INDIAN MARITIME UNIVERSITY

(A Central University, Govt. of India)

End Semester Examinations – June-July 2019

M.B.A (Port and Shipping Management) /

(International Transportation & Logistics Management)

Semester II

Quantitative Techniques for Business

(PG21T2201/PG22T2201)

Date:10-06-2019	**Max Marks: 60**
Time: 3 Hrs	**Pass Marks: 30**

PART – A

Answer all the Questions 12 x 1 = 12

1. When the hypothesis is true and our test rejects it, then it is called a …
   a. Type I error
   b. Type II error
   c. Null hypothesis
   d. None of these

2. A bag contains 30 balls numbered from 1 to 30. One ball is drawn at random. Find the probability that the number of the drawn ball will be a multiple of 5 or 7
   a. 6/30
   b. 4/3
   c. 1/3
   d. 4/30

3. Data originally collected for an investigation is called……..
   a. Primary data
   b. Secondary data
   c. Tertiary data
   d. None of the above

4. Second quartile is equal to
   a. Mean
   b. Median
   c. Mode
   d. None of the above

5. Under linear programming, the function to be maximized or minimized is called……
   a. Objective function
   b. Feasible function
   c. Infeasible function
   d. None of the above

6. Chi square value ranges between ….
   a. Zero and infinity
   b. Negative one and positive one
   c. Zero to positive one
   d. Negative one to zero

7. ---------- is a probability distribution expressing the probability of a set of dichotomous alternatives.
   a. Normal distribution
   b. Poisson distribution
   c. Multinomial distribution
   d. Binomial distribution

8. The ability by which a measuring device can detect small difference in the quantity being measured by it is called it's……
   a. damping
   b. sensitivity
   c. accuracy
   d. none of the above

9. Times between two successive requests arriving is called…….
   a. Inter-arrival time
   b. Arrival time
   c. Poisson distribution
   d. Average residual service time

10.A quantitative technique used for evaluating alternative courses of action based upon facts and assumptions with a computerised mathematical model in order to represent actual decision making under conditions of uncertainty
   a. Decision tree
   b. PERT
   c. CPM
   d. Simulation

11.Joining the other queue and leaving the first one
   a. Jockeying
   b. Reneging
   c. Balking
   d. None of the above

12.All possible solutions which can be worked upon under given constraints
   a. Optimum solution
   b. Objective function
   c. Feasible solution
   d. Criterion function

PART – B

Answer any five out of seven 5 x 4 = 20

13. During 10 weeks of a session, the marks obtained by two candidates, Ramesh and Suresh, taking the computer programme courses are given below:

Ramesh	58	59	60	54	65	66	52	75	69	52
Suresh	87	89	78	71	73	84	65	66	56	46

(a) Who is a better scorer?
(b) Who is a more consistent scorer?

14. Out of 800 families with 4 children each, what percentage would be expected to have
(a) 2 boys and 2 girls
(b) at least one boy
(c) no girls and
(d) at the most two girls? Assume equal probabilities for boys and girls.

15. Define sampling. Explain the different methods of sampling.
16. What is queuing theory? Explain its advantages
17. Distinguish between PERT and CPM

18. Find the dual of the linear programming problem
Minimize $C = 48y1 + 5y2 + 5y3$
Subject to $8y1 + y2 + 2y3 \geq 56$
$6y1 + 3y2 + 2y3 \geq 49$
$y1, y2, y3 \geq 0$

19. Suppose that a manufactured product has 2 defects per unit of the product inspected. Using Poisson Distribution, calculate the probabilities of finding a product without any defect, 3 defects and 4 defects (given $e^{-2} = 0.135$)

PART – C

(Question No.20 is compulsory and answer any three questions to be answered from the remaining) 4 x 7 = 28

20. Explain the procedure adopted for testing of hypothesis
Find the rank correlation coefficient from the following data:

X	65	63	67	64	68	62	70	66	68	67	69	71
y	68	66	68	65	69	66	68	65	71	67	68	70

21. Find the coefficient of correlation and obtain the equation to the lines of regression for the data

X	6	2	10	4	8
Y	9	11	5	8	7

22. A firm engaged in producing two models, viz, model X1 and model X2, performs only three operations- painting, assembly and testing. The relevant data are as follows.

Unit	Hours required for each unit			
	Sales price (Rs)	Assembly	Painting	Testing
Model X1	50	1.0	0.2	0.0
Model X2	80	1.5	0.2	0.1

Total number of hours available each week are as under
Assembly 600
Painting 100
Testing 30
The firm wishes to determine its weekly product mix so as to maximize the revenue. Write up the model and solve the problem using simplex method

23. Perform a two way ANOVA on the data given below:

Plots of land	Treatment			
	A	B	C	D
I	38	40	41	39
II	45	42	49	36
III	40	38	42	42

(Use coding method subtracting 40 from the given numbers)

24. In a manufacturing organisation, the distribution of wages was perfectly normal and the number of workers employed in the organisation was 5000. The mean wages of the workers were calculated at Rs. 800 and standard deviation was worked out to be Rs. 200. On the basis of the information estimate:

(i) The number of workers getting salary between Rs.700 and Rs.900.
(ii) Percentage of workers getting salary above Rs.1000
(iii) Percentage of workers getting salary below Rs.600

25. From the following information, calculate Fishers Ideal Index (assuming 2017 as base year).

	2017		2018	
Commodity	Price (Rs.)	Quantity (in "000" tons)	Price (Rs.)	Quantity (in "000" tons)
A	7	12	8	13
B	8	15	9	14
C	7	11	6	15
D	9	12	8	11
E	10	16	9	10