Code No.2662/CBCS/M

FACULTY OF ENGINEERING

B. E. VI – Semester (CBCS) (Main) Examination, December 2020

Subject: Operating Systems (Elective – I)

Time: 2 hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. Define an operating system. State the basic functions of service of an operating system.
2. Explain critical section problem.
3. Distinguish between internal and external fragmentation.
4. Explain the need for page-replacement.
5. List the implementation techniques of access matrix.
6. Describe the representation of a resource-allocation graph.
7. Describe about logical formatting of the disk.
8. Discuss the drawbacks of contiguous allocation of disk space.
9. List the design Principles of Linux.
10. What is Hardware abstraction Layer?

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. Explain the Readers and Writers problem and its solution using the concept of semaphores.
12. Depict the Gantt chart for scheduling the following processes with SJF and round robin (time slice=2). Calculate the average waiting time and average turnaround time for above said algorithms and conclude from the results observed.

Process	Arrival Time	Burst Time
P0	0	5
P1	1	6
P2	2	3
P3	3	2

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13. Consider the following page reference string 7, 0, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1,2,0,1,74,0. Assuming three frames, how many page faults would occur in each of the following cases? (a) LRU (b) FIFO. Note that initially all frames are empty.
14. Explain Banker's algorithm for deadlock avoidance with an example.
15. (a) Explain File system structure in detail.

    (b) Explain thrashing in detail with a suitable example.
16. (a) Draw the General architecture of Windows NT.

    (b) What are the different file systems supported by Linux?
17. Write about the following:

    (a) Implementation of segmentation.

    (b) Deadlock Recovery.

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Code No. 2663/CBCS/M

FACULTY OF ENGINEERING

B. E. (CBCS) VI – Semester (Main) Examination, December 2020

Subject: OOP Using Java (Elective - I)

Time: 2 hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. List out the various data types with their ranges.
2. Explain about throw and throws keywords.
3. What is the use of Print Writer class? List out its methods.
4. Explain AWT package hierarchy.
5. What are the benefits of Buffered I/o classes? Give example.
6. Create an Applet to display “Welcome to Java” message in red color.
7. List and describe various data structures in JAVA.
8. Explain dynamic method dispatch.
9. What is the use of super keyword?
10. What are the different states of threads?

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. (a) Explain in detail about features of JAVA.
    (b) Differentiate between method overloading and overriding with suitable example.
12. (a) Explain how to achieve synchronization using Multi-threading.
    (b) What is a package? Explain access protection in packages.
13. (a) Write a program to read two file names and compare the contents of two files to print the output as “Both are equal”/”first file is larger”/”first file is small”.
    (b) Explain the usage of comparator with example.
14. (a) Explain the steps involved in creation and handling of Menus.
    (b) Explain Delegation Event Model.
15. (a) Demonstrate the process of Serialization and Deserialization with program.
    (b) Explain about Byte stream and character stream classes.
16. (a) Demonstrate try with Multiple catch blocks with an example.
    (b) Write a program to demonstrate Abstract classes and methods.
17. Write short notes on:
    (a) Dynamic method dispatch.
    (b) Garbage collection.
    (c) Maps.

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FACULTY OF ENGINEERING

B.E. VI – Semester (CBCS) (Main) Examination, December 2020

Subject: Data Base Systems (Elective – I)

Time: 2 Hours **Max.Marks: 70**

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1 What is meant by Relational Model?
2 What is candidate key?
3 Explain about recursion and relational algebra.
4 Write the difference between DDL and DML query languages.
5 Write a small note on transaction management.
6 Define functional dependency with example.
7 What is meant by concurrency control?
8 Explain about multiple granularity.
9 What are the different advantages of distributed databases?
10 List out the various database security goals.

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11 a) Explain the concept of design issues in E-R model with suitable examples
b) Explain the concept of Generalization and Specialization.

12 a) Consider the following database:
Employee (ename, street, city)
Works (ename, company_name, salary)
Company (company_name, city)
Managers (ename, mgr_name)
Write SQL queries for the following:
i) Find all the employee names who are working in 'XYZ' company and works under the Manager name 'Kumar'.
ii) Find the number of employees working in any company located in 'Hyderabad'.
b) Write about No SQL Databases.

13 Explain in detail about database application paradigms in detail.

14 Explain various types of Normal forms in detail with suitable examples.

15 a) Illustrate different types data fragmentation in distributed databases.

b) Discuss about distributed query processing using semi-join.

16 Explain different methods of enforcing discretionary access control in databases systems by means of privileges.

17 Write short notes on:
a) Challenges of database security
b) JDBC
c) Columnar databases.

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FACULTY OF ENGINEERING

B.E. VI-Semester (CBCS) (Main) Examinations, December 2020

Subject : Principles of Embedded System (Elective-I)

Time: 2 Hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable)

PART-A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. Define Embedded System.
2. What is meant by localized brownout? How do you overcome it?
3. Distinguish between D-Flip flop and a latch.
4. Compare and contrast between microprocessor and microcontroller.
5. Define “Atomic” and “Critical Section” of a program.
6. What are the steps taken by a microprocessor to respond to an interrupt request?
7. Mention the advantages and disadvantages of RTOS Architecture over other Software architectures.
8. What is the difference between a native linker and cross linker?
9. What is an assert macro and how is it useful in testing of embedded systems?
10. Differentiate between emulator and simulator.

PART-B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. a) Describe the characteristic features of an Embedded System.
    b) Compare the challenges and problems of developing the software for the Cordless Bar-Code Scanner with a Telegraph system.

12. a) Why NAND and NOR gates are called Universal gates? Justify.
    b) Draw the timing diagram for a D-Flip flop and explain the following terms:
    (i) Hold-time (ii) Set-up time

13. a) What are the problems encountered in an overloaded circuit and how do you overcome it? Justify your answers with diagrams.

    b) Differentiate between I/O mapped I/O and Memory mapped I/O schemes.

14. a) Draw the architecture of a typical system with DMA and explain.
    b) Differentiate ASICs and FPGAs with examples.

15. a) Explain the Round-robin with interrupt architecture using the simple Bridge example.
    b)What are the major differences of RTOS architecture with the other Software architectures?

16. a) Draw the Native tool chain and show how it is used for embedded Software development.

    b) Explain the basic technique for testing embedded software on the Development host.

17. Write any Two of the following
    a) Shared-Data Problem
    b) Conventions Used on Schematics
    c) Laboratory tools for debugging techniques.

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Code No: 2668/CBCS/M

FACULTY OF ENGINEERING

BE VI Semester (CBCS) (Main) Examination, December 2020

Subject: Basics of Power Electronics (Elective – I)

Time: 2 Hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. Draw ideal characteristics of controlled switch.
2. Brief about types of power converters.
3. Justify the statement "Freewheeling diode in phase controlled rectifiers improves the power factor of the system".
4. What are the effects of load inductance on converter performance?
5. Derive voltage gain of Buck-Boost converter.
6. What do you understand by average inductor voltage?
7. What are the purposes of feedback diodes in inverters?
8. Compare single and multiple pulse width modulation techniques of inverter voltage control.
9. List the applications of Cyclo-converters.
10. What is the effect of load inductance on performance of single-phase ac voltage controller?

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. a) Explain the working of SCR and plot its static *v-i* characteristics.
    b) Compare power MOSFET and power IGBT.

12. a) Discuss about UJT as an oscillator with a circuit diagram.
    b) Explain circulating current mode of single-phase dual converter.

13. a) Explain the operation of three-phase fully-controlled rectifier with R-load, derive average load voltage expression.

    b) A single phase fully controlled bridge rectifier is given 230 V, 50 HZ supply. The firing angle is 45^0 and the load is highly inductive. Determine

    i) Average output voltage

    ii) Voltage ripple factor

    iii) Power factor

14. a). A step-up chopper has a resistive load of R = 20 Ω and input voltage V_{dc} = 200V. When the chopper is turned on, the voltage drop across switch is 2 V, the chopper frequency is 1 kHz. For a duty cycle of 60 %, determine

    i) average output voltage

    ii) the RMS output voltage

    iii) Efficiency of the chopper

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b) Derive filter elements design expressions for Buck converter with relevant waveforms.

15.a) Explain 180^0 conduction mode of 3-phase inverter with R load.
b) Explain sinusoidal PWM technique for inverter voltage control and give its disadvantages.

16.a) Explain the operation of a 1-ϕ AC voltage controller with RL-load.
b) Explain single-phase bridge type step-down cyclo-converter with RL-load.

17.Write short notes on

a) Performance parameters of Inverters.

b) Applications of Switch mode regulators and ac voltage controllers.

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Code No. 2670/CBCS/M

FACULTY OF ENGINEERING

B.E. VI – Semester(CBCS) (Main) Examination, December 2020
Subject: Material Handling
Open Elective -1

Time: 2 hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. Define Material handling and list its applications.
2. State the principle and Use of Hoists.
3. Discuss the modes of conveying.
4. List the components of a Pneumatic conveying system?
5. Explain the effect of Cohesion on Bulk material handling.
6. What is a Silos? Explain with the help of a diagram.
7. What is an AGV?
8. What are Barcode and RFID systems?
9. Explain about spare parts management.
10. What are various components of cost in MH?

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11. (a) Explain about the bucket elevator.
    (b) Describe the working, advantages and limitations of Screw conveyors.
12. (a) Explain with a neat sketch Dilute Pneumatic conveying system.
    (b) Briefly describe about various types of Reciprocating Compressors.
13. (a) Asses the effect of Adhesion property on Bulk materials handling.
    (b) State the classification of Hopper Flow modes?
14. (a) What are the advantages and disadvantages of Magnetic Tape Guiding for AGV?
    (b) With neat sketches explain the different types of AGV's.

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15. (a) Consider an operation of unit load AS/RS, which uses an S/R machine for each aisle of the system. The length of storage aisle is 300m and its height is 50m. Horizontal and vertical speeds of S/R machine are 400 m/min. and 75m/min respectively. The S/R require 30 seconds to accomplish pickup and delivery. Determine the single and dual command cycle times.

(b) Differentiate single and dual command cycle of AS/RS.

16. (a) Explain how Bar code technology works.

(b) What are the design considerations for flight conveyor?

17. Write short notes on

(a) Bolted silos.

(b) Compare fans, blowers and compressors.

(c) Modern material handling systems.

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Code No: 2671/CBCS/M

FACULTY OF ENGINEERING

B.E. VI semester (CBCS) (Main) Examination, December 2020

Subject: Automotive Safety and Ergonomics (Elective -I)

Time: 2 Hours **Max. Marks: 70**

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any five questions. **(5 x 2 = 10 Marks)**

1. Deceleration on impact with movable vehicle is less danger than the stationary object-justify.
2. Explain the safety sandwich construction.
3. What do you mean by interior safety system?
4. What is passive safety?
5. What are the safety aspects of bumper design?
6. What is the principle of operation of an air bag in a vehicle?
7. Define ergonomics.
8. Give the short note on causes of driver discomfort.
9. Name the important parts of environment information system.
10. What are the advantages of central locking system?

PART –B

Answer any four questions **(4 x 15 = 60 Marks)**

11. Discuss the concept of crumble zone and its effects on safety.
12. Classify active safety of a vehicle and explain each one of them.
13. Explain the construction and working principles of collapsible steering column.
14. Explain in detail vibration control in vehicle.
15. Describe the features of central locking, rain sensor system with a neat sketch.
16. Explain briefly man machine system in vehicle with neat sketch.
17. Write short notes on
    (a) ABS (Anti-lock braking system)
    (b) Cockpit design
    (c) DRL (Day light running lamps)

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Code No. 2962/CBCS/M

FACULTY OF ENGINEERING

B.E. VI – Semester (CBCS) (Main) Examination, December 2020

Subject: Disaster Management (Elective – I)

Time: 2 Hours **Max.Marks: 70**

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any five questions **(5 x 2 = 10 Marks)**

1. Define the terms 'disaster' and 'hazard'. When does a hazard become a disaster?
2. Distinguish between natural and man made disasters with examples.
3. What are the causes of floods?
4. Distinguish between urban emergencies, pandemics and complex emergencies with examples.
5. Give examples of structural and non-structural measures to mitigate the effects of one specific disaster.
6. List the responsibilities of a community in disaster risk reduction.
7. Define climate change and list its effects.
8. Explain 'changes in land-use' with regard to disaster management.
9. What is meant by 'institutional arrangements' with regard to disaster relief?
10. Write in brief about the legislation related to disaster management in India.

PART – B

Answer any four questions. **(4 x 15 = 60 Marks)**

11 a) Write about the past disasters in India.

b) Discuss the impacts of drought

12 a) Define, compare and contrast cyclones and floods.

b) Discuss road disasters in India.

13 a) Write briefly about 'culture of safety' with regard to disaster risk reduction.

b) List the responsibilities of states and centre towards disaster risk reduction.

14 a) Write in detail about the various factors affecting vulnerabilities.

b) What is the impact of disasters on development projects like embankments

15 a) Discuss food as a component of disaster relief.

b) Discuss policy, plans, programmes and legislation in the light of disaster management.

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16 a) Discuss the characteristics of drought as a disaster.

b) Discuss the differential impacts of a particular natural disaster in a community

17 a) Discuss climate change as a disaster.

b) What is meant by cumulative atmospheric hazards?

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Code No.2285/BL

FACULTY OF ENGINEERING

B. E. 4/4 (CE/EE/Inst./ECE/CSE/I.T) II – Semester (Backlog) Examination, December 2020

Subject: Disaster Mitigation and Management

(Elective – II, III & V)

Time: 2 hours **Max. Marks: 75**

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any seven questions. **(7 x 3 = 21 Marks)**

1. Identify India's key vulnerabilities with respect to natural disasters.
2. Present the process of IDNDR.
3. Suggest any three methods for prevention or control of avalanches.
4. Define the terms: Storm surge, progress floods and super cyclones.
5. What are the adverse effects of power flash break downs
6. Write about the different seasons for traffic accidents.
7. What are the components of GIS.
8. Differentiate between active remote sensing and passive remote sensing.
9. List the factors that contribute to risk.
10. What is the contribution of meteorology in loss prevention.

PART – B

Answer any three questions. **(3 x 18 = 54 Marks)**

11. (a) Briefly discuss the disaster management cycle with suitable examples.
    (b) Explain in detail the effects of natural disasters on economy and development of our country.
12. (a) Briefly outline the concept of occurrence of cyclone. Present the classification of cyclones in Beaufort scale. Explain any two case studies of cyclones that have hit in India and abroad.
    (b) What are the causes of landslides? What are the different types of landslides. Explain its characteristics.
13. (a) "Bomb blasting has become order of the day" Discuss the detection, prevention and main mitigation strategies.
    (b) List some of the causes of aviation hazards in the recent times. Present any recent case study. Also, explain the mitigation measures that can be taken up to present such accidents.

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14. "Integration of remote sensing and GIS is essential for proper mitigation and management of disaster". Substantiate the statement with good reasoning and illustrations,

15. (a) Discuss the role of NGO's in disaster management.

    (b) Formulate and explain the types of warning systems that are available to alert the people in the case of predicted disasters such as floods, cyclones etc.

16. (a) Write a note on seismic evaluation and strengthening of buildings.

    (b) Discuss the National disaster management framework to reduce the country's vulnerability to earthquake disasters.

17. Write short notes on

    (a) Types of Vulnerability

    (b) EMR

    (c) Types of characteristics of chemical / industrial hazards

    (d) Forecasting of disasters.

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