2020 Roll No: _____

INTERMEDIATE PART-II (12th CLASS) (SPECIAL EXAMINATION)

MATHEMATICS PAPER-II TIME ALLOWED: 2.30 Hours

SUBJECTIVE MAXIMUM MARKS: 80

NOTE: Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. **8 × 2 = 16**

(i) Define Function.

(ii) Write the Domain and Range of $\tan x$.

(iii) If $f(x) = \sqrt{x+1}$ and $g(x) = \frac{1}{x^2}$; find $gof(x)$.

(iv) Evaluate limit by using algebraic techniques $\lim_{x \to 2} \frac{\sqrt{x} - \sqrt{2}}{x - 2}$

(v) Define Differentiation.

(vi) Find the derivative of $x^{2/3}$ by definition.

(vii) $y = (2\sqrt{x} + 2)(x - \sqrt{x})$ find y_1.

(viii) Find the derivative of $\sec^{-1} x$.

(ix) Find $\frac{dy}{dx}$ if $x^2 + y^2 = 4$

(x) Find $\frac{dy}{dx}$ if $y = \tan h(x^2)$

(xi) Find $f'(x)$ if $f(x) = \sqrt{\ell n(e^{2x} + e^{-2x})}$

(xii) Write the Taylor Series formula.

3. Attempt any eight parts. **8 × 2 = 16**

(i) Find δ_y and dy if $y = x^2 - 1$ when x changes from 3 to 3.02.

(ii) Using differentials find $\frac{dy}{dx}$ and $\frac{dx}{dy}$ when $xy - \ell nx = c$

(iii) Evaluate $\int (2x + 3)^{\frac{1}{2}} dx$

(iv) Evaluate $\int \frac{dx}{\sqrt{x+a} + \sqrt{x+b}}$; $x + a > 0$, $x + b > 0$

(v) Evaluate $\int \operatorname{cosec} x \, dx$

(vi) Evaluate $\int \tan^4 x \, dx$

(vii) Evaluate $\int_0^{\pi/4} \frac{1}{1 - \sin x} dx$

(viii) Find the area bounded by cos function from $x = \frac{-\pi}{2}$ to $x = \frac{\pi}{2}$.

(ix) Show that points $A(3, 1)$, $B(-2, -3)$ and $C(2, 2)$ are vertices of an isosceles triangle.

(x) Check whether given lines are parallel: $2x + y + 3 = 0$ and $4x + 2y + 5 = 0$

(xi) Find equation of the line through $(-8, 5)$ having slope undefined.

(xii) Find lines represented by $x^2 + 2xy \sec\alpha + y^2 = 0$

P.T.O.

4. Attempt any nine parts. **$9 \times 2 = 18$**

(i) Define Corner Point.

(ii) Graph the solution set of $5x - 4y \leq 20$.

(iii) Find equation of circle with centre $(5, -2)$ and radius 4.

(iv) Check the position of point $(5, 6)$ with respect to circle $2x^2 + 2y^2 + 12x - 8y + 1 = 0$.

(v) Find eccentricity of $\frac{y^2}{4} - x^2 = 1$

(vi) Find equation of ellipse with foci $(\pm 3\sqrt{3}, 0)$ vertices $(\pm 6, 0)$.

(vii) Find directrix of parabola $x^2 - 4x - 8y + 4 = 0$.

(viii) Define major axes of ellipse.

(ix) Find unit vector of $\underline{v} = \underline{i} + 2\underline{j} - \underline{k}$.

(x) Find α if $\underline{u} = 2\alpha\underline{i} + \underline{j} - \underline{k}$, $\underline{v} = \underline{i} + \alpha\underline{j} + 4\underline{k}$ are perpendicular.

(xi) Find $\underline{a} \times \underline{b}$ if $\underline{a} = \underline{i} + \underline{j}$, $\underline{b} = \underline{i} - \underline{j}$

(xii) If $\underline{a} + \underline{b} + \underline{c} = 0$, prove that $\underline{a} \times \underline{b} = \underline{b} \times \underline{c} = \underline{c} \times \underline{a}$

(xiii) Find α if vectors $\underline{i} - 2\alpha\underline{j} - \underline{k}$, $\underline{i} - \underline{j} + 2\underline{k}$ and $\alpha\underline{i} - \underline{j} + \underline{k}$ are coplanar.

SECTION-II

NOTE: Attempt any three questions. **$3 \times 10 = 30$**

5.(a) Evaluate the $\lim_{\theta \to 0} \frac{\tan\theta - \sin\theta}{\sin^3\theta}$

(b) Find $\frac{dy}{dx}$ if $y = \frac{\sqrt{x^2 - 1}\,(x+1)}{(x^3+1)^{\frac{3}{2}}}$

6.(a) Evaluate $\int \sqrt{a^2 + x^2}\, dx$

(b) The points $(4, -2)$, $(-2, 4)$ and $(5, 5)$ are the vertices of a triangle. Find in-centre of the triangle.

7. (a) Solve the differential equation $\left(y - x\frac{dy}{dx}\right) = 2\left(y^2 + \frac{dy}{dx}\right)$

(b) Maximize $f(x, y) = 2x + 5y$ subject to constraints $2y - x \leq 8$, $x - y \leq 4$, $x \geq 0$, $y \geq 0$

8. (a) Find coordinates of vertices of a triangle formed by the lines
$x - 2y - 6 = 0$, $3x - y + 3 = 0$, $2x + y - 4 = 0$

(b) Find equation of circle which passes through points $A(5, 10)$, $B(6, 9)$ and $C(-2, 3)$

9.(a) Find the focus, axis, vertex, directrix of the parabola $x + 8 - y^2 + 2y = 0$ and sketch it.

(b) Using vectors, prove that $\sin(\alpha + \beta) = \sin\alpha\cos\beta + \cos\alpha\sin\beta$

Paper Code Number: 4191 2020 Roll No: _____

INTERMEDIATE PART-II (12th CLASS) (SPECIAL EXAMINATION)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

OBJECTIVE MAXIMUM MARKS: 20

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) $\ell n\left(x+\sqrt{x^2+1}\right)=$ (A) $\sin h^{-1}x$ (B) $\cos h^{-1}x$ (C) $\tan h^{-1}x$ (D) $\cot h^{-1}x$

(2) $\lim\limits_{x\to 0}\dfrac{\sin x^o}{x}=$ (A) 1 (B) ∞ (C) $\dfrac{\pi}{180}$ (D) $\dfrac{180}{\pi}$

(3) $\dfrac{d}{dx}\left(e^{f(x)}\right)=$ (A) $e^{f(x)}$ (B) $e^{f(x)}\cdot f'(x)$ (C) $\dfrac{1}{f'(x)}e^{f(x)}$ (D) $e^{f(x)}\cdot \ell nx$

(4) $\dfrac{1}{a}\dfrac{d}{dx}\left(Cot^{-1}\left(\dfrac{x}{a}\right)\right)=$ (A) $\dfrac{a^2}{a^2+x^2}$ (B) $\dfrac{-1}{a^2+x^2}$ (C) $\dfrac{1}{a^2+x^2}$ (D) $\dfrac{-a^2}{a^2+x^2}$

(5) $\dfrac{d}{dx}\left(\tan h(x^2)\right)=$ (A) $\sec h^2(x^2)$ (B) $\dfrac{1}{2}x\sec h^2(x^2)$ (C) $2x\sec h^2(x^2)$ (D) $-2x\sec h^2(x^2)$

(6) $1+x+\dfrac{x^2}{\lfloor 2}+\dfrac{x^3}{\lfloor 3}+------$ is the Maclaurin series expansion of:

(A) e^x (B) $\cos x$ (C) $\sin x$ (D) $\ell n(1+x)$

(7) $\displaystyle\int\frac{1}{4+x^2}\,dx=$

(A) $\ell n(4+x^2)+c$ (B) $\dfrac{1}{2}\ell n(4+x^2)+c$ (C) $\dfrac{1}{2}\tan^{-1}\left(x/2\right)+c$ (D) $2\ell n(4+x^2)+c$

(8) $\displaystyle\int e^x\left(\frac{1}{x}+\ell nx\right)dx=$ (A) $\dfrac{1}{x}e^x+c$ (B) $\ell nx+c$ (C) $1/x\,\ell nx+c$ (D) $e^x\ell nx+c$

(9) $\displaystyle\int\cos^2 x\sin x\,dx=$ (A) $\cos^3 x+c$ (B) $-\cos^3 x+c$ (C) $1/3\cos^3 x+c$ (D) $-1/3\cos^3 x+c$

(10) The order of the differential equation: $x\cdot\dfrac{d^2y}{dx^2}+\dfrac{dy}{dx}-2x^3=0$, is: (A) 1 (B) 2 (C) 3 (D) 0

(11) The slope of horizontal line is: (A) Zero (B) 1 (C) -1 (D) Undefined

(12) The lines represented by $ax^2+2hxy+by^2=0$, are orthogonal if:

(A) $h^2-ab=0$ (B) $h^2-ab<0$ (C) $h^2-ab>0$ (D) $a+b=0$

(13) If θ is the angle from line ℓ_1 with slope m_1 to the line ℓ_2 with slope m_2, then $\tan\theta=$

(A) $\dfrac{m_1-m_2}{1+m_1m_2}$ (B) $\dfrac{m_2-m_1}{1+m_1m_2}$ (C) $\dfrac{m_1+m_2}{1-m_1m_2}$ (D) $\dfrac{1+m_1m_2}{m_2-m_1}$

(14) The distance of the point $(0, 0)$ from the line ℓ: $3x-4y+9=0$, is: (A) 0 (B) 9 (C) $5/9$ (D) $9/5$

(15) The associated equation of the linear inequality $x+2y<6$ is:

(A) $x+2y\le 6$ (B) $x+2y\ge 6$ (C) $x+2y=6$ (D) $x+2y=0$

(16) The line $y=mx+c$ is tangent to the circle $x^2+y^2=a^2$ if:

(A) $c=\pm a\sqrt{1+m^2}$ (B) $c=a/m$ (C) $c=\pm\sqrt{a^2m^2+b^2}$ (D) $c=\pm m\sqrt{1+a^2}$

(17) If e is the eccentricity of a conic, then conic is a parabola if:

(A) $e=0$ (B) $e=1$ (C) $e<1$ (D) $e>1$

(18) The eccentricity of $\dfrac{y^2}{16}-\dfrac{x^2}{9}=1$, is: (A) $5/4$ (B) $5/3$ (C) $4/5$ (D) $3/5$

(19) If θ is the angle between the vectors $\underline{a}$ and $\underline{b}$, then $\cos\theta=$

(A) $\underline{a}\cdot\underline{b}$ (B) $\underline{a}\times\underline{b}$ (C) $\dfrac{\underline{a}\cdot\underline{b}}{|\underline{a}||\underline{b}|}$ (D) $\dfrac{\underline{a}\times\underline{b}}{|\underline{a}||\underline{b}|}$

(20) Three vectors $\underline{u}$, $\underline{v}$ and $\underline{w}$ are coplaner if:

(A) $\underline{u}\cdot\underline{v}\times\underline{w}=0$ (B) $\underline{u}\cdot\underline{v}\times\underline{w}\neq 0$ (C) $\underline{u}\cdot\underline{v}\times\underline{w}=1$ (D) $\underline{u}\cdot\underline{v}\times\underline{w}\neq 1$

Paper Code Number: 4193 2020 Roll No: _____

INTERMEDIATE PART-II (12th CLASS) (SPECIAL EXAMINATION)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

OBJECTIVE MAXIMUM MARKS: 20

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Q.No.1

(1) The order of the differential equation: $x\cdot\frac{d^2y}{dx^2}+\frac{dy}{dx}-2x^3=0$, is: (A) 1 (B) 2 (C) 3 (D) 0

(2) The slope of horizontal line is: (A) Zero (B) 1 (C) -1 (D) Undefined

(3) The lines represented by $ax^2+2hxy+by^2=0$, are orthogonal if:

(A) $h^2-ab=0$ (B) $h^2-ab<0$ (C) $h^2-ab>0$ (D) $a+b=0$

(4) If θ is the angle from line ℓ_1 with slope m_1 to the line ℓ_2 with slope m_2, then $\tan\theta =$

(A) $\frac{m_1-m_2}{1+m_1m_2}$ (B) $\frac{m_2-m_1}{1+m_1m_2}$ (C) $\frac{m_1+m_2}{1-m_1m_2}$ (D) $\frac{1+m_1m_2}{m_2-m_1}$

(5) The distance of the point $(0,0)$ from the line ℓ: $3x-4y+9=0$, is: (A) 0 (B) 9 (C) $\frac{5}{9}$ (D) $\frac{9}{5}$

(6) The associated equation of the linear inequality $x+2y<6$ is:

(A) $x+2y\le 6$ (B) $x+2y\ge 6$ (C) $x+2y=6$ (D) $x+2y=0$

(7) The line $y=mx+c$ is tangent to the circle $x^2+y^2=a^2$ if:

(A) $c=\pm a\sqrt{1+m^2}$ (B) $c=\frac{a}{m}$ (C) $c=\pm\sqrt{a^2m^2+b^2}$ (D) $c=\pm m\sqrt{1+a^2}$

(8) If e is the eccentricity of a conic, then conic is a parabola if:

(A) $e=0$ (B) $e=1$ (C) $e<1$ (D) $e>1$

(9) The eccentricity of $\frac{y^2}{16}-\frac{x^2}{9}=1$, is: (A) $\frac{5}{4}$ (B) $\frac{5}{3}$ (C) $\frac{4}{5}$ (D) $\frac{3}{5}$

(10) If θ is the angle between the vectors $\underline{a}$ and $\underline{b}$, then $\cos\theta =$

(A) $\underline{a}\,.\,\underline{b}$ (B) $\underline{a}\times\underline{b}$ (C) $\frac{\underline{a}\,.\,\underline{b}}{|\underline{a}||\underline{b}|}$ (D) $\frac{\underline{a}\times\underline{b}}{|\underline{a}||\underline{b}|}$

(11) Three vectors $\underline{u}$, $\underline{v}$ and $\underline{w}$ are coplaner if:

(A) $\underline{u}\,.\,\underline{v}\times\underline{w}=0$ (B) $\underline{u}\,.\,\underline{v}\times\underline{w}\neq 0$ (C) $\underline{u}\,.\,\underline{v}\times\underline{w}=1$ (D) $\underline{u}\,.\,\underline{v}\times\underline{w}\neq 1$

(12) $\ell n\left(x+\sqrt{x^2+1}\right)=$ (A) $\sin h^{-1}x$ (B) $\cos h^{-1}x$ (C) $\tan h^{-1}x$ (D) $\cot h^{-1}x$

(13) $\lim\limits_{x\to 0}\frac{\sin x^o}{x}=$ (A) 1 (B) ∞ (C) $\frac{\pi}{180}$ (D) $\frac{180}{\pi}$

(14) $\frac{d}{dx}\left(e^{f(x)}\right)=$ (A) $e^{f(x)}$ (B) $e^{f(x)}\cdot f'(x)$ (C) $\frac{1}{f'(x)}e^{f(x)}$ (D) $e^{f(x)}\cdot\ell nx$

(15) $\frac{1}{a}\frac{d}{dx}\left(Cot^{-1}\left(\frac{x}{a}\right)\right)=$ (A) $\frac{a^2}{a^2+x^2}$ (B) $\frac{-1}{a^2+x^2}$ (C) $\frac{1}{a^2+x^2}$ (D) $\frac{-a^2}{a^2+x^2}$

(16) $\frac{d}{dx}\left(\tan h(x^2)\right)=$ (A) $\sec h^2(x^2)$ (B) $\frac{1}{2}x\sec h^2(x^2)$ (C) $2x\sec h^2(x^2)$ (D) $-2x\sec h^2(x^2)$

(17) $1+x+\frac{x^2}{\underline{|2}}+\frac{x^3}{\underline{|3}}+------$ is the Maclaurin series expansion of:

(A) e^x (B) $\cos x$ (C) $\sin x$ (D) $\ell n(1+x)$

(18) $\int\frac{1}{4+x^2}dx=$

(A) $\ell n(4+x^2)+c$ (B) $\frac{1}{2}\ell n(4+x^2)+c$ (C) $\frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right)+c$ (D) $2\ell n(4+x^2)+c$

(19) $\int e^x\left(\frac{1}{x}+\ell nx\right)dx=$ (A) $\frac{1}{x}e^x+c$ (B) $\ell nx+c$ (C) $\frac{1}{x}\ell nx+c$ (D) $e^x\ell nx+c$

(20) $\int\cos^2 x\sin x\,dx=$ (A) $\cos^3 x+c$ (B) $-\cos^3 x+c$ (C) $\frac{1}{3}\cos^3 x+c$ (D) $-\frac{1}{3}\cos^3 x+c$

Paper Code Number: 4195 | 2020 | Roll No: _____

INTERMEDIATE PART-II (12th CLASS) (SPECIAL EXAMINATION)

MATHEMATICS PAPER-II

TIME ALLOWED: 30 Minutes

OBJECTIVE MAXIMUM MARKS: 20

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Q.No.1

(1) $\int \frac{1}{4+x^2}\,dx =$

(A) $\ell n(4+x^2)+c$ (B) $\frac{1}{2}\ell n(4+x^2)+c$ (C) $\frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right)+c$ (D) $2\ell n(4+x^2)+c$

(2) $\int e^x\left(\frac{1}{x}+\ell nx\right)dx =$ (A) $\frac{1}{x}e^x+c$ (B) $\ell nx+c$ (C) $\frac{1}{x}\ell nx+c$ (D) $e^x\ell nx+c$

(3) $\int \cos^2 x \sin x\,dx =$ (A) $\cos^3 x+c$ (B) $-\cos^3 x+c$ (C) $\frac{1}{3}\cos^3 x+c$ (D) $-\frac{1}{3}\cos^3 x+c$

(4) The order of the differential equation: $x\cdot\frac{d^2y}{dx^2}+\frac{dy}{dx}-2x^3=0$, is: (A) 1 (B) 2 (C) 3 (D) 0

(5) The slope of horizontal line is: (A) Zero (B) 1 (C) -1 (D) Undefined

(6) The lines represented by $ax^2+2hxy+by^2=0$, are orthogonal if:

(A) $h^2-ab=0$ (B) $h^2-ab<0$ (C) $h^2-ab>0$ (D) $a+b=0$

(7) If θ is the angle from line ℓ_1 with slope m_1 to the line ℓ_2 with slope m_2, then $\tan\theta =$

(A) $\frac{m_1-m_2}{1+m_1m_2}$ (B) $\frac{m_2-m_1}{1+m_1m_2}$ (C) $\frac{m_1+m_2}{1-m_1m_2}$ (D) $\frac{1+m_1m_2}{m_2-m_1}$

(8) The distance of the point (0, 0) from the line ℓ: $3x-4y+9=0$, is: (A) 0 (B) 9 (C) $\frac{5}{9}$ (D) $\frac{9}{5}$

(9) The associated equation of the linear inequality $x+2y<6$ is:

(A) $x+2y\le 6$ (B) $x+2y\ge 6$ (C) $x+2y=6$ (D) $x+2y=0$

(10) The line $y=mx+c$ is tangent to the circle $x^2+y^2=a^2$ if:

(A) $c=\pm a\sqrt{1+m^2}$ (B) $c=\frac{a}{m}$ (C) $c=\pm\sqrt{a^2m^2+b^2}$ (D) $c=\pm m\sqrt{1+a^2}$

(11) If e is the eccentricity of a conic, then conic is a parabola if:

(A) $e=0$ (B) $e=1$ (C) $e<1$ (D) $e>1$

(12) The eccentricity of $\frac{y^2}{16}-\frac{x^2}{9}=1$, is: (A) $\frac{5}{4}$ (B) $\frac{5}{3}$ (C) $\frac{4}{5}$ (D) $\frac{3}{5}$

(13) If θ is the angle between the vectors $\underline{a}$ and $\underline{b}$, then $\cos\theta =$

(A) $\underline{a}\cdot\underline{b}$ (B) $\underline{a}\times\underline{b}$ (C) $\frac{\underline{a}\cdot\underline{b}}{|\underline{a}||\underline{b}|}$ (D) $\frac{\underline{a}\times\underline{b}}{|\underline{a}||\underline{b}|}$

(14) Three vectors $\underline{u}$, $\underline{v}$ and $\underline{w}$ are coplaner if:

(A) $\underline{u}\cdot\underline{v}\times\underline{w}=0$ (B) $\underline{u}\cdot\underline{v}\times\underline{w}\neq 0$ (C) $\underline{u}\cdot\underline{v}\times\underline{w}=1$ (D) $\underline{u}\cdot\underline{v}\times\underline{w}\neq 1$

(15) $\ell n\left(x+\sqrt{x^2+1}\right)=$ (A) $\sin h^{-1}x$ (B) $\cos h^{-1}x$ (C) $\tan h^{-1}x$ (D) $\cot h^{-1}x$

(16) $\lim_{x\to 0}\frac{\sin x^o}{x}=$ (A) 1 (B) ∞ (C) $\frac{\pi}{180}$ (D) $\frac{180}{\pi}$

(17) $\frac{d}{dx}\left(e^{f(x)}\right)=$ (A) $e^{f(x)}$ (B) $e^{f(x)}\cdot f'(x)$ (C) $\frac{1}{f'(x)}e^{f(x)}$ (D) $e^{f(x)}\cdot\ell nx$

(18) $\frac{1}{a}\frac{d}{dx}\left(Cot^{-1}\left(\frac{x}{a}\right)\right)=$ (A) $\frac{a^2}{a^2+x^2}$ (B) $\frac{-1}{a^2+x^2}$ (C) $\frac{1}{a^2+x^2}$ (D) $\frac{-a^2}{a^2+x^2}$

(19) $\frac{d}{dx}\left(\tan h(x^2)\right)=$ (A) $\sec h^2(x^2)$ (B) $\frac{1}{2}x\sec h^2(x^2)$ (C) $2x\sec h^2(x^2)$ (D) $-2x\sec h^2(x^2)$

(20) $1+x+\frac{x^2}{\underline{|2}}+\frac{x^3}{\underline{|3}}+------$ is the Maclaurin series expansion of:

(A) e^x (B) $\cos x$ (C) $\sin x$ (D) $\ell n(1+x)$

Paper Code Number: 4197 2020 Roll No: _____

INTERMEDIATE PART-II (12th CLASS) (SPECIAL EXAMINATION)

MATHEMATICS PAPER-II TIME ALLOWED: 30 Minutes

OBJECTIVE MAXIMUM MARKS: 20

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Q.No.1

(1) $\frac{1}{a}\frac{d}{dx}\left(Cot^{-1}\left(\frac{x}{a}\right)\right) =$ (A) $\frac{a^2}{a^2+x^2}$ (B) $\frac{-1}{a^2+x^2}$ (C) $\frac{1}{a^2+x^2}$ (D) $\frac{-a^2}{a^2+x^2}$

(2) $\frac{d}{dx}\left(\tan h(x^2)\right) =$ (A) $\sec h^2(x^2)$ (B) $\frac{1}{2}x\sec h^2(x^2)$ (C) $2x\sec h^2(x^2)$ (D) $-2x\sec h^2(x^2)$

(3) $1 + x + \frac{x^2}{\lfloor 2} + \frac{x^3}{\lfloor 3} + ------$ is the Maclaurin series expansion of:

(A) e^x (B) $\cos x$ (C) $\sin x$ (D) $\ell n(1+x)$

(4) $\int \frac{1}{4+x^2}\,dx =$

(A) $\ell n(4+x^2)+c$ (B) $\frac{1}{2}\ell n(4+x^2)+c$ (C) $\frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right)+c$ (D) $2\ell n(4+x^2)+c$

(5) $\int e^x\left(\frac{1}{x}+\ell nx\right)dx =$ (A) $\frac{1}{x}e^x+c$ (B) $\ell nx+c$ (C) $\frac{1}{x}\ell nx+c$ (D) $e^x\ell nx+c$

(6) $\int \cos^2 x \sin x\,dx =$ (A) $\cos^3 x+c$ (B) $-\cos^3 x+c$ (C) $\frac{1}{3}\cos^3 x+c$ (D) $-\frac{1}{3}\cos^3 x+c$

(7) The order of the differential equation: $x\cdot\frac{d^2y}{dx^2}+\frac{dy}{dx}-2x^3=0$, is: (A) 1 (B) 2 (C) 3 (D) 0

(8) The slope of horizontal line is: (A) Zero (B) 1 (C) -1 (D) Undefined

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(A) $h^2-ab=0$ (B) $h^2-ab<0$ (C) $h^2-ab>0$ (D) $a+b=0$

(10) If θ is the angle from line ℓ_1 with slope m_1 to the line ℓ_2 with slope m_2, then $\tan\theta =$

(A) $\frac{m_1-m_2}{1+m_1m_2}$ (B) $\frac{m_2-m_1}{1+m_1m_2}$ (C) $\frac{m_1+m_2}{1-m_1m_2}$ (D) $\frac{1+m_1m_2}{m_2-m_1}$

(11) The distance of the point $(0, 0)$ from the line ℓ: $3x-4y+9=0$, is: (A) 0 (B) 9 (C) $\frac{5}{9}$ (D) $\frac{9}{5}$

(12) The associated equation of the linear inequality $x+2y<6$ is:

(A) $x+2y\le 6$ (B) $x+2y\ge 6$ (C) $x+2y=6$ (D) $x+2y=0$

(13) The line $y=mx+c$ is tangent to the circle $x^2+y^2=a^2$ if:

(A) $c=\pm a\sqrt{1+m^2}$ (B) $c=\frac{a}{m}$ (C) $c=\pm\sqrt{a^2m^2+b^2}$ (D) $c=\pm m\sqrt{1+a^2}$

(14) If e is the eccentricity of a conic, then conic is a parabola if:

(A) $e=0$ (B) $e=1$ (C) $e<1$ (D) $e>1$

(15) The eccentricity of $\frac{y^2}{16}-\frac{x^2}{9}=1$, is: (A) $\frac{5}{4}$ (B) $\frac{5}{3}$ (C) $\frac{4}{5}$ (D) $\frac{3}{5}$

(16) If θ is the angle between the vectors $\underline{a}$ and $\underline{b}$, then $\cos\theta =$

(A) $\underline{a}\,.\,\underline{b}$ (B) $\underline{a}\times\underline{b}$ (C) $\frac{\underline{a}\,.\,\underline{b}}{|\underline{a}||\underline{b}|}$ (D) $\frac{\underline{a}\times\underline{b}}{|\underline{a}||\underline{b}|}$

(17) Three vectors $\underline{u}$, $\underline{v}$ and $\underline{w}$ are coplaner if:

(A) $\underline{u}\,.\,\underline{v}\times\underline{w}=0$ (B) $\underline{u}\,.\,\underline{v}\times\underline{w}\neq 0$ (C) $\underline{u}\,.\,\underline{v}\times\underline{w}=1$ (D) $\underline{u}\,.\,\underline{v}\times\underline{w}\neq 1$

(18) $\ell n\left(x+\sqrt{x^2+1}\right) =$ (A) $\sin h^{-1}x$ (B) $\cos h^{-1}x$ (C) $\tan h^{-1}x$ (D) $\cot h^{-1}x$

(19) $\lim_{x\to 0}\frac{\sin x^o}{x} =$ (A) 1 (B) ∞ (C) $\frac{\pi}{180}$ (D) $\frac{180}{\pi}$

(20) $\frac{d}{dx}\left(e^{f(x)}\right) =$ (A) $e^{f(x)}$ (B) $e^{f(x)}\cdot f'(x)$ (C) $\frac{1}{f'(x)}e^{f(x)}$ (D) $e^{f(x)}\cdot\ell nx$

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION,MULTAN.

OBJECTIVE KEY FOR ITERMEDEAT SPECIAL PART-II EXAMINATION,2020

Name of Subject: MATH Session: Special Exam 2020

Q. Nos.	Paper Code 4191	Paper Code 4193	Paper Code 4195	Paper Code 4197
1	A	B	C	B
2	C	A	D	C
3	B	D	D	A
4	B	B	B	C
5	C	D	A	D
6	A	C	D	D
7	C	A	B	B
8	D	B	D	A
9	D	A	C	D
10	B	C	A	B
11	A	A	B	D
12	D	A	A	C
13	B	C	C	A
14	D	B	A	B
15	C	B	A	A
16	A	C	C	C
17	B	A	B	A
18	A	C	B	A
19	C	D	C	C
20	A	D	A	B

سرٹیفکیٹ بابت تصحیح سوالیہ پرچہ/مارکنگ Key

ہم نے مضمون MATH پرچہ II گروپ ____/____ سکیم New انٹرمیڈیٹ اسپیشل امتحان 2020 کا سوالیہ پرچہ انشائیہ ومعروضی(Subjective & Ojbective) کو بنظر عمیق چیک کرلیا ہے یہ پرچہ Syllabus کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ پرچہ میں کسی قسم کی کوئی غلطی نہ ہے۔ ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کرلیا ہے۔ یہ Version آپس میں مطابقت رکھتے ہیں اور Syllabus کیمطابق بھی ہیں۔ نیز اس پرچہ کی معروضی Key (MCQs) کی بابت بھی تصدیق کی جاتی ہے کہ اس میں بھی کسی قسم کی کوئی غلطی نہ ہے۔ MCQs کی "Key" کو دوبارہ بھی بغور چیک کرلیا گیا ہے۔ مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات وصول کرکے ان کا بغور مطالعہ کرلیا ہے اور ان کی روشنی میں Key بنائی ہے۔ نیز سب ایگزامینرز کیلئے تفصیلی ہدایات / مارکنگ سکیم / Rubrics بھی تیار کر دی گئی ہیں۔

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Re-Checked By ہم نے درج بالا سوالیہ پرچہ (انشائیہ + معروضی)، معروضی "Key" اور ہدایات کے حوالہ سے مکمل طور پر تسلی کرلی ہے۔ کسی قسم کی کوئی غلطی نہ ہے۔

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