

**MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)**(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)  
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad**II B.TECH I SEMESTER REGULAR END EXAMINATIONS, DECEMBER-2018**Subject: **OPERATING SYSTEMS**

Branch: IT

Time: 3 hours

Max. Marks: 60

**PART – A**

Answer ALL questions of the following

5x2Mark=10 Marks

1. Differentiate between asymmetric and symmetric multiprocessing system.
2. What are the functions of semaphore?
3. How deadlock can be prevented in a system?
4. What do you mean by page fault?
5. What is a file?

**PART-B**

Answer ALL questions of the following

5x 10 Marks= 50Marks

1. What are the advantages of inter-process Communication? Explain shared memory and message passing inter-process communication.

(OR)

2. a) What are the advantages and disadvantages of using the same system call interface for manipulating both files and devices?  
b) What is a System call? Explain the various types of system calls provided by an operating system.
3. Explain SJF scheduling with an example.

(OR)

4. What is the role of a scheduler? Differentiate between long, medium and short term schedulers?
5. Draw a resource allocation graph for the following scenario and determine whether the system is in a dead lock or not. Justify your answer.

$$P = \{P_1, P_2, P_3\}$$

$$R = \{R_1, R_2, R_3, R_4\}$$

no. of instances of  $R_1, R_2, R_3$  and  $R_4$  are 1, 2, 1 and 3 respectively

$$E = \{P_1 \rightarrow R_1, R_1 \rightarrow P_2, R_2 \rightarrow P_1, R_2 \rightarrow P_3, P_2 \rightarrow R_3, P_2 \rightarrow R_2, R_3 \rightarrow P_3, R_4 \rightarrow P_3\}$$

(OR)

6. Explain in detail about dead detection technique.
7. a) What is the need for page replacement? Explain optimal page replacement technique with an example. 7M  
b) Explain kernel I/O subsystem. 3M

(OR)

8. Describe SSTF and C-SCAN disk scheduling algorithms with suitable examples.
9. Discuss about any two allocation methods in file management

(OR)

10. a) Define Computer security? Write in brief about computer security classifications?  
b) Discuss in brief about system and network threats?



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**II B.TECH I SEMESTER REGULAR END EXAMINATIONS, DECEMBER-2018**Subject: Java Programming

Branch: IT

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Explain about operations.
2. Difference between constructor and method?
3. Explain about Sleep method.
4. Define AWT list of components
5. Explain about layout.

PART-B

Answer ALL questions of the following

5x 10 Marks= 50Marks

1. Explain String Class and its methods with suitable examples

OR

2. a. Explain about Java editions.  
b. Explain about Java applications.
3. a) Explain about single inheritance with example.  
b) Explain about multi level inheritance with example

OR

4. Explain how super keyword implements
5. a) What are the benefits of exception handling mechanism? (4M)  
b) Explain throw statement in Java with the help of an example program? (6M)

OR

6. a) Explain Demon thread with example.  
b) Explain Alive method in thread with example
7. a) How to pass the parameters to an Applet? Explain with example program.  
b) How to pass simple message an Applet

OR

8. a. Explain about button component with example.  
b. Explain about label component with example.
9. a) Explain about Jbutton with example.  
b) Explain about Jtextfield with example.

OR

10. a. Explain about JLabel with example.  
b) Explain about Jtextarea with example.



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**II B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2018**Subject: Linux Programming

Branch: IT

Time: 3 hours

Max. Marks: 60

**PART – A**

Answer ALL questions of the following

5x2Mark=10 Marks

1. Write about cat command.
2. Write about Here document.
3. Differentiate between zombie process and orphan process.
4. What is IPC? Give examples of applications that use IPC.
5. Differentiate between stream sockets and datagram sockets.

**PART-B**

Answer ALL questions of the following

5x 10 Marks= 50Marks

1. a) Explain the following command with an example: i) cmp      ii) comm      iii) diff  
b) Using head and tail commands, write a single command to copy lines 20 to 60 of file 1 to file2.  
c) Illustrate that how the “tee” command is used to store the output of a command to a file and redirect the same output as input to another command.

OR

2. a) Write an awk script to count number of lines in a file that does not contain vowels.  
b) Write a sed script to print all lines of a file that is passed as command line argument by changing the string Hyd with Hyderabad.
3. a) Discuss about input and output redirection using appropriate examples  
b) Write a shell program the factorial of given number.

OR

4. a) Write a shell script with functions.  
b) Write a shell script to read a file name and convert the content of a file to uppercase letters.
5. a) Write in detail about file types and attributes.  
b) Explain about low level file accesses with syntax.

OR

6. a) Write about the following Process API. a) fork b) \_exit c) wait d) exec e) pipe  
b) How kernel supports for processes.
7. a) Write a program to accept the two integer numbers accepted by child, add them and result should be passed to parent. Parent process should print result on the screen using pipes.  
b) Compare the IPC functionality provided by message queues with named pipes.

OR

8. Explain about shared memory and system calls of shared memory with syntaxes and example.
9. Describe Socket system calls used for connectionless protocol with syntax and usage

OR

10. a) What is semaphore? How kernel supports for semaphores.  
b) Discuss POSIX APIs of semaphores



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**II B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2018**Subject: Computer Organization

Branch: Common to CSE &amp; IT

Time: 3 hours

Max. Marks: 60

**PART – A**

Answer ALL questions of the following

5x2Mark=10 Marks

1. Explain selective set and selective complement operation.
2. Describe Instruction code with an example?
3. Differentiate the main memory and cache memory?
4. Discuss about peripheral devices.
5. Explain SISD.

**PART-B**

Answer ALL questions of the following

5x 10 Marks= 50Marks

1. Design a 4 bit arithmetic circuit.

OR

2. a) Define bus, Explain about the bus structure with a block diagram?  
b) Define a microoperation? Explain any four arithmetic microoperations with an example for each?
3. Explain the different types of addressing modes.

OR

4. What do you mean by Stack Frame? Explain how a stack frame is created & destroy during subroutine call with an example program
5. Explain micro programmed control unit. What are the advantages and Disadvantages of it?

OR

6. a) How address sequencing is achieved when the instructions are executing, explain with a diagram?  
b) Explain about main memory, show how their hardware chips designed?
7. a) Explain addition and subtraction algorithms, show its hardware diagram?  
b) Explain how I/O interface can be done?

OR

8. a) Explain about BCD adder with diagram.  
b) What are the modes of data transfer, explain any one in detail?
9. Explain about arithmetic pipeline with an example.

OR

10. a) Explain the process of instruction pipeline?  
b) Write short notes on Attached array processor with their diagrams?





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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad**II B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2018**Subject: Mathematical Foundation for Computer ScienceBranch: **Common to CSE & IT**

Time: 3 hours

Max. Marks: 60

**PART – A**

Answer ALL questions of the following

5x2Mark=10 Marks

1. Write the converse of the statement “If I work hard then I get the grade A”.
2. Define an equivalence relation.
3. If  $f(x) = \frac{x-4}{x-7}$  then find  $f^{-1}$
4. Explain the principle of inclusion & exclusion.
5. Find the generating function of the sequence  $\{1, 3, 3^2, 3^3, \dots\}$ .

**PART-B**

Answer ALL questions of the following

5x 10 Marks= 50Marks

1. a) Prove that  $(\exists x) (P(x) \wedge Q(x)) \Rightarrow (\exists x) P(x) \wedge (\exists x) Q(x)$ . [5M+5M]  
b) Prove  $P \rightarrow (Q \rightarrow R) \Leftrightarrow (P \wedge Q) \rightarrow R$ .

OR

2. (a) Construct the truth table of  $\neg(P \vee (Q \wedge R)) \leftrightarrow (P \vee Q) \wedge (P \vee R)$ . (5M)  
(b) Obtain the PCNF of the formula  $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$ .
3. (a) Prove that the following premises are inconsistent: (5M+5M)  
 $P \rightarrow Q, Q \rightarrow R, S \rightarrow \neg R, P \wedge S$ .  
(b) Draw the Hasse diagram for the divisibility relation on the set  $A = \{3, 6, 12, 36, 72\}$ .

OR

4. a) Verify the validity of the following arguments: (5M+5M)  
1. “Every living thing is a plant or an animal”.  
2. “Logu’s dog is alive and it is not a plant”.  
3. “All animals have heart”.  
Therefore “Logu’s dog has a heart.”  
b) Let  $(L, \leq)$  be a lattice and  $a, b, c \in L$ . Then prove that  $a \vee b = b$  iff  $a \leq b$
5. a) Let  $\mathbb{R}$  be the set of real numbers and  $f: \mathbb{R} \rightarrow \mathbb{R}$  be defined by  $f(x) = x^2$ . Is  $f$  invertible? Justify it. [5M+5M]  
b) Let  $A = \{1, 2, 3, 4\}$ ,  $B = \{a, b, c\}$  and  $C = \{w, x, y, z\}$  with  $f: A \rightarrow B$  and  $g: B \rightarrow C$  given by  $f = \{(1,a), (2,a), (3,b), (4,c)\}$  and  $g = \{(a,x), (b,y), (c,z)\}$ . Find  $\text{gof}$ .

OR

6. a) Show that a function  $f: \mathbb{R} \rightarrow \mathbb{R}$  defined by  $f(x) = 2x + 3$  is a bijection. (5M)  
b) Prove that a group  $G$  is abelian if and only if  $(a * b)^2 = a^2 * b^2$ . (5M)

7. (a) Among 200 people, how many of them were born on the same month. (5M+5M)  
(b) Suppose that 200 faculty members can speak English and 50 can speak Hindi, while only 20 can speak both. How many faculty members can speak either English or Hindi?

OR

8. a) What are the applications of Binomial and Multinomial coefficients? (5M+5M)  
b) In how many ways can you select at least one king, if you choose five cards from a Deck of 52 cards?
9. (a) Solve  $a_n = a_{n-1} + 2$ , for  $n \geq 1$ , given that  $a_0 = 3$  by substitution method. (5M+5M)  
(b) Find the closed form expression for the generating function of Fibonacci numbers.

OR

10. a) If the person invests Rs.10, 000 at 10% annual interest compounded quarterly, in how Many months the money will become 15000. (5M+5M)  
b) Find a recursive relation for the following:  
i. The number of strings of length  $n$  over the lower-case Roman alphabet  $\{a,b,c,\dots,z\}$  containing two consecutive vowels.  
ii. The number of strings of length  $n$  over the lower-case Roman alphabet  $\{a,b,c,\dots,z\}$  not containing two consecutive consonants.

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1. Obtain the Taylor series expansion of  $e^x$  about  $x = -1$
2. Evaluate  $\int_0^1 \int_0^y xye^{-x^2} dx dy$
3. Find a unit normal to the surface  $xy^3z^2 = 4$  at the point  $(-1, -1, 2)$
4. Evaluate  $\int_0^1 [ti + (t^2 - 2t)j + (3t^2 + 3t^3)k] dt$
5. Write the auxiliary equations of Charpit's Method

**PART-B****Answer ALL questions of the following****5x 10 Marks= 50Marks**

1. a) Determine the functions  $u = xy + yz + zx$ ,  $v = x^2 + y^2 + z^2$  and  $w = x + y + z$  are functionally dependent or not? If so find the relation between them.  
b) Find the extreme values of the function  $f(x, y) = x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$   
OR
2. Verify Rolles theorem for  $f(x) = x^{2m-1}(a-x)^{2n}$  in  $[0, a]$  where  $a > 0$ .
3. a) Evaluate  $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dz dy dx$   
b) Using spherical polar co-ordinates find the volume of the sphere  $x^2 + y^2 + z^2 = a^2$   
OR
4. Change the order of integration and evaluate  $\int_0^b \int_0^{\frac{a}{b}\sqrt{b^2-y^2}} xy dx dy$
5. a) Find the directional derivative of  $f = x^2 - y^2 + 2z^2$  at the point  $P(1, 2, 3)$  in the direction of the line PQ where Q is the point  $(5, 0, 4)$ . Also calculate the magnitude of the maximum directional derivative.  
b) Find the constant  $a$  so that the vector field is solenoidal.  $\vec{f} = (x + 3y)\vec{i} + (y - 2z)\vec{j} + (x - az)\vec{k}$   
OR
6. Show that the vector field  $A = (x^2 + xy^2)\vec{i} + (y^2 + yx^2)\vec{j}$  is irrotational, and find scalar potential Function

7. Prove that  $\vec{f} = (4xy - 3x^2z^2)\vec{i} + 2x^2\vec{j} - 2x^3z\vec{k}$  is a) conservative field b) find the scalar potential of  $\vec{f}$  c) find the work done in moving an object in this field from (0,0,0) to (1, 1, 1)

OR

8. Verify Greens theorem in the  $xy$  - plane for  $\int_c e^x(\sin y dx + \cos y dy)$  where  $c$  is rectangle with vertices (0, 0), (1, 0), (1,  $\pi/2$ ), (0,  $\pi/2$ )
9. (a) Form a partial differential equation by eliminating the arbitrary constants  $a, b$  from  $(x-a)^2 + (y-b)^2 = r^2$   
(b) Solve  $z^2(p^2 + q^2 + 1) = 1$

OR

10. (a) Form the partial differential equations by eliminating the arbitrary function  $z = f(\sin x + \cos y)$ .  
(b) Solve the partial differential equation  $zpq = p+q$