

Code No: 134BU

R16**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B.Tech II Year II Semester Examinations, May - 2019****OPERATING SYSTEMS****(Common to CSE, IT)****Time: 3 Hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b as sub questions.

PART - A**(25 Marks)**

- 1.a) Define Operating systems. List the objectives of Operating System. [2]
- b) Illustrate about device controller and drivers. [3]
- c) What are the disadvantages of semaphore. [2]
- d) What is a critical section? Give example. [3]
- e) Compare internal and external fragmentation. [2]
- f) Explain first, best fit memory allocation techniques. [3]
- g) Define the terms seek time and rotational latency. [2]
- h) What are the various file accessing methods? [3]
- i) Explain safe, unsafe and deadlock state process. [2]
- j) What are the conditions used in Banker's algorithm? [3]

PART - B**(50 Marks)**

- 2.a) Explain different categories of system calls with suitable example. [5+5]
- b) What are the functionalities of Operating Systems? Explain in detail. [5+5]

OR

- 3.a) Explain features of Distributed Operating System. [5+5]
- b) What are the various components of Operating System structure? And explain simple layered approach of Operating System in detail. [5+5]

- 4.a) Explain FIFO and Round Robin CPU scheduling algorithm. Why do we need? [5+5]
- b) With a neat sketch explain process state diagram. [5+5]

OR

- 5.a) What are the criteria for evaluating the CPU scheduling algorithm? [5+5]
- b) What is a process? Explain Process Control Block. [5+5]

- 6.a) What is virtual memory? Discuss the benefits of virtual memory techniques. [5+5]
- b) What are the disadvantages of single contiguous memory allocation? Explain. [5+5]

OR

- 7.a) Consider the following page reference string
1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6
Determine how many page faults would occur for Optimal page replacement algorithm.
Assume three frames are initially empty. [5+5]
- b) Discuss the procedure for page-fault in demand paging. [5+5]

- 8.a) Compare and Contrast Free space management and Swap space management.
b) Discuss the indexed file allocation method with an example.

[5+5]

OR

- 9.a) Discuss various types of Disk storage attachments.
b) What are the objectives of file management system? Explain file system architecture.

[5+5]

- 10.a) Explain deadlock detection algorithm with an example.
b) Explain the technique used to prevent the deadlock.

[5+5]

OR

- 11.a) Explain about deadlock conditions and Banker's algorithm in detail.
b) Write the principles of protection? And explain the access matrix in detail.

[5+5]

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Code No: 134AC

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

ANALOG COMMUNICATIONS

(Common to ECE, ETM)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(25 Marks)

- 1.a) A modulating signal consists of a symmetrical triangular wave, which has zero dc component and peak-to-peak voltage 11v. It is used to amplitude modulate a carrier of peak voltage 10v. Find the modulation index? [2]
- b) The antenna current of an AM transmitter is 8 Amps, when only the carrier is sent, but it increases to 8.93A, when the carrier is modulated by a single sine wave. Find percentage modulation. Determine the antenna current when the percent modulation changes to 0.8. [3]
- c) List the properties of Hilbert Transform. [2]
- d) Illustrate the block diagram for the detection of SSB-SC signal using phase discrimination method. [3]
- e) Define modulation index and bandwidth of FM. [2]
- f) Compare NBFM and WBFM. [3]
- g) What is meant by Noise? State the different types of Noise. [2]
- h) Explain how noise can be calculated in a communication system. [3]
- i) Define sensitivity and selectivity. [2]
- j) Explain the image frequency rejection of a radio receiver. [3]

PART-B

(50 Marks)

2. Develop the equation of a single tone modulation of AM system and Also power relations. [10]

OR

3. Explain the principle of operation of Envelope detector used for AM detection, with necessary equations. [10]

4. Explain the phase discrimination method for generating SSB signal. [10]

OR

5. Why VSB modulation is used in TV broad casting? Give the VSB filter characteristics with spectrum. [10]

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6. What are the different demodulation techniques of FM? Explain the demodulation of F.M signal with the help of PLL. [10]

OR

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7. Formulate the equation for FM wave. Define modulation index, maximum deviation and band width of a FM signal. [10]

8. Explain about the noise performance of an FM receiver. [10]

OR

9. Explain the noise performance of SSB-SC receiver and prove its S/N ratio is unity. [10]

- 26 26 26 26 26 26 26
10. Draw the block diagram of Superhetrodyne receiver and explain the function of each block. [10]

OR

- 11.a) Explain, how a PPM signal can be generated from PWM signal?
b) Compare PAM, PWM and PPM pulse modulation techniques. [5+5]

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26 26 26 26 26 26 26

Code No: 124DA

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year II Semester Examinations, May - 2019

MACHINE DRAWING

(Common to ME, MCT, AME)

Time: 3 Hours

Max. Marks: 75

Answer any THREE questions from Part-A
Part-B is Compulsory

PART- A

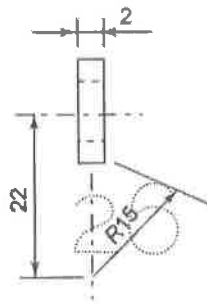
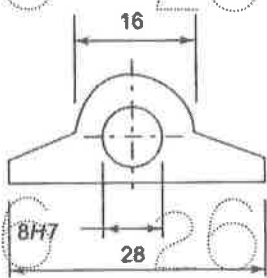
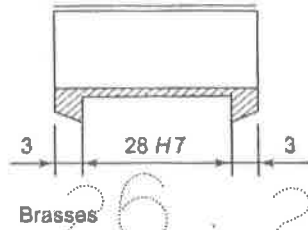
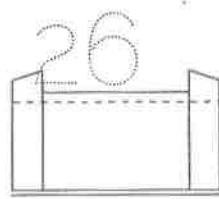
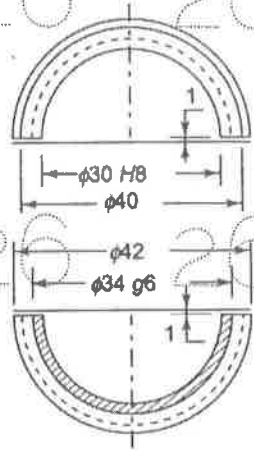
[3 × 10 = 30 Marks]

1. Draw the sectional front view and top view of double riveted zig zag lap joint to join plates of thickness 25mm. [10]
2. Draw the sectional front, top and side view of a knuckle joint to join two pipes of diameter 25mm each. [10]
3. Draw the front, top and left hand side view of a 25mm diameter square headed bolt. [10]
4. Sketch the conventional representation of common materials and common machine components.
a) cast Iron b) glass c) Insulating material d) external threads e) Knurling
f) Bearings. [10]

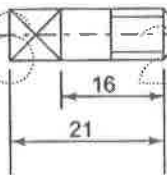
PART - B

(1 × 45 = 45 Marks)

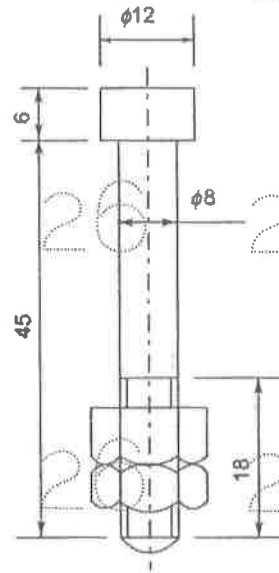
5. Assemble all the parts and draw the following views of the connecting rod.
a) Top view
b) Full sectional Front view.
All dimensions are in mm. [45]



Shims
2 off



$\phi 6$, Set screw



$\phi 8.2$ bolts

Code No: 124CX

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

JAVA PROGRAMMING

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is the difference between a class and an object? [2]
- b) Why reserved words are not used in variable name. [3]
- c) What is an abstract class? [2]
- d) What is the difference between implicit and explicit import statement? Which one takes less time for compilation. [3]
- e) What is Daemon Thread? [2]
- f) How many catch blocks and finally blocks can we use with try blocks? Why. [3]
- g) Write about the string Tokenizer. [2]
- h) What is collection in Java? Differentiate between Vector and ArrayList. [3]
- i) What is adapter class? [2]
- j) In what way JButton is better than Button Class explain with an example? [3]

PART-B

(50 Marks)

- 2.a) What are the fundamental characteristics of OOPs?
 - b) Write a program to compute division by 2 without using any arithmetic operator. [5+5]
- OR**
- 3.a) Write a program to illustrate a copy constructor so that a string may be duplicated into another variable either by assignment or copying.
 - b) Explain the enumerated data types with an example. [5+5]
- 4.a) Write a program which has an abstract class Solid and implements Cylinder, Cone and Sphere by inheriting from solid to find surface area and volume.
 - b) Discuss the various levels of access protection for packages and their implications. [5+5]
- OR**
- 5.a) Discuss how java handles overridden methods. In short, how base class member functions can be invoked in a derived class if the derived class also has a member function with the same name.
 - b) Explain with an example how multiple inheritance is achieved in Java. [5+5]

6.a) Write a program that counts the number of characters, words and lines in a file. Use exceptions to check whether the file you are reading exists or not. Take file name as a command line argument.

b) Explain the life cycle of a Thread.

[5+5]

OR

7.a) Write a simple Timer that can periodically print a timeout message.

b) What happens when a raised exception is not caught by any catch block? Explain with an example.

[5+5]

8.a) Explain the different types of JDBC drivers.

b) Write a program to display the bytes of a file in reverse sequence. Provide the name of the file as a command line argument. (Use RandomAccessFile).

[5+5]

OR

9.a) Write a program to illustrate the use of hash table class for storing and retrieving employee records.

b) How can we open and read a text file in java? Explain your answer with an example JAVA program.

[5+5]

10.a) Write a program to display the month names by JList and display the Days by JComboBox.

b) Explain how the parameters are passing to an applet.

[5+5]

OR

11.a) Write a simple calculator applet that can handle basic math functions.

b) Explain about the Hierarchy for the swing components.

[5+5]

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

DIGITAL DESIGN USING VERILOG HDL

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
 Part A is compulsory which carries 25 marks. Answer all questions in Part A.
 Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) What is concurrency? [2]
- b) What are the white space characters? [3]
- c) Describe array of instances of primitives. [2]
- d) Why net delay is needed. [3]
- e) How is procedure assignment characterized? [2]
- f) How if and if – else constructs? [3]
- g) What are bidirectional gates? [2]
- h) What is mean by module paths? [3]
- i) What are advantages and limitations feedback model of sequential circuit. [2]
- j) How combinational circuit can be tested? [3]

PART – B

(50 Marks)

2. What are the different models of verilog HDL programming explain them with suitable examples. [10]
- OR**
- 3.a) Explain identifiers, comments and strings in verilog. [5+5]
 - b) Give details of strengths in Verilog.
 - 4.a) Prepare a full – adder module using half – adder module and OR gate primitive in verilog.
 - b) Prepare a module to add 2 BCD numbers in verilog HDL. [5+5]
- OR**
- 5.a) Design a J-K Flip-Flop using NAND gates. Write verilog module for this. [6+4]
 - b) How to introduce delays in verilog HDL programming? Why these are needed.
 - 6.a) Explain functional bifurcation with example.
 - b) Prepare design module for the following operation and also prepare a suitable test bench and test the design module 2 decimal numbers each of two digits. [5+5]
- OR**
- 7.a) Compare blocking and non-blocking Assignments.
 - b) Prepare design module for the following operation. Prepare a suitable test bench and test the design module. Interrupt service routine (ISR) : An ISR receives an interrupt request (IRQ). The PC content is saved on a stack – 4 bytes deep. Then a specific byte 5a5ah is loaded into the PC. The ISR sets an INTA flag high and returns. Use the 'wait' construct and design the module. [5+5]

- 8.a) Explain strength contention with trireg nets.
b) Implement NAND, AND, OR gates using MOS switches ; test it with a suitable test – bench. [4+6]

OR

- 9.a) Implement a pseudo – NMOS 4 – input NOR logic gate. Write a test – bench and test it.
b) What are the user defined primitives and write any program using these. [5+5]

10. Explain capacitive model of a sequential circuit and compare it with other models. [10]

OR

- 11.a) What are the basic differences between sequential circuit testing and combinational circuit testing?
b) What is test bench? Why it is needed. [6+4]

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Code No: 114DA

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year II Semester Examinations, May - 2019

MACHINE DRAWING

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any THREE questions from Part-A
Part-B is Compulsory

PART- A

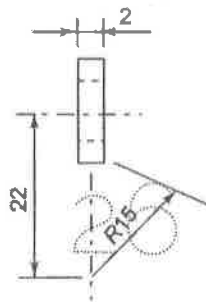
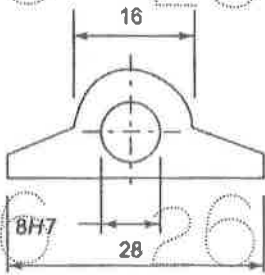
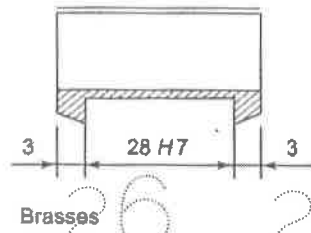
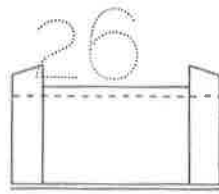
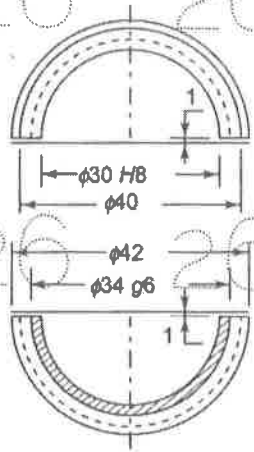
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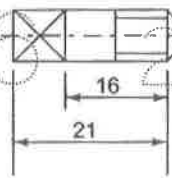
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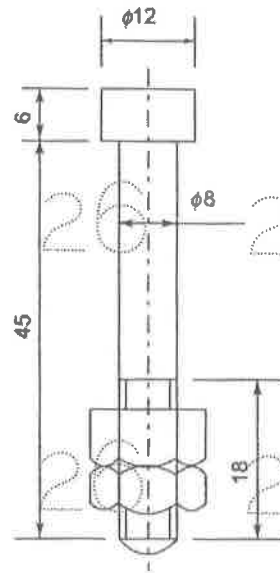
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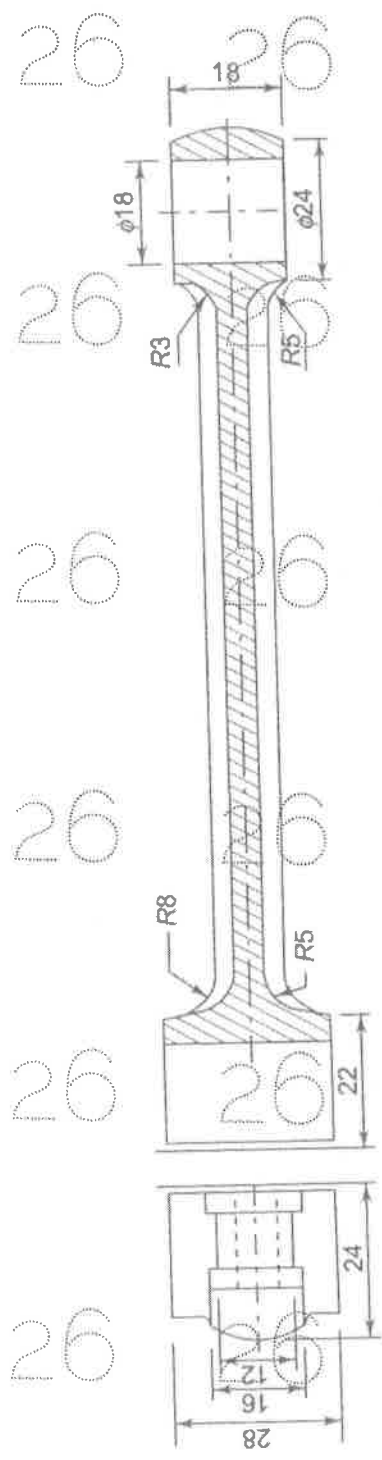
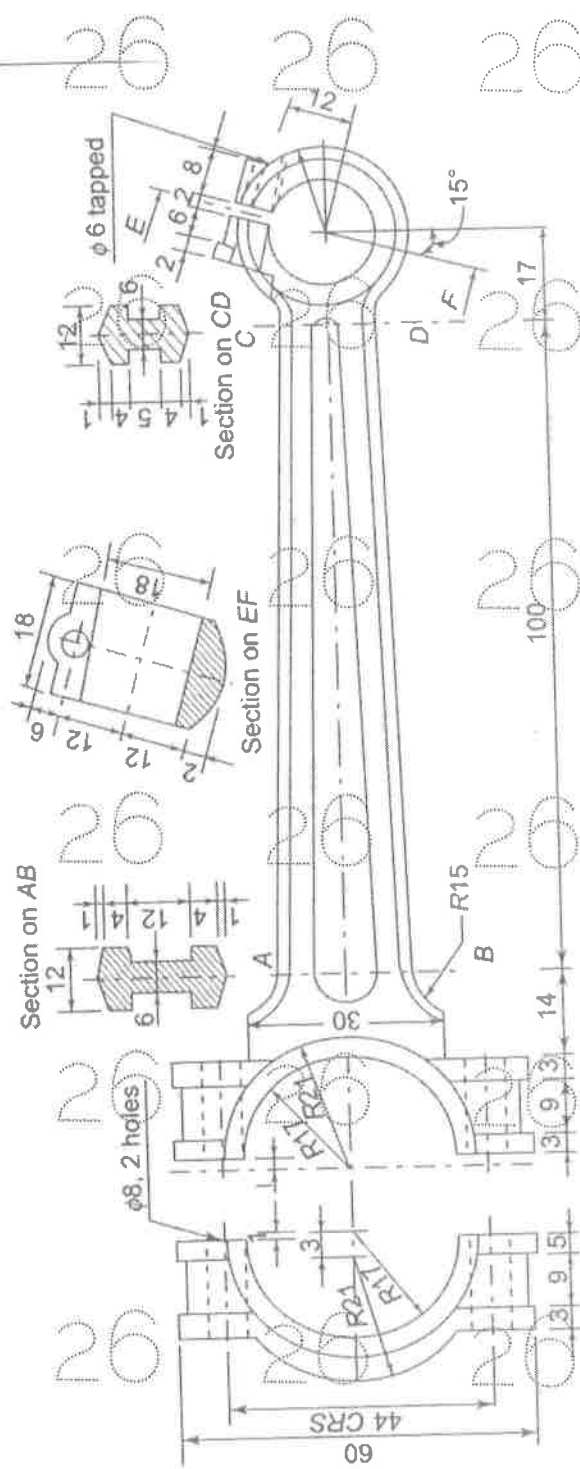
Shims
2 off



φ6, Set screw



φ8.2 bolts



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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

DIGITAL DESIGN USING VERILOG HDL

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

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PART- A

(25 Marks)

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- g) What are bidirectional gates? [2]
- h) What is mean by module paths? [3]
- i) What are advantages and limitations feedback model of sequential circuit. [2]
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PART – B

(50 Marks)

2. What are the different models of verilog HDL programming explain them with suitable examples. [10]
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- 9.a) Implement a pseudo – NMOS 4 – input NOR logic gate. Write a test – bench and test it.
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10. Explain capacitive model of a sequential circuit and compare it with other models. [10]

OR

- 11.a) What are the basic differences between sequential circuit testing and combinational circuit testing?

- b) What is test bench? Why it is needed. [6+4]

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Code No: 114CX

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

JAVA PROGRAMMING

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

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PART- A

(25 Marks)

- 1.a) What is the difference between a class and an object? [2]
- b) Why reserved words are not used in variable name. [3]
- c) What is an abstract class? [2]
- d) What is the difference between implicit and explicit import statement? Which one takes less time for compilation. [3]
- e) What is Daemon Thread? [2]
- f) How many catch blocks and finally blocks can we use with try blocks? Why. [3]
- g) Write about the string Tokenizer. [2]
- h) What is collection in Java? Differentiate between Vector and ArrayList. [3]
- i) What is adapter class? [2]
- j) In what way JButton is better than Button Class explain with an example? [3]

PART-B

(50 Marks)

- 2.a) What are the fundamental characteristics of OOPs?
 - b) Write a program to compute division by 2 without using any arithmetic operator. [5+5]
- OR**
- 3.a) Write a program to illustrate a copy constructor so that a string may be duplicated into another variable either by assignment or copying.
 - b) Explain the enumerated data types with an example. [5+5]
- 4.a) Write a program which has an abstract class Solid and implements Cylinder, Cone and Sphere by inheriting from solid to find surface area and volume.
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b) Explain the life cycle of a Thread.

[5+5]

7.a) Write a simple Timer that can periodically print a timeout message.

b) What happens when a raised exception is not caught by any catch block? Explain with an example.

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8.a) Explain the different types of JDBC drivers.

b) Write a program to display the bytes of a file in reverse sequence. Provide the name of the file as a command line argument. (Use RandomAccessFile).

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b) How can we open and read a text file in java? Explain your answer with an example JAVA program.

[5+5]

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b) Explain how the parameters are passing to an applet.

[5+5]

OR

11.a) Write a simple calculator applet that can handle basic math functions.

b) Explain about the Hierarchy for the swing components.

[5+5]

Code No: 54011

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) Derive the expression for Electric field intensity due to infinite line charge of density ρ_l C/m.
- b) What is the net electric flux passing through a closed surface of radius 2.5m centered at origin for the given charge configurations.
 - i) Point charges $Q = 2^{-x^2}$ nC located at x-axis $x = 0m, \pm 1m, \pm 2m, \pm 3m$
 - ii) Non-uniform line charge of density $\frac{1}{x^2 + 1}$ nC/m lies along z-axis.
 - iii) Non-uniform surface charge of density $\frac{1}{x^2 + y^2 + 4}$ nC/m² lies in $z = 0$ plane.
 - iv) Uniform line charge density of 20 nC/m lies in the $z = 0$ plane and are located at $y = 0m, \pm 1m, \pm 2m, \pm 3m$

[7+8]
- 2.a) Define capacitance. Derive the expression for capacitance of parallel plate and Coaxial capacitors.
- b) Two parallel conducting planes in free space one at $y = 0$ and $y = 0.02m$, the zero voltage reference is at $y = 0.01m$. If $D = 253a_y$ nC/m² between the conductors, determine the conductor voltages.

[9+6]

- 3.a) Find the magnetic field strength on the z axis at appoint P(0,0,h), due to a current carrying circular loop, $x^2 + y^2 = A^2$ in $z = 0$ plane.
- b) Derive the expression for force on moving charge, on differential current element.

[8+7]

- 4.a) What is inconsistency in ampere's law? How Maxwell modified it?
- b) A certain material has $\sigma = 0$ and $\epsilon_r = 1$, if $H = 4 \sin(10^6 t - 0.01z) a_y$ A/m. Use Maxwell's equations to find μ_r .

[7+8]

- 5.a) Describe the wave propagation in perfect dielectric, good dielectric and good Conducting medium.
- b) Give the wave equations for conductions and perfect dielectric media.

[8+7]

- 6.a) State and prove poynting theorem.
- b) A plane travelling wave has a peak electric field of 15V/m. If the medium is lossless with $\mu_r = 1$ and $\epsilon_r = 12$. Find the velocity of the wave, impedance of the medium and peak pointing vector.

[8+7]

- 26 26 26 26 26 26 26 2
- 7.a) Derive the expressions voltage and currents in a transmission line.
b) A transmission line has operating at 500 MHz has $Z_0 = 80 \Omega$, $\alpha = 0.04 \text{ Np/m}$, $\beta = 1.5 \text{ rad/m}$. Find the line parameters R, L, G and C. [7+8]

- 26 26 26 26 26 26 26 2
- 8.a) Describe about the single stub matching technique with the help of smith chart.
b) Explain, how UHF lines can be used as circuit elements. [8+7]

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Code No: 54015

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

APPLIED THERMODYNAMICS – I

(Common to ME, AME)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) Explain with the help of p-v diagram the loss due to variation of specific heats in Otto cycle.
- b) Compare and contrast the actual cycles and fuel-air cycles of S.I Engine in detail. [8+7]
2. Illustrate the constructional details of an I.C engines. Explain briefly about the important components and its materials. [15]
- 3.a) What is abnormal combustion in S.I. Engine? Compare the abnormal combustion with normal combustion in detail.
- b) Explain the desirable characteristics of a good combustion chamber for S.I. Engine in detail. [7+8]
- 4.a) What are different stages of combustion in C.I. Engine? Explain with p- θ diagram.
- b) Describe the phenomenon of knocking in C.I. Engine and how it is different from S.I. Engine detonation. [7+8]
- 5.a) The following data was recorded during testing of a four stroke cycle gas engine.
Area of indicator diagram = 900 mm²; Length of indicator diagram = 70 mm;
spring scale = 0.3 bar/mm; Diameter of piston = 200 mm; Length of stroke = 250 mm; Speed = 300 rpm. Determine:
i) Indicated mean effective pressure
ii) Indicated power.
- b) A twin-cylinder two-stroke engine has a swept volume of 150 cm³. The maximum power output is 19 kW at 11000 rpm, bsfc is 0.11 kg/MJ and the air/fuel ratio is 12. If ambient test conditions were 10°C and 1.03 bar and the fuel has a calorific value of 44 MJ/kg, calculate the BMEP, overall efficiency and the volumetric efficiency. [7+8]
- 6.a) Derive the equation for work required for a single stage reciprocating air compressor.
- b) Differentiate between positive displacement compressors and roto dynamic machines in detail. [7+8]

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- 7.a) What are different losses occurring in the centrifugal compressor due to different blade shapes? Explain.
b) Define and explain the terms pressure coefficient and adiabatic coefficient of a centrifugal compressor. [8+7]

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- 8.a) Differentiate between centrifugal compressor with the axial flow compressor in detail.
b) What is the type of compressor applicable for aircraft application? Explain its working principle in detail. [7+8]

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