(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	0.0.1	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 α=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.			**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.		