

E 6626

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Reg. No.....

Name.....

B.B.A. DEGREE (C.B.C.S.S.) EXAMINATION, MAY 2017

Second Semester

Complementary Course—MATHEMATICS FOR MANAGEMENT

(2013 Admission onwards)

Time : Three Hours

Maximum Marks : 80

Part A

Answer all questions.

1 mark each.

1. For any positive integer 'n',

$$\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = \underline{\hspace{2cm}}.$$

2. Images of the point (2, 3, 4) w.r.t. XY plane is _____.

3. The distance of the point (x, y) from y-axis is _____.

4. Slope of the line $4x + 3y + 5 = 0$ is _____.

5. Find the slope of the line joining (-2, 6) and (4, 8).

6. The distance between the points (-3, 7, 2) and (2, 4, -1) is _____.

7. The centre of the circle $x^2 + y^2 - x = 0$ is _____.

8. Find the value of $\frac{d}{dx}(x^2 + x)$ at $x = 1$.

9. Value of $\int 0 dx$ is _____.

10. Give an example for an odd function.

(10 × 1 = 10)

Turn over

Part B

Answer any eight questions.

2 marks each.

11. Find the derivative of $x - 3$ using first principle.
12. Find the equation perpendicular to the line $3x - 4y + 2$ and having Y intercept 2.
13. Find the derivative of $2x - 3x$ using quotient rule.
14. Find the co-ordinate of the point which divides the line segment joining the points $(-2, 3, 5)$ and $(1, -4, 6)$ in the ratio 2:3 internally.
15. Evaluate $\int \frac{dx}{\sqrt{x+1}}$.
16. Find the forth derivative of $\sqrt{4x+2}$.
17. Draw the graph of the function $y = \frac{1}{x}$.
18. Define function. What are the domain and range of a function ?
19. Integrate $\sqrt{\sin 2x + 1}$ w.r.t. x .
20. Evaluate $\lim_{x \rightarrow a} \frac{e^{3x} - 1}{x}$.
21. Define Cartesian product of two sets.
22. Evaluate $\int \tan^{-1} x dx$.

(8 × 2 = 16)

Part C

Answer any **six** questions.

4 marks each.

23. Show that the triangle with vertices $(1, 4, 2)$, $(2, -3, 4)$ and $(-2, 1, 2)$ is right angled.
24. Find the co-ordinates of the orthocentre of the triangle whose vertices are $(-1, 3)$, $(2, -1)$ and $(0, 0)$.
25. Write converse of, if two lines are parallel, then they do not intersect in same plane.
26. Evaluate $\int \frac{e^x - e^{-2x}}{e^x + e^{-x}} dx$.
27. Evaluate $\int \frac{dx}{2 + e^{3x}}$
28. Find the maximum and minimum values of the function $x^4 + 2x^3 - 3x^2 - 4x + 1$.
29. Find the derivative of $y = \tan x$ using first principle.
30. Find the equation of the line passing through the intersection of lines $x + 2y - 3 = 0$ and $4x - y + 7 = 0$ and which is parallel to $5x + 4y - 20 = 0$.
31. Find the co-ordinate of the foci, vertices and length of latus rectum of the hyperbola $16xz - 9yz = 576$.

(6 × 4 = 24)

Part D

Answer any **two** questions.

15 marks each.

32. Evaluate $\int \frac{x^3 + 3x}{(x+1)^2(x^2 - 2x + 1)} dx$.
33. Find the point of intersection of pairs of lines $4x - 3y + 7 = 0$ and $2x + 7y - 5 = 0$ and also find a line perpendicular to $4x - 3y + 7 = 0$ and passing through the origin.

Turn over

34. Find the maxima and minima values of the following functions :

(i) $2x + \frac{4}{x+5}$.

(ii) $6x^5 - 12x^4 + 9x^3 + 45$.

(iii) $3x^3 + 42x^2 + \frac{5x}{x-4}$.

35. Solve the system of equations using Cramer's method

$$x - y + 3z = 9, \quad 3x + 5y - 3z = 21 \quad 12x + 7y - 10z = 35.$$

(2 × 15 = 30)