

- 1) Ensuring that the model behaves in the way it was intended is called **verification**
- 2) One of the problems in the queuing theory analysis approach in queuing system is the time frame, which is due to the assumption **should be at steady state**
- 3) If a model is simple enough, it is better to use **traditional mathematical approach**
- 4) The news vendor problem is an example of **static, discrete, stochastic**.
- 5) Making too many assumptions about a system to build a model may lead you to **working on the wrong problem, an issue that you should realize by validation**.
- 6) For a simulation model with an output of 15 and utilization of 85%, doubling the interarrival time distribution parameter is expected to, **decrease the output, and decrease the utilization**.
- 7) Comparing results from the simulation with actual data from the real system is helpful to **validate the model**.
- 8) Repeating the simulation for 3 times each each run for a length of 50 hours will result in a sample size of **3**
- 9) In simulation, increasing the sample size will result in a better estimation of the quantity and bigger error **FALSE**.
- 10) The maximum waiting time in queue is an example of the worst-case measure **TRUE**
- 11) The excel function RAND () can be used to generate random numbers between 0 and 1 **TRUE**
- 12) To simulate a uniform distribution, use the excel expression  $a+(b-c) * \text{RAND} ()$  **TRUE**
- 13) Not releasing a resource before leaving the model might cause **Many entities will build up in queue, the output will be zero, it should be realized by verification not validation, syntax error due to entity trying to take the resource out of the system**.
- 14) If all analysis methods of a system are applicable with no limitations, the best approach is **mathematical modeling using linear programming**.
- 15) A supermarket manager tried actual different policies for inventory to see which policy gives the highest performance. This is not simulation? **TRUE**
- 16) The simulation clock for a discrete event dynamic stochastic model jumps in discrete equal increments of time in the defined time units. For example, 1 sec, 2 sec, 3 sec. **FALSE**
- 17) The concept of steady state implies that after a long enough time the system will not change with respect to time **TRUE**
- 18) The waiting time for entities in queue are time persistent data **FALSE**
- 19) If a system changes significantly with respect to time, it is said to be stochastic. **FALSE**
- 20) When solving a problem, it is more powerful to use simulation rather than traditional methods given that both are applicable. **FALSE**
- 21) Special computer packages have been developed to undertake real life simulation. **TRUE**
- 22) Random numbers are used to **Assign values to the parameters**.
- 23) First step in simulation is to **Define the problem**.
- 24) A snapshot of the system at particular point in time characterized by values of the variable that are necessary for determining the future evaluation of the system from the present time **Steady state**.
- 25) A limited quantity of items that are used (seized or released) by entities as they proceed through the system (**Resource**)
- 26) A set of interrelated components that act together over time to achieve common objectives **System**

- 27) An object of interest in the system whose movement or operation within the system may cause the occurrence of events **Entity**
- 28) A property or variable that is associated with an entity **Attribute**
- 29) Advantages of simulation?  
**Simulation does not interfere with the real-world system.**  
**Simulation allows what if types of question.**
- 30) Making too many assumptions about a system to build a model may lead you to be working on the wrong problem, an issue that should be realized by verification **FALSE**
- 31) If a model is simple enough it is better to use traditional mathematical tools like queuing theory, differential equation methods, or something like liner programming **TRUE**.
- 32) The Buffon needle problem to estimate the value of, is an example of dynamic simulation **FALSE**
- 33) In correctly specifying the delay logic in the process module from “seize delay release to seize delay” is an issue that should be fixed using **Verification**
- 34) A failure policy must attach to two resources **FALSE**
- 35) Global expressions stores formulas as well as numbers, it can be scalar or vector or matrix **TRUE**
- 36) You may have, or than entity type and multiple realizations of the entities in the same system **TRUE**
- 37) A limited storage space is best modeled by **QUEUE** و **resource** مش اکید
- 38) A **VARIABLE** does not store formula it just stores numbers, and it can be one of the following types: scalar or vector or matrix
- 39) One of the following is not an event? **Entity leaving the queue and starts service**
- 40) User defined values associated with individual entities, such as customer type, product size, time job entered the system etc. are examples of **ATTRIBUTES**
- 41) A **VARIABLE** is a global quantity that can be initiated and changed during simulation.
- 42) A set of approximations and assumptions, both structural and quantitative, about the way the system will work. This is the definition of **Logical Model**.
- 43) If a system changes significantly with respect to time, it is said to be **Dynamic**
- 44) The Buffon needle problem to estimate the value of pi is an example of **Monte-Carlo (static) simulation**
- 45) Over simplifying a model by making assumptions will allow us to use traditional methods easily **TRUE**
- 46) In the simulation when doing more than one replication the system will be valid **FALSE**