ix.	List out the conditions for Incoherence.	1M
	x.	What is catch coherence problem?	1M
Q.2(A)		Explain in detail about I/O Subsystem Organization.	10M
		OR	
Q.2(B)		Explain about instruction cycle.	10M
Q.3(A)		Explain in detail about magnetic disks and magnetic tape.	10M
		OR	
Q.3(B)		Explain about cache memory in detail.	10M
Q.4(A)		What are the general considerations for pipelining? Explain in detail.	10M
		OR	
Q.4(B)		Explain about data dependency and handling of branch instructions in pipelining.	10M
Q.5(A)		Explain about the issues in instruction level parallelism in detail.	10M
		OR	
Q.5(B)		What is out of order execution? Explain with example.	10M
Q.6(A)		Explain the characteristics of multiprocessors in detail.	10M
		OR	
Q.6(B)		Explain in detail about inter-processor communication and synchronization.	10M

*** END***

II-II

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14CSU109-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Jan 2019

(Regulations: R14)

DESIGN & ANALYSIS OF ALGORITHMS (MOOC)

(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 Part B only

Q.1	i.	Define binary search.	1M
	ii.	What is sorting?	1M
	iii.	Write the two graph traversal methods.	1M
	iv.	Differentiate the tree and graph.	1M
	v.	State the principles of divide and conquer method.	1M
	vi.	Write the advantages of Huffman coding.	1M
	vii.	State the pros and cons of dynamic programming.	1M
	viii.	How to implement memorization using dynamic programming?	1M
	ix.	Define reduction.	1M
	x.	What is NP hard problem?	1M
Q.2(A)	Explain about asymptotic notations in detail.		10M
	OR		
Q.2(B)	Prove quick sort algorithm is divide and conquer approach. Give example		10M
Q.3(A)	Describe about breadth first search with example.		10M
	OR		
Q.3(B)	Sketch the minimum spanning tree. Explain with kruskal's algorithm.		10M
Q.4(A)	Write in detail about Huffman coding with example.		10M
	OR		
Q.4(B)	i. Differentiate the priority queue and queue. ii. Define heap. Write the properties of heap. Draw max heap tree.		10M
Q.5(A)	Give the purpose of Floyd Warshall algorithm. Explain.		10M
	OR		
Q.5(B)	i. Advantages of dynamic programming. ii. Write about matrix multiplication using dynamic programming.		10M
Q.6(A)	Explain NP Hard with suitable example.		10M
	OR		
Q.6(B)	How to reduce the NP hard into NP completeness? Explain.		10M

*** END***

II-II

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

Question Paper Code: 14EEE109-M2

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech - MOOCS (2015-Batch) (R14) Supplementary End Semester Examinations - Jan 2019

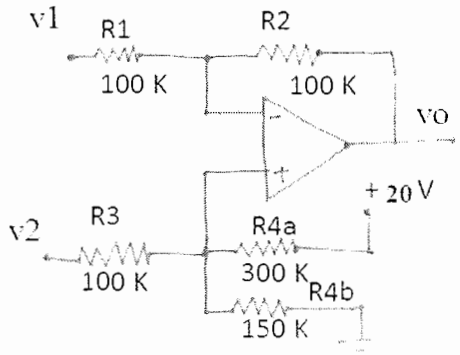
ANALOG CIRCUITS

(Common to ALL)

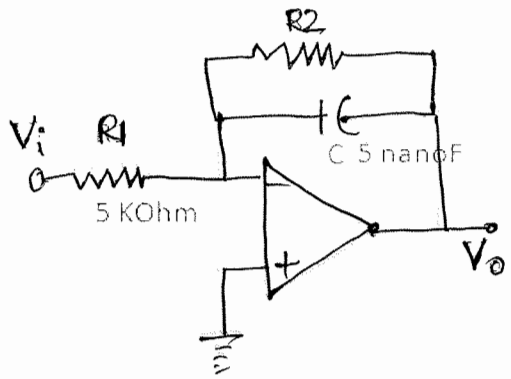
Time: 3Hrs | Max Marks: 60

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 Slew rate of an op-amp.	1M
	(ii)	Define CMRR	1M
	(iii)	What is the roll off rate for differentiator?	1M
	(iv)	Derive the output voltage for subtractor	1M
	(v)	Define the term positive feedback for an Op-amp?	1M
	(vi)	What is Nquist plot ?	1M
	(vii)	Define active filter? Give its advantages	1M
	(viii)	Draw the frequency response of high pass filter	1M
	(Ix)	What is monostable multivibrator	1M
	(x)	Write conditions for sustained oscillations.	1M
Q.2(A)	i. Explain ideal op-amp parameters.		5M
	ii. Discuss practical inverting amplifier and derive output voltage formula		5M
	OR		
Q.2(B)	Discuss biasing circuits for BJT and derive stability factor		10M
Q.3(A)	i. Explain the basic differentiator circuit and derive output voltage expression.		5M
	ii. Design an op amp differentiator that will differentiate an input signal with F_{max} =100hz		5M
	OR		
Q.3(B)	Explain the Integrator using op amp and derive the expression for output voltage. If Resistance R=100 MΩ and capacitor C= 1 μ F and input voltage =2 sin10wt then find the magnitude of output voltage .		10M
Q.4(A)	The circuit given below employs an ideal op-amp. What is the value for output voltage v_o when v_1 = 3V v_2 = -2V. Consider the feedback resistance to be 100KΩ		10M



Q.4(B) 1.For the given circuit below for the cut off frequency of 3 KHz find the value of R2 10M



Q.5(A) i. Draw the circuit of first order HPF and derive transfer function? 5M

ii. Design an II order HPF circuit for the cutoff frequency f_l= 10khz,choose c=0.02μf. 5M

OR

Q.5(B) Derive the transfer function of 2 order Butterworth Low pass filter 10M

Q.6(A) i. Explain the operation of Astable Multivibrator using op-amp and derive its expression for frequency of oscillation. 5M

ii. Design an Astable Multivibrator using op-amp to generate a frequency of 1KHZ. 5M

OR

Q.6(B) Discuss RC phase shift oscillator and hence derive the frequency. 10

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II-II

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

Question Paper Code: 14ECE107-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech II Year II Semester (R14) Supplementary End Semester Examinations – Jan 2019

(Regulations: R14)

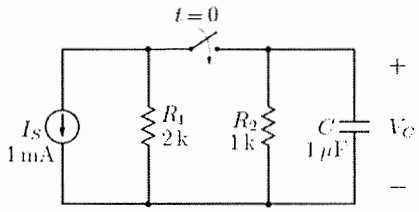
BASIC ELECTRONICS (MOOC)

(ECE)

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

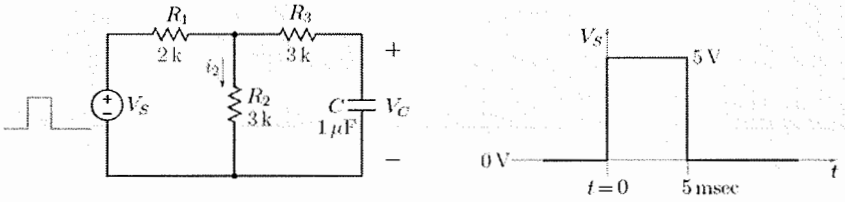
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part A or Part B only

Q.1 i. The switch in the following circuit has been open for a long time and closes at t=0. 1M



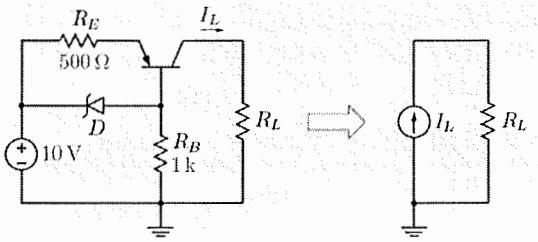
What is the circuit time constant for t > 0?

ii. The capacitor in the circuit is initially uncharged. A pulse shown in the figure is applied. 1M



What is the circuit time constant?

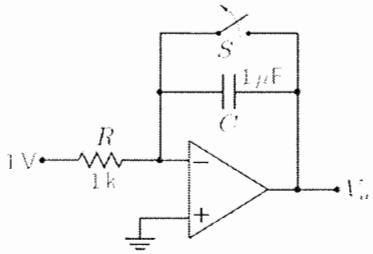
iii. A current source circuit is shown in the figure. It provides a constant current to the load resistance R_L (i.e., I_L independent of R_L) as long as RL < R_L^{Max} . Assume that the Zener diode, with VZ =5:1 V, operates under reverse breakdown. 1M



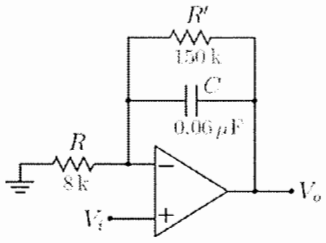
What is I_L for R_L =100 Ω ?

iv. Consider an npn transistor operating in the active mode. If V_{BE} is reduced by 40 mV, by what factor will the collector current decrease? (Take V_T =26 mV.) 1M

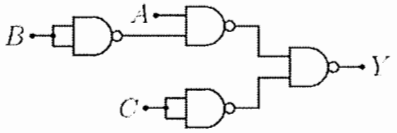
v. In the circuit shown in the figure, the switch S is initially closed and opens at t=0. Assuming that the op-amp and the switch are ideal, what is Vo at t=2 ms? 1M



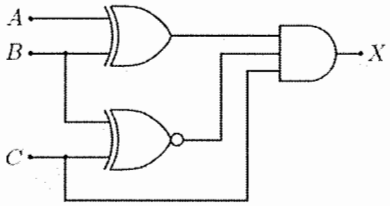
vi. In the circuit shown in the figure, the input is a 4V peak, 1 kHz square wave. What is the peak-to-peak amplitude of the output waveform? 1M



vii. For the circuit shown in the figure, Y is given by _____ 1M



viii. In the circuit shown in the figure, what are A, B, C for X to be 1 ? 1M



ix. What type of ADC is generally used in a digital voltmeter? 1M

x. An 8-bit successive approximation type ADC uses a clock frequency of 1 MHz. The conversion time is _____. 1M

Q.2(A)	Write a note on RL circuit with an example.	10M
	OR	
Q.2(B)	Briefly explain about Thevenin's theorem with an example.	10M
Q.3(A)	Write note on simple BJT circuit with an example.	10M
	OR	
Q.3(B)	Explain about small signal model in BJT in detail.	10M
Q.4(A)	Brief about difference amplifier with necessary diagrams.	10M
	OR	
Q.4(B)	Explain about instrumentation amplifier in detail	10M
Q.5(A)	Explain about the comparators in detail.	10M
	OR	
Q.5(B)	Explain various principles of Boolean algebra along with De-Morgan's theorems.	10M
Q.6(A)	Explain about combinational circuits with an example	10M
	OR	
Q.6(B)	Explain about JK flip-flops with necessary block diagrams along with timing diagram.	10M

*** END***

II-II

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 14ME106-M1

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech - MOOCS (2015-Batch) (R14) Supplementary End Semester Examinations - Jan 2019

INTRODUCTION TO FLUID MECHANICS

(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

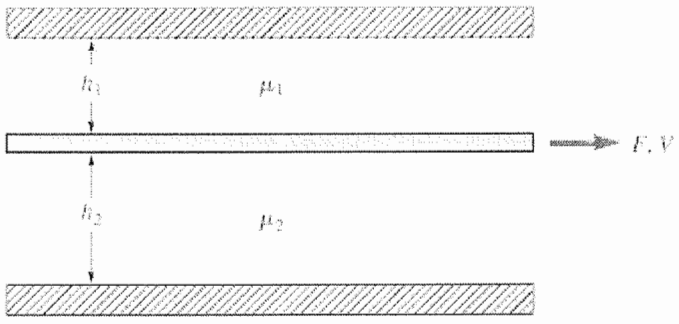
Q.1	i.	Define substantial derivative.	1M
	ii.	For a fluid flowing through a pipeline, write down the expression for Reynolds number.	1M
	iii.	Define stagnation pressure.	1M
	iv.	What is a streamline	1M
	v.	What is displacement thickness	1M
	vi.	Define Buckingham Pi Theorem.	1M
	vii.	Define hydraulic diameter.	1M
	viii.	What is cavitation	1M
	ix.	State the expression for Darcy Weisbachfrictional head loss in a pipe.	1M
	x.	How is vorticity and angular velocity related to each other.	1M

Q.2(A) i. Is the flow with velocity field $\vec{V} = 2txi - t^2yj + 3xzk$ steady or unsteady? At the point $(x, y, z) = (2,-2,0)$ compute the total acceleration vector. 10M

ii. A thin plate is separated from two fixed plates by very viscous liquids μ_1 and μ_2 respectively, as inFig below. The plate spacing's $h1$ and $h2$ are unequal, as shown. The contact area is Abetween the center plate and each fluid.

(a) Assuming a linear velocity distribution in each fluid, derive the force Frequired to pull the plate at velocity V.

(b) Is there a necessary relationbetween the two viscosities, μ_1 and μ_2?



OR

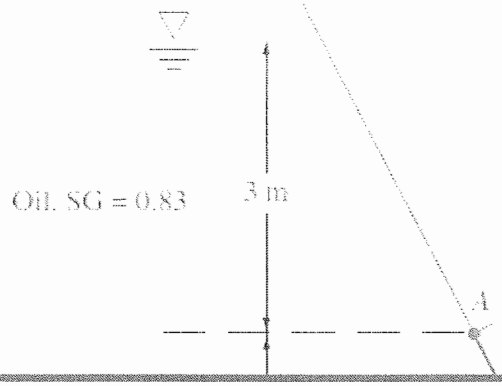
Q.2(B) i. Calculate the density, specific weight and specific volume of oxygen at 38^0C and 1 bar (absolute). What would be the temperature and pressure of this gas if it were compressed isentropically to 40 percent of its original volume. 10M

ii. Given the velocity field $\vec{V} = 13x^2yi + 18(yz + x)j + 15k$, find the angular velocity vector of a fluid particle at $(2,3,4)$ m.

Q.3(A) Discuss the following: a) Archimedes principle b) Center of Buoyancy c) Meta center d) Center of pressure e) Stability of floating and submerged bodies. 10M

OR

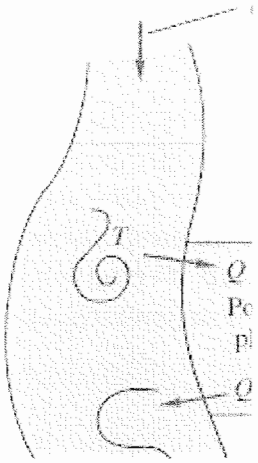
Q.3(B) Isosceles triangle gate AB in Fig below is hinged at A and weighs 1500 N. What horizontal force P is required at point B for equilibrium? 10M



Q.4(A) Derive Bernoulli equation. 10M

OR

Q.4(B) A power plant on a river, as in Fig below, must eliminate 55 MW of waste heat to the river. The river conditions upstream are Q_i= 2.5 m^3/s and T_i = 18°C. The river is 45 m wide and 2.7 m deep. If heat losses to the atmosphere and ground are negligible, estimate thedownstream river conditions (Q_0, T_0). 10M



Q.5(A) Derive an expression for the momentum integral estimate. 10M

OR

Q.5(B) For the velocity profile for laminar boundary layer on a flat plate is 10M

$$\frac{u}{U}=\frac{2y}{\delta}-\frac{2y^3}{\delta^3}+\frac{y^4}{\delta^4}$$

Obtain an expression for displacement thickness, momentum thickness and shear stress.

Q.6(A) The wall shear stress τ_W in a boundary layer is assumed to be a function of stream velocity U, boundary layer thickness δ, local turbulence velocity u', density ρ and local pressure gradient dp/dx. Using (ρ, U, δ) as repeating variables, rewrite this relationship as a dimensionless function. 10M

OR

Q.6(B) The drag of an airfoil at zero angle of attack is a function of chord length L, span S, density ρ, dynamic viscosity μ and velocity V. Hence, $D = f(L, S, \rho, \mu, V)$, where D is the drag force. From Buckingham Π, we have $\frac{D}{\rho V^2 LS} = g\left(\frac{\rho VL}{\mu}, \frac{L}{S}\right)$. An airplane wing with chord length of 1.5 m and span of 9 m is designed to move through standard air at a speed of $7.5 \, m/s$. A $\frac{1}{10}$ scale model of the wing is to be tested in a water tunnel. What speed is necessary in the water tunnel to achieve dynamic similarity? What will be the ratio of forces measured in the model flow to those on the prototype wing? 10M

*** END***