Question Bank 3

School of Basics and Applied Science

**Mathematics**

Course Name: Multivariable Calculus Course Code: BMA101

Date: 05-10-2019

| Sl No. | Questions | CO | Bloom’s Taxonomy Level | Difficulty Level | Competitive Exam Question Y/N | Area | Topic | Unit | Marks |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Define function of two variables. | 3 | K1 | L | N | Functions of several variables | Function of several variable | 3 | 2 |
| 2 | Define level curves. | 3 | K1 | L | N | Functions of several variables | Function of several variable | 3 | 2 |
| 3 | Find the domain and range of the function. | 3 | K2 | M | N | Functio njpns of several variables | Function of several variable | 3 | 2 |
| 4 | Find the domain and range of the function. | 3 | K2 | M | N | Functions of several variables | Function of several variable | 3 | 2 |
| 5 | Plot the level curves, and in the domain of the function in the plane. | 3 | K2 | M | N | Functions of several variables | Function of several variable | 3 | 2 |
| 6 | Find the limit: | 3 | K3 | M | N | Functions of several variables | Limit and continuity | 3 | 2 |
| 7 | Find the limit: | 3 | K3 | M | N | Functions of several variables | Limit and continuity | 3 | 2 |
| 8 | Find the limit: | 3 | K3 | M | N | Functions of several variables | Limit and continuity | 3 | 2 |
| 9 | Show that the limit does not exist of the function: | 3 | K3 | M | N | Functions of several variables | Limit and continuity | 3 | 6 |
| 10 | Show that the limit does not exist of the function: | 3 | K3 | M | N | Functions of several variables | Limit and continuity | 3 | 6 |
| 11 | Show that the limit does not exist of the function: | 3 | K3 | M | N | Functions of several variables | Limit and continuity | 3 | 6 |
| 12 | Define the continuity of a functionat a point. | 3 | K1 | M | N | Functions of several variables | Limit and continuity | 3 | 2 |
| 13 | At what points (*x*, *y*) in the plane is the function continuous: | 3 | K2 | M | N | Functions of several variables | Limit and continuity | 3 | 2 |
| 14 | At what points (*x*, *y*) in the plane is the function continuous: | 3 | K2 | M | N | Functions of several variables | Limit and continuity | 3 | 2 |
| 15 | Show that the function is continuous at every point except the origin: | 3 | K3 | M | N | Functions of several variables | Limit and continuity | 3 | 6 |
| 16 | Show that the function is continuous at every point except the origin: | 3 | K3 | M | N | Functions of several variables | Limit and continuity | 3 | 6 |
| 17 | Define the partial derivative of a function with respect to at a point. | 3 | K1 | M | N | Differentiation of Functions of several variables | Partial derivatives | 3 | 2 |
| 18 | Define the partial derivative of a function with respect to at a point. | 3 | K1 | M | N | Differentiation of Functions of several variables | Partial derivatives | 3 | 2 |
| 19 | Find the partial derivative of the function with respect to each variable: | 3 | K3 | M | N | Differentiation of FSV | Partial derivatives | 3 | 2 |
| 20 | Find the partial derivative of the function with respect to each variable: | 3 | K3 | M | N | Differentiation of FSV | Partial derivatives | 3 | 6 |
| 21 | Find the partial derivative of the function with respect to each variable: | 3 | K3 | H | N | Differentiation of FSV | Partial derivatives | 3 | 6 |
| 22 | Find the partial derivative of the function with respect to each variable: | 3 | K3 | H | N | Differentiation of FSV | Partial derivatives | 3 | 6 |
| 23 | Find all the second-order partial derivatives of the function: | 3 | K3 | M | N | Differentiation of FSV | Partial derivatives | 3 | 6 |
| 24 | Find all the second-order partial derivatives of the functiono | 3 | K3 | H | N | Differentiation of FSV | Partial derivatives | 3 | 6 |
| 25 | Find the value of at the point (1, 1, 1) if the equation *xy* + *z*3*x* - 2*yz* = 0 defines *z* as a function of the two independent variables *x* and *y* and the partial derivative exists. | 3 | K3 | H | N | Differentiation of FSV | Partial derivatives | 3 | 6 |
| 26 | Define total derivatives of function of two variables. | 3 | K1 | M | N | Differentiation of FSV | Partial derivatives | 3 | 2 |
| 27 | Define total derivatives of function of three variables. | 3 | K1 | M | N | Differentiation of FSV | Partial derivatives | 3 | 2 |
| 28 | Find the total differential of the function at the point : | 3 | K3 | L | N | Differentiation of FSV | Partial derivatives | 3 | 6 |
| 29 | Find the total differential of the function at the point : | 3 | K3 | M | N | Differentiation of FSV | Partial derivatives | 3 | 6 |
| 30 | Draw a branch diagram and write a Chain Rule for derivative of a function of 1 independent variable and 2 intermediate variables. | 3 | K2 | M | N | Differentiation of FSV | Chain rule | 3 | 2 |
| 31 | Draw a branch diagram and write a Chain Rule for derivative of a function of 1 independent variable and 3 intermediate variables. | 3 | K2 | M | N | Differentiation of FSV | Chain rule | 3 | 2 |
| 32 | Draw a branch diagram and write a Chain Rule for derivative of a function of 2 independent variables and 3 intermediate variables. | 3 | K2 | M | N | Differentiation of FSV | Chain rule | 3 | 2 |
| 33 | Express as a function of *t*, both by using the Chain Rule and by expressing *w* in terms of *t* and differentiating directly with respect to *t*. Then evaluate at : | 3 | K3 | M | N | Differentiation of FSV | Chain rule | 3 | 6 |
| 34 | Evaluateand at the point (*u*, v): | 3 | K3 | M | N | Differentiation of FSV | Chain rule | 3 | 6 |
| 35 | Evaluateand at the point: | 3 | K3 | M | N | Differentiation of FSV | Chain rule | 3 | 6 |
| 36 | Express and in terms of *r* and *s* if | 3 | K3 | M | N | Differentiation of FSV | Chain rule | 3 | 6 |
| 36 | Express and in terms of *r* and *s* if | 3 | K3 | M | N | Differentiation of FSV | Chain rule | 3 | 6 |
| 37 | If ƒ(*u*, v, *w*) is differentiable and *u* = *x* - *y*, v = *y* - *z*, and *w* = *z* - *x*, show that. | 3 | K3 | H | N | Differentiation of FSV | Chain rule | 3 | 6 |
| 38 | Show that if *w* = ƒ(*u*, v) satisfies the Laplace equation ƒ*uu* + ƒvv = 0 and if *u* = (*x*2 - *y*2)/2 and v = *xy*, then *w* satisfies the Laplace equation *wxx* + *wyy* = 0. | 3 | K3 | M | N | Differentiation of FSV | Chain rule | 3 | 10 |
| 39 | Find if. | 3 | K3 | M | N | Differentiation of FSV | Chain rule | 3 | 6 |
| 40 | Find if. | 3 | K3 | M | N | Differentiation of FSV | Chain rule | 3 | 6 |
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Signature of Course Coordinator/DC:

Signature of Dean:

IQAC: