

Time: 3 Hours**Max Marks: 70**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain the different grades of cement in detail. 7M
b) Describe the field tests of cement. 7M

(OR)

2. a) Explain about mineral admixtures 7M
b) Define fineness modulus and explain the procedure for finding fineness modulus. 7M

UNIT-II

3. a) What is meant by workability? Explain measurement of workability by slump cone test? 8M
b) Whether sea water can be used for concrete or not? Discuss. 6M

(OR)

4. a) Explain the step wise procedure for manufacture of concrete. 8M
b) What is bleeding and explain the precautions to control bleeding? 6M

UNIT-III

5. a) Explain maturity concept of concrete? 7M
b) Explain the factors affecting strength of the concrete 7M

(OR)

6. a) Explain the procedure for finding the strength of concrete by any one of NDT tests 7M
b) What is shrinkage and explain types of shrinkage? 7M

UNIT-IV

7. a) Describe the factors that affect the choice of mix proportion? 7M
b) Explain the statistical methods for quality control of concrete?. 7M

(OR)

8. Design the concrete mix for the following data: characteristic compressive strength=45mpa, maximum size of aggregate =20mm (angular), degree of workability=0.9CF, degree of quality control =good and type of exposure=severe. Water absorption by CA=1% and moisture content in FA =1.5%. Assume any suitable missing data. 14M

UNIT-V

9. Write about 14M
i) self compacting concrete. ii) Polymer concrete. iii) no fines concrete

(OR)

10. a) Explain about light weight aggregate concrete 7M
b) Explain the properties of fibre reinforced Concrete. 7M

AR16

CODE: 16EE3017

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech I Semester Regular Examinations, November, 2018

**ELECTRICAL MACHINES-III
(Electrical and Electronics Engineering)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain the construction features and principal of operation of single phase induction motor? 7M
b) Using double revolving field theory explain the slip torque characteristics of a single phase induction motor? 7M
(OR)
2. a) Derive the equivalent circuit of a single phase induction motor using double revolving field theory ? 7M
b) Explain the operation of single phase induction motor using split-phase technique? 7M

UNIT-II

3. a) Explain with a neat diagram a capacitor start induction run single phase induction motor and draw their speed torque characteristics? 7M
b) Describe the constructional features and operating characteristics of a shaded-pole motor and give its uses? 7M
(OR)
4. a) Describe the constructional features and operating characteristics of a universal motor and give its applications? 7M
b) Describe the constructional features and operating characteristics of a shaded-pole motor and give its uses? 7M

UNIT-III

5. a) Explain constructional details of stepper motors 7M
b) Explain hybrid VR stepper motors. 7M

(OR)

6. a) Explain the construction and operation of a variable reluctance stepper motors. 7M
b) What is a step angle? Explain. Define stepping rate of a stepper motor. 7M

UNIT-IV

7. a) Explain different control techniques of brushless dc motors 7M
b) List out different rotor position sensing schemes of brushless dc motor and explain any one of the schemes clearly 7M

(OR)

8. a) Explain the constructional details of a PMBLDC motor. 7M
b) Explain the commutation process in BLDC machines. 7M

UNIT-V

9. a) Explain the construction & working Principle of Linear Induction Motor 7M
b) What are advantages & disadvantages of Linear Induction Motor and also list out the application of Linear Induction Motor 7M

(OR)

10. a) List and discuss different types of linear motors. 7M
b) Explain the operation of a linear induction motor. 7M

**INSTRUMENTATION AND CONTROL SYSTEMS
(Mechanical Engineering)****Time: 3 Hours****Max Marks: 70**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) What are performance characteristics? Explain dynamic characteristics 7M
b) Explain the working principle of LVDT for displacement measurement. 7M
- (OR)
2. a) Discuss briefly different types of error, its sources and their elimination methods 7M
b) How seismic instrument used for measuring acceleration? Explain in detail. 7M

UNIT-II

3. a) With the help of a neat sketch, explain working principle of torsion meter for torque measurement? 7M
b) Enumerate the working principle of stroboscope for speed measurement? 7M
- (OR)
4. a) Explain the working principle of a load cell for force measurement. 7M
b) Derive an expression for gauge factor of a resistance strain gauge. 7M

UNIT-III

5. a) Discuss the working principle of McLeod gauge for pressure measurement. 7M
b) Explain the principle of operation of radiation pyrometer with a sketch. 7M
- (OR)
6. a) How do you measure the level of a container? Explain with a neat sketch. 7M
b) Discuss different laws of thermocouples. 7M

UNIT-IV

7. a) Explain the working of a Hot-wire anemometer with a sketch. 7M
b) With a sketch, explain the working of a Absorption Hygrometer. 7M
- (OR)
8. a) Describe the working of a magnetic flow meter. 7M
b) How a dew point meter works. Explain. 7M

UNIT-V

9. a) Discuss advantages and disadvantages of open loop and closed control systems? 7M
b) Explain PI control algorithm and write their advantages and disadvantages? 7M
- (OR)
10. a) Explain PID control algorithm And write their advantages and disadvantages? 7M
b) Classify different control systems and explain? 7M

AR16

CODE: 16EC3018

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech I Semester Regular Examinations, November, 2018

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

(Electronics and Communication Engineering)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

- | | | |
|-------------|---|----|
| 1. a) | Explain DC ammeter working and derive the expression. | 6M |
| b) | Discuss thermocouple type RF ammeter in detail. | 8M |
| (OR) | | |
| 2. a) | Explain the constructional details of series type ohmmeter. | 8M |
| b) | Give the block schematic of a general measuring system and explain the same | 6M |

UNIT-II

- | | | |
|-------------|---|----|
| 3. a) | Explain the principle of operation and generation of pulse and square wave. | 8M |
| b) | Differentiate between wave analyzer and harmonic distortion analyzer | 6M |
| (OR) | | |
| 4. a) | Define a Sweep Generator, explain its functioning | 7M |
| b) | Explain the working of the harmonic distortion analyzer | 7M |

UNIT-III

- | | | |
|-------------|---|-----|
| 5. | Draw and explain the storage oscilloscope. | 14M |
| (OR) | | |
| 6. | With a block diagram explain the operation of a sampling oscilloscope | 14M |

UNIT-IV

- | | | |
|-------------|--|----|
| 7. a) | Draw the circuit diagram of Schering bridge and derive conditions of balance? | 7M |
| b) | Draw the circuit diagram of a wien bridge, explain its working and derive the equation for frequency | 7M |
| (OR) | | |
| 8. a) | Draw and explain the Maxwell Bridge with neat diagram and derive the expression for unknown inductance. | 8M |
| b) | A Maxwell bridge is used to measure inductive impedance. The bridge constants at balance are $C_1=0.01 \mu F$, $R_1=470k \Omega$, $R_2=5.1k \Omega$ and $R_3=100k \Omega$. Find the series equivalent of the unknown impedance? | 6M |

UNIT-V

- | | | |
|-------------|--|-----|
| 9. | Explain the Principle, working, Construction, characteristics and applications of thermistors. | 14M |
| (OR) | | |
| 10 | Explain the principle , working , construction , Characteristics and applications of LVDTs. | 14M |

AR16

CODE: 16CS3015

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech I Semester Regular Examinations, November, 2018

**JAVA PROGRAMMING
(Common to CSE & IT)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Java is compiled and interpreted. Justify your answer. 4M
b) What are command line arguments? How are they useful? Give an example. 10M
- (OR)**
2. a) Compare the terms “break” and “continue” with the help of an example. 7M
b) Explain automatic type conversion and when casting is needed with an example. 7M

UNIT-II

3. a) What are the differences between constructor and method? How does a constructor work in java? 7M
b) Define method overloading. Explain with an example. 7M
- (OR)**
4. a) What is finalize () method regarding Garbage Collection? Explain with a Program 8M
b) Define class and object. How do you create an object? Explain with an example. 6M

UNIT-III

5. a) What is an interface? What are the differences between an abstract class and interface. State the advantages of using an interface? 7M
b) Explain dynamic method dispatch. 7M
- (OR)**
6. a) Differentiate method overloading and method overriding with an example. 7M
b) How do you implement multiple inheritance using an interface? Give an example. 7M

UNIT-IV

7. a) Explain the four categories of visibility for class members in view of packages. 9M
b) Explain the significance of “throw” and “throws” statements with an example? 5M
- (OR)**
8. a) What are benefits of importing packages? 5M
b) Write a program to catch Array Index Out Of Bounds Exception when you enter more number of arguments at the command prompt. 9M

UNIT-V

9. a) Describe the different stages in the life cycle of an applet. Distinguish between init() and start() methods. 7M
b) What is synchronization? When do we use it? 7M
- (OR)**
10. a) Explain about Inter Thread Communication with an example. 7M
b) Write an applet that reads the name of the person and prints characters in it after reversing the cases of each of them. 7M

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****III B.Tech I Semester Supplementary Examinations, November, 2018****BUILDING PLANNING AND DRAWING
(Civil Engineering)****Time: 3 Hours****Max Marks: 70****PART-A****Answer any THREE questions Part-A****[3 X 14 = 42 M]**

1. a) How height of building is evaluated? Explain the factor associated with this? [7M]
- b) Explain briefly about Floor area ratio (FAR) [7M]
- 2 Write the minimum standard room dimensions of residential buildings and explain? [14M]
3. a) Explain different principles used while planning a hospital in rural areas? [7M]
- b) Draw a plan (for not to scale) of a Bank with all the facilities constructed in a town? [7M]
4. Explain the different features of Queen post truss? [14M]
5. a) Differentiate clearly between PERT and CPM network methods [7M]
- b) What are the features of network planning? Why do we use network planning? Explain in detail [7M]

PART-B**Answer any one question Part-B****[1x28=28M]**

6. Draw the plan, Section and Elevation of a bank building showing the following requirements to scale following byelaws and specify the dimensions of each element in a tabular form i) Public space with counter. ii) Manager's room. iii) Meeting hall. iv) Safe deposit locker and strong room. v) Records room. vi) Store room. vii) Working space. viii) Toilets. ix) Recreation room. x) Fire safety unit. xi) Guard room. xii) A.T.M. xiii) Drinking water unit.

(OR)

7. Draw plan, elevation and section of a building by using given line diagram and assume suitable dimensions for foundation, slab thickness, lintel thickness, parapet wall thickness, doors and windows etc.

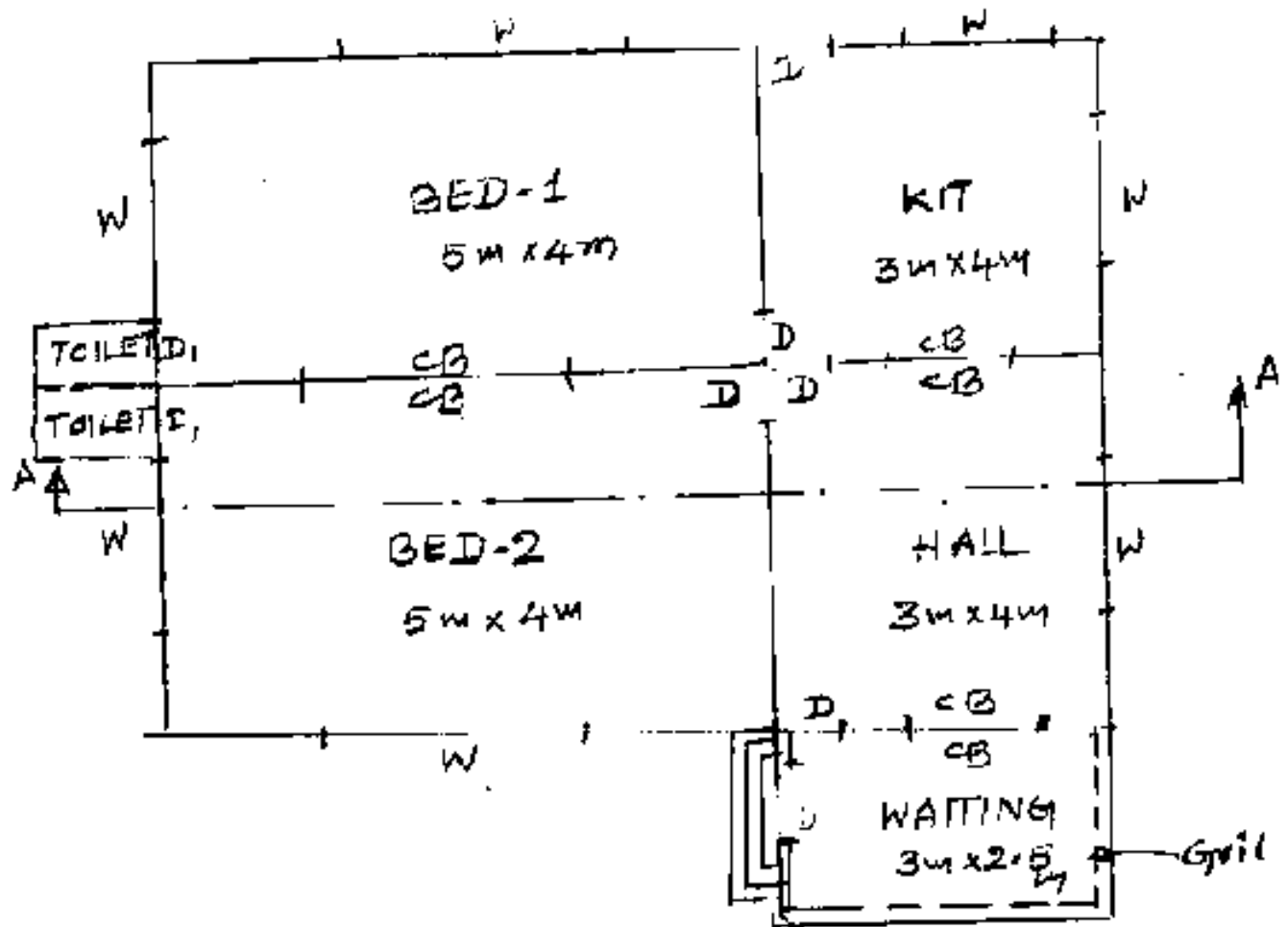


Figure 1

PART-A**ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) Why are cylindrical rotors suitable for turbo generators?
- b) What is the effect of distributed winding?
- c) Why are the short circuit characteristics of a 3- Φ alternator linear?
- d) What are the necessary conditions for parallel operation?
- e) Why is emf method called as pessimistic method?
- f) Why is the synchronous motor always running at synchronous speed irrespective of loading conditions?
- g) Define coil span
- h) Why synchronous motor starting torque is zero?
- i) What is effect of armature reaction on alternator when it is operating at ZPF leading?
- j) What are the drawbacks of AC series motor?

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

2. a) Explain about the advantages of rotating field over stationary field in 3- Φ alternator 6M
- b) A 4 pole 50 Hz star connected alternator has a flux per pole of 0.12 Webers. It has 4 slots per pole per phase, conductors per slot being 4. If the winding coil span is 150° find the emf. 6M

(OR)

3. a) Derive expression for the winding factor of an alternator. 6M
- b) What are the advantages and disadvantages of using short pitched winding and distributed winding? 6M

UNIT-II

4. a) Explain the Potier triangle method of finding the voltage regulation. 6M
- b) A 3- Φ star connected synchronous generator is rated at 1.5 MVA, 11KV. The armature effective resistance and synchronous reactance are 1.2 ohms and 25 ohms per phase respectively. Calculate the % voltage regulation for a load of 1.4375 MVA at 0.8 pf lagging. 6M

(OR)

5. a) Describe the slip test method for the measurement of X_d and X_q of synchronous machine 6M
- b) A 3- ϕ synchronous generator has per pole per phase $X_d=1.0$ p.u. and $X_q = 0.6$ p.u. Estimate the load angle and per unit no load emf when the generator is operating at full load at a pf of 0.8 lagging. Neglect armature resistance. 6M

UNIT-III

6. a) What conditions are required to be fulfilled for the successful parallel operation of alternators? 6M
- b) The following two synchronous machines are operating in parallel:
Machine A: 50 MW, 6% speed regulation
Machine B: 50 MW, 3% speed regulation
Determine the load taken by each machine for a total load of 80 MW when the speed changes set to give rated speed at 100% rated output. 6M

(OR)

7. a) Explain the factors which effect the sharing of the load between two alternators operating in parallel. 6M
- b) Explain the effect of varying the mechanical input to an alternator connected to an infinite bus bar. 6M

UNIT-IV

8. a) Explain why synchronous motor does not develop starting torque 6M
- b) Derive the expression for power developed in a synchronous motor 6M

(OR)

9. a) Explain about V and Λ curves of a synchronous motor. 6M
- b) Explain about hunting in synchronous machine. 6M

UNIT-V

10. a) Explain double field revolving theory. 6M
- b) Explain split phase and capacitor start induction motor. 6M

(OR)

11. a) Explain why a 1- ϕ induction motor is not self starting. 6M
- b) Explain the construction and principle of working of universal motor and mention its applications. 6M

AR13

CODE: 13ME3017

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, November, 2018

THERMAL ENGINEERING - II

(Mechanical Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Sketch simple Rankine cycle on T-s diagram.
b) What is stoichiometric air fuel mixture and rich mixture?
c) What is the difference between Water tube and Fire tube boilers?
d) What is the function of Blow off cock valve in the boilers?
e) Define nozzle efficiency.
f) Define condenser and vacuum efficiencies.
g) Why compounding is necessary in steam turbines?
h) Define degree of reaction.
i) Give any two advantages of closed gas turbines over open cycle gas turbines.
j) Define thrust power and propulsive efficiency.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a. Briefly explain the working of Reheat steam cycle and derive the efficiency for the same 6M
b. A reheat cycle operating between 30 bar and 0.04 bar has a superheat and reheat temperature of 450° C. The first expansion takes place till the steam is dry saturated and then reheat. Neglecting pump work, determine the ideal cycle efficiency. 6M
- (OR)
3. a. Determine the stoichiometric air fuel ratio for a hydro carbon fuel by taking any example. 4M
b. A fuel consists of the following percentage analysis by mass: C=84%; H₂=10%; O₂=2%; S=1%; and N₂=3%. Find the amount of air required to completely burn 1 kg of this fuel and determine the products of combustion both by mass and as a percentage. 8M

UNIT-II

4. a. Briefly explain the working of Cochran boiler with a neat sketch. 6M
b. List out different boiler mountings and mention their functions. 6M
- (OR)
5. a. Briefly explain the working of (i) air pre-heater and (ii) Green's economiser 6M
b. Derive the expression for Chimney height in the boiler 6M

AR13

CODE: 13ME3017

SET-1

UNIT-III

6. a. Derive the expression for critical pressure ratio of convergent divergent nozzle. 6M
- b. Determine the throat area, exit area and exit velocity for a steam nozzle to pass 0.2 kg/sec when the inlet conditions are 12 bar and 250°C and the final pressure is 2 bar. Assume that the expansion is isentropic and that the inlet velocity is negligible. Take $n=1.3$ for superheated steam. 6M
- (OR)
7. a. Briefly explain the working of Evaporative condenser with a neat sketch. 6M
- b. In a surface condenser the vacuum maintained is 700 mm Hg. The barometer reads 754 mm Hg. If the temperature of condensate is 18°C. Determine (i) Mass of air present per kg of steam, (ii) Vacuum efficiency. 6M

UNIT-IV

8. a. Prove that diagram or blade efficiency for a single stage impulse turbine is given by
- $$\eta_{bl} = 2 \rho [\cos \alpha_1 - \rho] [1 + k C]$$
- where $\rho = \frac{V}{V_{w1}}$, $K = \frac{V_{w2}}{V_{w1}}$, $C = \frac{\cos \beta_2}{\cos \beta_1}$ 8M
- b. Distinguish between Impulse and Reaction turbines 4M
- (OR)
9. a. Briefly explain the velocity compounding method with the help of simplified sketch. 6M
- b. Show that blades are symmetrical for 50 % degree of reaction in turbines. 6M

UNIT-V

10. a. Derive the expression for thermal efficiency of a Gas turbine power plant 6M
- b. In a gas turbine power plant working on Brayton cycle, the air properties at inlet to the compressor are 0.1 MPa and 30°C. The pressure ratio is 6 and the maximum temperature of the cycle is 900°C. If the turbine and compressor efficiencies are 85 % and 80% respectively, determine the cycle efficiency. 6M
- (OR)
11. a. Briefly explain the working of Ramjet with the help of a neat sketch. 4M
- b. Define and derive the expression for Thrust, Thrust power and Propulsive efficiency 8M

AR13

CODE: 13EC3047

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, November, 2018
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What are primary and secondary measurements.
b) What is Calibration.
c) Classify systematic errors.
d) What is Loading effect.
e) State the basic principle of PMMC instrument.
f) What are the sources of errors in the bridge measurement.
g) Give some applications of Wheatstone's bridge.
h) What is delayed sweep.
i) What is meant by deflection sensitivity of a CRT.
j) What are the characteristics of a Transducer.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a. Explain different dynamic characteristics. 6M
b. Explain the operation of Multi range Voltmeter. 6M

(OR)

3. a. Explain how resistance can be measured using ohmmeter. 6M
b. List out different specifications of a DMM. 6M

UNIT-II

4. a. Explain the operation of the AF Oscillator. 6M
b. Describe the construction and working of a spectrum analyzer 6M

(OR)

5. a. Explain in detail about random noise in signal generators. 6M
b. Explain how sweep is produced in signal generators. 6M

UNIT-III

6. a. Explain different features of CRT. 6M
b. Explain about probes for CRO. 6M

(OR)

7. a. Explain the importance of delay line in CRO. 6M
b. Explain the measurement procedure of amplitude and time period. 6M

UNIT-IV

8. a. Derive the Bridge balance condition of Maxwell's Bridge. 6M
b. Explain the operation procedure of Weinbridge. 6M

(OR)

9. a. Derive the Bridge balance condition of Kelvin's Bridge. 6M
b. Explain in detail about the errors in bridges. 6M

UNIT-V

10. a. Write about the basic Hall effect Sensors. 6M
b. How the temperature is measured using Thermocouple. 6M

(OR)

11. a. Write in detail about active and passive Transducers. 6M
b. Explain about Thermistors and Sensistors. 6M

AR13

CODE: 13CS3014

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, November, 2018

OPERATING SYSTEMS

(Common to CSE & IT)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) How can a user program disrupt the normal operations of a system?
- b) State any two distinguishing features of UNIX and Windows
- c) Define deadlock avoidance
- d) Under what circumstances is user level thread is better than the kernel level threads.
- e) Name two difference between logical and physical address
- f) Examine the criteria do you consider to Evaluate various page replacement algorithms to select the best one.
- g) What is the basic approach of page replacement
- h) Briefly discuss the relative advantage and disadvantages of sector sparing and sector slipping
- i) Give the disadvantages of Contiguous allocation
- j) What are the possible operations on file?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) List out the services provided by operating systems to programs and to the users of program.
- b) Generalize some CPUs Provide for more than two modes of operation. What are two possible uses of these multiple modes?

(OR)

3. a) Describe the various types of system calls with an example of each
- b) Discuss in detail about Evolution of Operating Systems.

UNIT-II

4. a) Consider the following set of process that arrive at time 0. The length of the CPU burst times given in milli seconds.

Process	Burst time (Milli seconds)
P1	5
P2	20
P3	18
P4	12
P5	4

Compute the average waiting time, average response time and average turnaround time by FCFS algorithm.

- b) Prepare the issues to be considered with multithreaded programs

(OR)

5. a) What is a semaphore? What operations can be performed on a semaphore?
- b) Consider the following page reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. How many page faults would occur for the following replacement algorithms, assuming three frames that all frames are initially empty?

UNIT-III

6. a) Give relevant examples and discuss situations under which the least frequently used page replacement algorithm generates fewer page faults than the least recently used page replacement algorithm. Also give an example and discuss under what circumstances the opposite hold does?
- b) Describe how logical address is translated into physical address using Paging mechanism with a neat diagram

(OR)

7. a) Discuss situation in which the LFU page replacement algorithm generates fewer page faults than the least recently used LRU Page replacement algorithm. Also discuss under what circumstances the opposite holds good
- b) Explain in detail about the segmentation with neat diagram.

UNIT-IV

8. a) What are the different directory structures? Explain in detail
 - b) Infer in detail about a tree structure directory in file system interface
- (OR)**
9. a) Infer with an example of an application in which data in a file should be accessed in the following order:
i. Sequentially ii. Randomly
 - b) Express the views on –disk structure in file system implementation

UNIT-V

10. a) Develop a system which uses interrupt-driven I/O to manage a single serial port, but polling I/O to manage a front-end processor, such as a terminal concentrator.
 - b) Write notes about disk management and swap-space management.
- (OR)**
11. a) Describe the life cycle of I/O request in detail.
 - b) What are the different block and character devices? Explain in detail?