Reg. No. : .....

Code No.: 7544 Sub. Code : PBAM 13

M.B.A. (CBCS) DEGREE EXAMINATION, NOVEMBER 2020.

First Semester

Business Administration - Core

## QUANTITATIVE TECHNIQUES FOR MANAGEMENT

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A —  $(10 \times 1 = 10 \text{ marks})$ 

Answer ALL questions.

Choose the correct answer :

- 1. Which of the following sets are null sets?
  - (a) {}
  - (b) *ø*
  - (c) Both (a) and (b)
  - (d)  $\{0\}$

2. If  $A = \{1, 2, 3\}$  then relation  $S = \{(1, 1), (2, 2)\}$  is

- (a) Symmetric
- (b) Anti-symmetric only
- (c) An equivalence relation
- (d) Both symmetric and anti-symmetric
- 3. If  $f(x) = 3x^2$ , then F(x) =
  - (a) 6x (b)  $x^3$
  - (c)  $x^3 + C$  (d) 6x + C

4. If we differentiate :  $y = \frac{x^4}{4} + 2x^2$  we get

- (a)  $x^3 + 4x$  (b)  $4x^3 + 4x$
- (c)  $4x^3 + 2x^2$  (d)  $\frac{\pi^3}{4} + 4x$
- 5. When data are classified according to some characteristics, it is called?
  - (a) Geographical classification
  - (b) Chronological classification
  - (c) Qualitative classification
  - (d) Quantitative classification

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- 6. A systematic presentation of numerical data in columns and rows in accordance with some salient features is called
  - (a) Classification
  - (b) Analysis
  - (c) Tabulation
  - (d) None of the above
- 7. Any possible outcome of a random experiment is called
  - (a) Trial (b) Result
  - (c) Probability (d) Event
- 8. \_\_\_\_\_ relates the chances in favour of an event to the chances against it.
  - (a) Odds
  - (b) Combinations
  - (c) Permutation
  - (d) Bayes' theorem

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9.	study	the	changes	in	the	volume	of
	goods produced or	const	umed.				

- (a) Price Index (b) Quantity Index
- (c) Value Index (d) All the above
- 10. In index number,  $P_1$  denotes
  - (a) Base year price
  - (b) Current year price
  - (c) Price index number for the base year
  - (d) Price index number for the current year

PART B —  $(5 \times 5 = 25 \text{ marks})$ 

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) In a group of 60 people, 27 like cold drinks and 42 like hot drinks and each person likes at least one of the two drinks. How many like both coffee and tea?

Or

(b) Which of the following relations from  $R \rightarrow R$  are functions?

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12. (a) Evaluate  $\int (x^{3/2} - 1/x^2 + 5x - 7) dx$ .

Or

(b) Compute the derivative of y = f(x) with respect to x.

$$f(x) = \frac{x+7}{(x-6)(x+2)}$$

13. (a) Explain the parts of tabulation.

 $\mathbf{Or}$ 

(b) From the marks secured by 120 students in section A, 120 students in section of a class, the following measures are obtained;

Section A Mean = 46.83 S.D = 14.8 Mode = 51.67

Section B Mean = 47.83 S.D = 14.8 Mode = 47.07

Determine which distribution of marks is more skewed?

14. (a) The ages of all students in a class is normally distributed. The 95 percent of total data is between the age 15.6 and 18.4. Find the mean and standard deviation of the given data.

Or

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- (b) Two cards are drawn from a pack of cards at random. What is the probability that it will be
  - (i) a diamond and a heart,
  - (ii) a king and a queen,
  - (iii) two kings?
- 15. (a) Discuss the uses of Index Numbers.

 $\mathbf{Or}$ 

(b) Convert the following field base index numbers into chain base index numbers :

Year :	2010	2011	2012	2013	2014	2015

F.B.I: 376 392 408 380 392 400

PART C —  $(5 \times 8 = 40 \text{ marks})$ 

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) In a group of students, 65 play foot ball, 45 play hockey, 42 play cricket, 20 play foot ball and hockey, 25 play foot ball and cricket, 15 play hockey and cricket and 8 play all the three games. Find the total number of students in the group. (Assume that each student in the group plays at least one game.)

Or

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- (b) (i) A bungalow sells for Rs. 50,000 down payment and 10 semi annual payments of Rs. 5,000 each, the first due 3 years hence. Find the cash price of the bungalow if money is worth 6% compounded semi annually. (4)
  - (ii) Mr. X purchased an asset for Rs. 1,00,000 on installment basis. Each installment is to be paid at the beginning of each quarter. Find the size of the each installment if the money is to be repaid in three years and effective rate of interest is 6%. (4)

17. (a) Find 
$$\frac{d}{dx}(2x^2 + 5\log x)(3x^4 + 7x^3)$$
.

 $\mathbf{Or}$ 

(b) Find 
$$d/dx \log \left[\frac{2x+3}{5x+7}\right]$$
.

18. (a) Explain the functions of statistics.

Or

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(b) Calculate the Mean, Median and Mode for the given data;

Daily earnings (Rs.)	No. of persons	Daily earnings (Rs.)	No. of persons
50 - 53	3	65 - 68	28
53 - 56	8	68 - 71	16
56 - 59	14	71 - 74	10
59 - 62	30	74 - 77	5
62 - 65	36		

- 19. (a) Box I contains three defective and seven nondefective balls, and Box II contains one defective and nine non-defective balls. We select a box at random and then draw one ball at random from the box.
  - (i) What is the probability of drawing a non-defective ball?
  - (ii) What is the probability of drawing a defective ball?
  - (iii) What is the probability that box I was chosen, given a defective ball is drawn?

Or

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- (b) If three persons, on an average, come to ABC Company for job interview, then find the probability that less than three people have come for interview on a given day.
- 20. (a) From the following data calculate price index numbers for 2012 with 2011 as base by
  - (i) Laspeyre's method
  - (ii) Paasche's method
  - (iii) Marshall Edgeworth method
  - (iv) Fisher's method

Commodity	2	2011	2012				
	Price	Quantity	Price	Quantity			
А	20	8	40	6			
В	50	10	60	5			
С	40	15	50	15			
D	20	20	20	25			
Or							

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(b)	(i)	Draw semi-a	a trei average	nd line es.	by the	meth	od of (4)
Year	:	2010	2011	2012	2013	2014	2015
Sales ('0	)00):	60	75	81	110	106	120
(ii) Calculate three yearly moving averages of the following data. (4)							
Year :	200	1 2	002	2003	2004	2	005
No.of Students :	15		18	17	20		23
Year :	200	6 2	007	2008	2009	) 2	010
No.of Students :	25		29	33	36		40

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