

Sixth Semester Examination – 2011**OPERATING SYSTEM****Full Marks – 70****Time : 3 Hours**

Answer Question No. **1** which is compulsory and any **five** from the rest.

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10
- (a) What are the advantages of the layered approach to system design ?
 - (b) Compare and contrast the use of monitors and semaphore operations.
 - (c) What is the nucleus or kernel of an operating system ?
 - (d) Define and differentiate between multitasking and multiprogramming.
 - (e) What is a process ? What is a PCB ?
 - (f) What is Throughput, Turnaround time, waiting time and Response time ?
 - (g) What do you mean by race condition ?
 - (h) What is the advantage of using threads compared to processes ?
 - (i) What is the difference between binary and counting semaphores ?
 - (j) What happens during trashing (in the memory system) and why it happens?
2. (a) What are the major activities of an operating system ? What is the main advantage of the layered approach to system design ? 5
- (b) What aspect of paging makes page replacement algorithms so much simpler than segment replacement algorithms ? What hardware or software

3. (a) An airconditioner generates a noise of 75 dB for five minutes every hour. If the background noise level is 55 dB, compute the L_{Aeq} . 5
- (b) What are the purposes of advanced water treatment processes ? Discuss about the removal of iron and manganese. 5
4. (a) What is Rotating Biological Contactors (RBC) ? Draw the schematic of a RBC. 5
- (b) In an experiment, 15 ml. of sample was diluted in 300 ml. bottle. Initial DO was calculated to be 8.9 mg/L, final DO after five days was 4.4 mg/L corresponding initial and final DO sample of dilution water was 9.1 mg/L and 9.05 mg/L. Calculate the 5 days BOD. 5
5. (a) Show the step by step procedure to be used in the waste reduction techniques with the help of a flow chart. Discuss three benefits of waste minimization. 5
- (b) In industrial air emission control study, what do you mean by condensation? Draw a schematic of a condenser and discuss its operating principle. 5
6. (a) What are the objectives and benefits of occupational health and safety (OH & S) management system ? To which type organization occupational health and safety assessment series (OHSAS) standard is applicable ? 5
- (b) Mention the industrial substances causing chemical hazard. What are the general hazardous effects of chemicals and discuss about their mitigation measures. 5
7. (a) What are the electrical hazards in industrial systems ? Discuss about the safety precautions against contact shocks, flash shocks and burns. 5
- (b) Using the following data, calculate the severity rate of accident in an industrial plant where only one accident occurred during the year, the type of injury being cutting of the tip of the figure. 5
- (i) Number of workers = 2000
 - (ii) Number of days lost in a year due to accidents = 100
 - (iii) Average number of hours worked by the worker per year = 2000

8. Write short notes on the followings (any **four**) :

2.5×4

- ✓ (a) Activated sludge treatment
- (b) Wind rose
- ✓ (c) Environmental audit
- ✓ (d) Reuse and recycle
- (e) Safety measures in LPG bottling
- ✓ (f) Fire extinguishers.

