

(Time: 3 hours)

[Total Marks: 75]

Please check that you have got the correct question paper.

- N. B.: (1) All questions are compulsory.
 (2) Make suitable assumptions wherever necessary and state the assumptions made.
 (3) Answers to the same question must be written together.
 (4) Numbers to the right indicate marks.
 (5) Draw neat labeled diagrams wherever necessary.
 (6) Use of Non-programmable calculators is allowed.

SECTION – I

1.
 - a. When Simulation is not an appropriate tool? 7
 - b. List the application areas/Industry domains of simulation? 6

OR

1.
 - a. Explain the terms: (a) entity (b) attribute (c) activity (d) event (e) state in the system simulation context? 7
 - b. Determine the hypothesis of independence for runs above or below the mean for the sequence of 40 numbers given below: 6

0.41	0.68	0.89	0.94	0.74	0.91	0.55	0.62	0.36	0.27
0.19	0.72	0.75	0.08	0.54	0.02	0.01	0.36	0.16	0.28
0.18	0.01	0.95	0.69	0.18	0.47	0.23	0.32	0.82	0.53
0.31	0.42	0.73	0.04	0.83	0.45	0.13	0.57	0.63	0.29

Also $\alpha=0.05$ $Z_{\alpha}=1.96$ and mean $=0.495$

2.
 - a. The number of cyclones hitting the coast of Odisha has a Poisson distribution with a mean of 0.8. 7
 - i) What is the probability that more than two cyclones will hit the Odisha coast in a year?
 - ii) What is the probability that only one cyclone will hit the coast in a year?
 - b. Explain any two discrete distributions and give the equation for probability mass function. Also, calculate mean and variance of same. 6

OR

2.
 - a. What is the inverse transform technique? Explain how it is used for producing random variants for exponential distribution and uniform distribution. 7
 - b. Explain the properties of random number & its consequences. 6

3.
 - a. Explain goodness of fit test with examples. 6
 - b. State the four steps involved in the development of an input model? 6

OR

3.
 - a. What are the types of simulations with respect to output analysis? 6
 - b. Describe in detail the three steps approach for model validation? 6

[TURN OVER]

SECTION I

4.
 - a. Why COM is better than C++? Justify your answer **7**
 - b. What is distributed object system? Explain the evolution of distributed object system **6**
- OR**
4.
 - a. What is difference between 2 tier architecture and multi-tier architecture system? **7**
 - b. What is COM Interface definition language (IDL)? Explain the syntax for defining COM methods is used in Interface Definition Language (IDL). **6**
5.
 - a. What is an IUnknown Interface? Explain the three methods of IUnknown Interface **6**
 - b. It is better if we separate interface and COM implementation? Why? **6**
- OR**
5.
 - a. Explain the COM Activation Model using Service Control Manager(SCM) with the help of a diagram **6**
 - b. Write short note on: i) MTA and RTA ii) Cross Apartment. **6**
6.
 - a. What is a role of stub and skeleton in CORBA architecture? Explain with suitable diagram **6**
 - b. What is Java Native Interface (JNI)? Explain the step for creating a java native method with an example **6**
- OR**
6.
 - a. What do you mean by Object Web? Explain with example. **6**
 - b. What is object activation? Explain the concept of In-process and Out-process activation. **6**