Section —B (4 ´ 10 =40 marks)

Q # 2. *Attempt any **TEN** parts. Graph paper will be supplied on demand.*

(i) Determine whether the given function is even or odd: $$f(x) = x^{2/3} + 6$$	Ex 1.1 – 9(iv) – p11
(ii) Evaluate; $\lim\limits_{q \to 0} \dfrac{\tan q - \sin q}{\sin^3 q}$.	Ex 1.3 – 3(xii) – p27
(iii) Find $\dfrac{dy}{dx}$ if $x = y \sin y$.	Ex 2.5 – 3 – p79
(iv) Differentiate a^x w.r.t x by ab-intio method. ($a > 0$).	Ex 2.6 – Art2.10 – p80
(v) Show that $y = \dfrac{\ln x}{x}$ has maximum value at $x = e$.	Ex 2.9 – 4 – p113
(vi) Evaluate; $\int \sec x \, dx$	Ex 3.3 – Exp5(ii) – 133
(vii) Evaluate: $\int \ln(x + \sqrt{x^2 + 1}) dx$	Ex 3.4 – Exp5 – p139
(viii) Find the area above the x-axis bounded by curve $y^2 = 3 - x$ from $x = -1$ to $x = 2$	Ex 3.7 – 11 – p168
(ix) Find h such that points $A(-1, h)$, $B(3, 2)$ and $C(7, 3)$ are collinear	Ex 4.1 – 7 – p186
(x) Find an equation of the perpendicular bisector joining the points $A(13, 5)$ and $B(19, 8)$.	Ex 4.3 – 11 – p216
(xi) Show that line $2x + 3y - 13 = 0$ is tangent to the circle $x^2 + y^2 + 6x - 4y = 0$	Ex 6.1 – 6 – p256
(xii) write an equation of the parabola whose focus is $F(2, 5)$ and directrix is $y = 1$.	Ex 6.4 – 2(ii) – p281
(xiii) Show that the vectors $2\underline{i} - \underline{j} + \underline{k}$, $\underline{i} - 3\underline{j} - 5\underline{k}$ and $3\underline{i} - 4\underline{j} - 4\underline{k}$ form sides of a right angle triangle..	Ex 7.3 – Exp6– p347
(xiv) Find the points of intersection of $\dfrac{x^2}{18} + \dfrac{y^2}{8} = 1$ and $\dfrac{x^2}{3} - \dfrac{y^2}{3} = 1$	Ex 6.7 – 8 – p309

Section C (40 Marks)

*Note: Attempt any **FIVE** Questions. Graph paper will be supplied on demand.*

Q # 3. If q is measured in radian then prove that $\lim\limits_{q \to 0} \dfrac{\sin q}{q} = 1$.	Ex 1.3 – Art1.5.8 – p25
Q # 4. The perimeter of a triangle is $20cm$. If one side is of length $8cm$, what are lengths of other two sides of maximum area of triangle.	Ex 2.10 – Exp3 – p115

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Q # 5. Evaluate; $\displaystyle\int_0^{\frac{p}{2}} \frac{\sin x}{(1+\cos x)(2+\cos x)}\,dx$.	Ex 3.6 -32 – p164
Q # 6. Find the area of region bounded by the triangle whose sides are: $7x-y-10=0$; $\qquad 10x+y-41=0$; $\qquad 3x+2y+3=0$.	Ex 4.4 – 14 – p224
Q # 7. Minimize $z=2x+y$ subject to the constraints $x+y\geq 3$, $7x+5y\leq 35$, $x\geq 0$, $y\geq 0$.	Ex 5.3 – 4 – p248
Q # 8. Find an equation of the ellipse having vertices $(0,\pm 5)$, eccentricity $\dfrac{3}{5}$. And sketch the graph	Ex 6.5 – 1(vi) – p296
Q # 9. Prove by the vector method that perpendicular bisectors of the sides of triangle are concurrent	Ex 7.3 – 8 – p350

Chart between Chapters and Marks
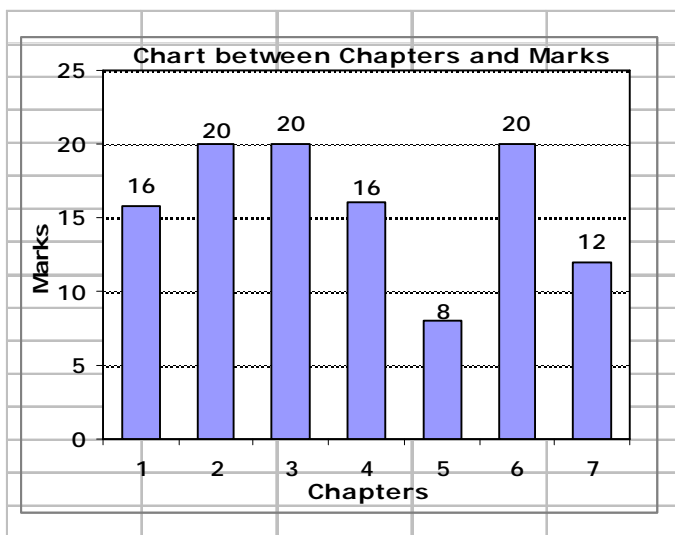
Chart between marks of Question from Exercises and Examples
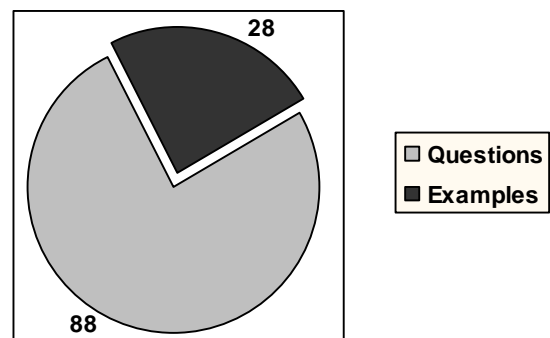
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