MATHS

S.NO.	*Question*	*Answer*	*DETTAIL SOLUTION*
1	**If Sin A + Sin B = a and...**	$\frac{b^2-a^2}{a^2+b^2}$	
2	**The value of tan** 15^0	4	
3	**The general value of** θ ...	$n\pi-(-1)^n\frac{\pi}{6}, n\in I$	
4	**In a triangle ABC if ....**	$\sqrt{3}$ unit	
5	**The value of tan** $\left(\frac{1}{2}\cos^{-1}\frac{\sqrt{5}}{3}\right)$	$\frac{3-\sqrt{5}}{2}$	
6	**An aeroplane is hori.**	$2\left(\frac{\sqrt{3}-1}{\sqrt{3}}\right)$ km	
7	**Equation of a line which passes through ....**	$X\sec\theta+y\,\mathrm{cosec}\,\theta=a$	
8	**The equation of pair of straight lines**	$bx^2-2hxy+ay^2=0$	
9	**The value of 'a' for which the lines..**	-3	
10	**For two circle, if the distance between their....**	3	
11	**If Y= x+a is tangent to the parabola**	2	
12	**If the line ax +4y = 36 is tangent to the**	$\pm2\sqrt{5}$	
13	**Angle between tangents drawn....**	$\frac{\pi}{2}$	
14	**The angle between the asymptotes of the**	$2\tan^{-1}\left(\frac{b}{a}\right)$	

15	**If the foci the ellipse** $\frac{x^2}{16}+\frac{y^2}{b^2}=1$ ...	7	
16	**The locus of the middle point**	$x^2+y^2=8$	
17	**Centre of the conic ....**	$(1,2)$	
18	**Direction ratio's of the line ....**	$b_1c_2-c_1b_2, c_1a_2, a_1b_1-b_1a_2$	
19	**The co-ordinates of a point in the...**	(0,0,0)	
20	**The yz plane divides the line segment**	2 : 3	
21	**If the plane x + ay + z = 5 has....**	1	
22	**If the sum of squares of distance of a point from ....**	$x^2+y^2+z^2=p^2$	
23	**Distance of the plane .....**	4/3	
24	**Angle between the lines .....**	$\cos^{-1}\left(\frac{4}{9}\right)$	
25	**If** a and b are unit...	$\sin\frac{\theta}{2}=\frac{1}{2}\lvert a-b\rvert$	
26	**The unit vector which is ....**	$\frac{-3i+5j+11k}{\sqrt{155}}$	
27	**If op =** $x_1i+y_1j+z_1k$	$\frac{x_2-x_1}{PQ}, \frac{y_2-y_1}{PQ}, \frac{z_2-z_1}{PQ}$	
28	**Direction of a reciprocal vector...**	None of these	
29	**The moment of force .....**	$\hat{i}-2\hat{j}+\hat{k}$	
30	**If** $\vec{a}=\vec{b}+\vec{c}$, then ..	0	
31	**A force** $\vec{F}=2\hat{i}-3\hat{j}+\hat{k}$ is acting at a point ..	6 units	
32	**If a and b are the**	2	

	position vector...		
33	**If log** $\log_{0.2}(x-1)<\log_{0.4}(x-1$, then...	$x\in(1,2)$	
34	**Domain and Range are....**	Identity function	
35	**If** $f(x)=\frac{1+x}{1-x}$, then the value...	$-\frac{1}{x}$	
36	**The value of ....**	e^2	
37	**If the function f (x) =....**	$a=1,b=3$	
38	**For what value of m, the function....**	m>1	
39	**If** $x^2+y^2=t=\frac{1}{t},x^4+y^4=$	$\frac{1}{x^3y}$	
40	**If** $(\cos x)^y=(\sin y)^x$, then	$\frac{\log_e(\sin y)+\tan x}{\log_e(\cos x)-x\cot y}$	
41	**If a particle is moving in a straight...**	$2<t<5$	
42	**The function 3 sin x-4 sin ../..**	$=\frac{\pi}{6}<x<\frac{\pi}{6}$	
43	**The height of a cylinder of maximum.....**	$\frac{2a}{\sqrt{3}}$ units	
44	**For the function .....**	$2\pm\frac{1}{\sqrt{3}}$	
45	$\int\sqrt{e^x-1}\,dx$ is equal to...	$2[e^x-1+\cot^{-1}\sqrt{e^x-1}]+c$ or $2[e^x-1-\tan^{-1}\sqrt{e^x-1}]+c$	
46	$\int\frac{1}{5+4\cos x}$ dx is equal to.....	$\frac{2}{3}\tan^{-1}\left(\frac{\tan(x/2)}{3}\right)+C$	
47	$\int\frac{x^2+1}{x^4+x^2+1}$ dx is equal to....	$\frac{1}{\sqrt{3}}\tan^{-1}\left(\frac{x^2-1}{\sqrt{3}x}\right)+c$	

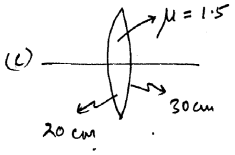
48	The value of	$\frac{4}{e}$	
49	Value of $\int_{-1}^{1} e^{\lvert x\rvert}$ dx is ...	$2(e-1)$	
50	The value of $\int_0^{2\pi} \frac{x \sin^{2n} x}{\sin^{2n} x + \cos^{2n} x}$	π^2	
51	If $\int \frac{x \tan^{-1} x}{\sqrt{1+x^2}}$ dx = ...	A= 1, b= -1	
52	$\int\left[\frac{e^{5\log_e x} - e^{4\log_e x}}{e^{3\log_e x} - e^{2\log_e x}}\right]$ dx is equal to .	$\frac{x^3}{3} + c$	
53	The area bounded by the curve y= 4x(x-1)(x-2)	2sq. units	
54	The area bounded by the curve $y = \lvert x\rvert - 1$ and $-\lvert x\rvert + 1$ is ...	2 sq. units	
55	The differential equation of rectangular hyperbola...	$x\frac{dy}{dx} + y = 0$	
56	The differential equation of family of circles ...	$\left[1+\left(\frac{dy}{dx}\right)^2\right]^3 = a^2\left[\frac{d^2y}{dx^2}\right]^2$	
57	Degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^{3/2} + x^2\left(\frac{dy}{dx}\right) = e^x$ is	3	
58	The order of the differential equation $\frac{d^2y}{dx^2} - 5\left(\frac{dy}{dx}\right)^{7/2} = \sin x,$ ..	2	
59	Solution of the differential equation $\frac{dy}{dx} = (4x + y + 1)^2$	$\frac{1}{2}\tan^{-1}\left(\frac{4x+y+1}{2}\right) = x + c$	

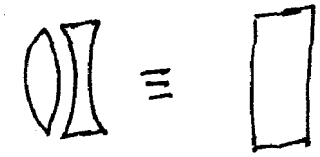
60	Solution of the differential equation $e^{-x+y}\frac{dy}{dx}=1$..	$e^{y}=e^{x}+c$	
61	Solution of the differential equation $\frac{dy}{dx}=\frac{y}{x}+\sin\left(\frac{y}{x}\right)$ is ..	$\tan\left(\frac{y}{2x}\right)=cx$	
62	Solution of the differential equation $\frac{dy}{dx}=\frac{x+y+1}{2x+2y+3}$..	$6y-3x+\log(3x+3y+4)=c$	
63	Integrating factor of the differential equation x.....	log x	
64	A bag contain 3 white....	5 : 9	
65	A, B and C are parti.....	257/320	
66	In a single throw of two....	5/9	
67	A and B are independent event...	1/3	
68	The number of minimum series..	2	
69	The standard deviation of th..		**No option is correct**
70	If the correlation coefficient is zero..	Perpendicular	
71	The order of convergence of.	2	
72	First approximate solution of	2.05	
73	Using false position method, the...	(2, 3)	
74	Using Bisection method the...	[0 , 1]	
75	In Simpson's 1/3 rule	Even	

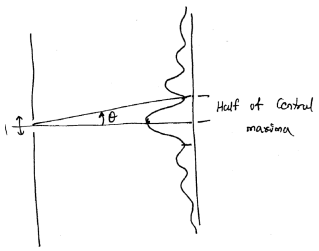
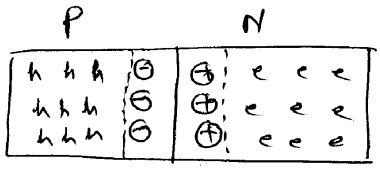
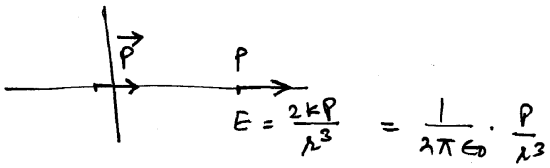
	the ...		
76	For the following data :	5.05	
77	In Trapezoidal rule the..	Straight line	
78	Which one of the following represent the Simpson's...	$\int_{x_0}^{x_0+nh} ydx \simeq$ $h\left[\frac{1}{3}(y_0+y_n)+\frac{4}{3}(y_1+y_3+.....+y_{n-1})+\frac{2}{3}(y_2+y_4+...+y\right.$	
79	The objective function of a Linear Programming...	A polynomial	
80	The main parts of linear...	2	
81	The optimal solution of the linear...	X = 30, y = 0	
82	In solving the linear programming problem...	Convex set of feasible solution	
83	The smallest positive integer..	4	
84	If $\frac{2z_1}{3z_2}$ is purely number	1	
85	If complex number z_1, z_2 and o are..	0	
86	The amplitude of	$\frac{\pi}{6}$	
87	$\log_3 2$, $\log_6 2$	HP	
88	If a,b,c are Harmonic ...	$\frac{3}{b^2}-\frac{2}{ab}$	
89	If x be real, then the maximum value..	41	
90	If α, β are the roots....	1	
91	${}^{47}C_4 +$	${}^{52}C_4$	
92	Total number of ways in which	35	

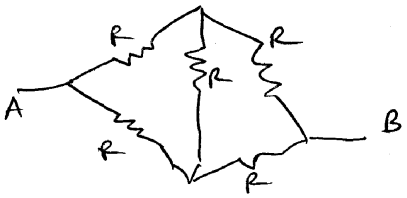
93	The middle term in the	252	
94	If $\log_5(3x-1)<1$, then...	$\left(\frac{1}{3},2\right)$	
95	If $ax^3+bx^2+cx+d=...$	-1	
96	If the system of equation....	2	
97	For a square matrix A =	Skew symmetric matrix	
98	If the value of a third order determinant ..	256	
99	The range of the trigonometric function sec x...	$R-(-1,1)$	
100	The valye of $\frac{\cos(90^0+\theta).....}{\sec(360^0-\theta).....}$	-1	

PHYSICS

S.NO.	Question	Answer	DETTAIL SOLUTION
101	A piece of ice.....	Will not change	
102	Difference between the internal and external.....	$\frac{2T}{r}$	$P_2 - P_1 = \frac{2T}{R}$
103	Two identical solid spheres...	$\rho^2 r^4$	$F = \frac{GM_1M_2}{(R)^2} = \frac{G\left(\rho\frac{4}{3}\pi r^3\right)\left(\rho\frac{4}{3}\pi r^3\right)}{(2\pi)^2}$
104	An ideal gas has pressure	$P = \frac{2}{3}E$	$PV = \frac{1}{3}\eta m v_{rms}^2$ $pv = \frac{2}{3}\left(\frac{1}{2}\eta m v_{rms}^2\right)$
105	An iron needle floats on the....	Surface tension	
106	Work done in an isothermal....	On both the temperature and volume expansaion ratio	$W = nRT\ln\left(\frac{v_2}{v_1}\right)$
107	The ratio of the coefficient of thermal....	5 : 3	$R = \frac{L}{KA}$ R= same ; L = same $\therefore \frac{l_1}{l_2} = \frac{k_1}{k_2} = \frac{5}{3}$
108	The refractive index of the material of a con.....	24 cm	 $\frac{1}{f} = (\frac{\mu-1}{1})\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$ $= \frac{1.5-1}{1}\cdot\left(\frac{1}{20} + \frac{1}{30}\right)$ $\frac{1}{f} = 0.5\cdot\left(\frac{30+20}{600}\right)$ $f = \frac{12}{\cancel{600}\ \cancel{50} \times 0.5} = \frac{120}{5}$ $f = 24$ cm
109	Two thin lenses are	30 cm	

	kept in conduct....		
110	**A convex and a concave lens of.....**	**erect and of same size as the object**	 $\frac{1}{f_{eff}}=\frac{1}{f_1}+\frac{1}{f_2}$ $=\frac{1}{(+10)}+\frac{1}{(-10)}=0$ $\Rightarrow$ **Combination will behave as a glam slab image will be chart and of the same size as the object**
111	**the focal length of a convex .....**	$\left(\frac{n-1}{n}\right)f$	$m=\frac{9}{4}=n\Rightarrow v=nu$ **And** $\frac{1}{v}-\frac{1}{u}=\frac{1}{f}$ $\frac{1}{(nu)}-\frac{1}{u}=\frac{1}{f}$ $\left(\frac{n-1}{n}\right)f$ $u=\frac{f(n-1)}{n}$
112	**the magnifying power of com.....**	**4**	$m=m_0m_e$ $m_e=\frac{m}{m_0}=\frac{32}{8}=4$
113	**in young's experiment the ....**	**I = 4** I_0	$I=I_1+I_2+\sqrt{I_1I_2}\cos\phi$ **At central fringe** $I_{max}=4I$ **In problem** $I=I_0$
114	**in an experiment of diffraction....**	**increase**	$\beta=\frac{2\lambda D}{d}$ $B\alpha\frac{1}{d}$ If d decreased β increase

115	**in the diffaction of light of ...**	$\frac{\lambda}{d}$	 $d\sin\theta = nd$ $d\sin\theta = \lambda$ (for 1st min $\Rightarrow \theta = \frac{\lambda}{d}$ **Angular width of central** **Maxima =** $\frac{2\lambda}{d}$ **So half of angular width =** $\frac{\lambda}{d}$
116	**electrical resistance of a piece....**	**semi-conductor**	$\rho = \rho_0(1+\alpha\Delta\theta)$ α **= is +ve for conductors** α **= is -ve for semi conductors**
117	**depletion layer at....**	**both positive and negative immobile charges**	 Depletion layers contains both positive and negative immobile charges
118	**electric field strength due to a ...**	$E = \frac{1}{2\pi\varepsilon_0}\frac{p}{r^3}$	
119	**stored electrostatic energy in ...**	$u = \frac{Q^2}{2C}$	$u = \frac{Q^2}{2C}$
120	**A parallal plate capacitor...**	**44 pF;211.2pF**	

121	**each resistance in the given....**	**R**	 **For balanced wheatstone bridge** $R_{AB} = R$
122	**a galvanometer of resistence...**	$R = 480\Omega$	$V = i_g\left(R_g + R\right)$ $\Rightarrow 3 = 6\times10^{-3}\left(20 + R\right)$ $\Rightarrow R + 20 = 0.5\,k\Omega = 500\Omega$ $\Rightarrow R = 480\Omega$
123	**open circuit potential ....**	**elctromotive force**	**Open terminal voltage is called electro motive force**
124	**when a capacitor of ....**	$Q(t) = Q_{max}\left(1 - e^{-t/RC}\right)$	$Q(t) = Q_{max}\left(1 - e^{-t/RC}\right)$
125	**a heater is marked 500w...**	**30 paisa**	**Consumed = P X t** $= 500\times4\times3600$ $= 72\times10^5$ Joule Unit consumed = 2 kwh Cost = $2\times15 = 30$paisa
126	**the magnetic field d...**	$\frac{\mu_0}{4\pi}\frac{Id\vec{l}\times\vec{r}}{r^3}$	$\frac{\mu_0}{4\pi}\frac{Id\vec{l}\times\vec{r}}{r^3}$ Biot savarat law
127	**in a voltameter masses ...**	**electro –chemical equivalent**	**m=z.q** **z= electro –chemical equivalent**
128	**force $\vec{F}$ experienced by charge ...**	$\vec{F} = q[\vec{E} + (\vec{v}\times\vec{B})]$	$\vec{F} = q[\vec{E} + (\vec{v}\times\vec{B})]$
129	**the mangitude of electric**	**Charge of the particle**	
130	**Pick statement that is correct for a p-type semiconcutor**	**Density of minority carriers depends on temperature**	

131	Pick mirror isobars from the following :	${}_7N^{15}, {}_8O^{15}$	${}_7N^{15}, {}_8O^{15}$
132	The speed of sound in air is 332 m/s.....	1195.2 km/h	
133	Dimensional formula for boltzman....	$[ML^2T^{-2}\theta^{-1}]$	$[ML^2T^{-2}\theta^{-1}]$
134	Select the pairs which have same....	Torque and wok	
135	Frequency f of oscillations of a mass....	$x=-\frac{1}{2}, y=\frac{1}{2}$	$x=-\frac{1}{2}, y=\frac{1}{2}$
136	A Force $\vec{F}=(5\vec{i}+3\vec{j})$ newton.....	7 Joules	
137	A simple pendulum is hanging from the	$\theta=\tan^{-1}\left(\frac{a}{g}\right)$	
138	A motor car is moving on a straight horizontal road	50 m	50 m
139	A cylinder rolls up an inclined plane, reaches some....	Up the incline while ascending and descending	
140	A assuming that the coefficient of friction.....	20 m/s	$v=\sqrt{\mu rg}=20 m/s$
141	For a body moving in a horizontal.....	Kinetic energy	
142	For a geostationary satellite	$\pi/12$	$\omega=\frac{2\pi}{T}=\frac{2\pi}{24}$

143	**A body is moving in a circular..,...**	**16 a**	$a = \frac{v^2}{r}$ If velocity becomes 4 times than a will be 16 times
144	**The circular motion if a particle ....**	**Periodic but not simple harmonic**	**For SHM** $F \propto -x$
145	**The moment of linear momentum...**	**Angular momentum**	**Angular momentum is momentum of linear momentum**
146	**The moment of inertia of a uniform...**	$\frac{3}{2}MR^2$	$I = I_{cm} + MR^2$ $= \frac{1}{2}MR^2 + MR^2$
147	**The equation of motion of a particle is.....**	$\frac{2\pi}{\sqrt{b}}$	$a = -bx = -\omega^2 x$ $\omega = \sqrt{b} = 2\pi/T$
148	**The Young's modulus of steal is ....**	**60.0**	$Y = 2.0 \times 10^{11} \frac{N}{M^2}$, $r_0 = 3\overset{0}{A}$ $K = yr_0$
149	**A wire is stretched by 5 mm when it is .....**	**2.5 mm**	
150	**A liquid rises in a capillary tube ....**	**Acute**	

CHEMISTRY

S.NO.	*Question*	*Answer*	*DETTAIL SOLUTION*
151	**Which of the following is formed when.....**	**Orange solution of** $Na_2Cr_2O_7$ is formed	
152	**A compound contains ....**		**According to English** CH_3NH_2 and no answer in hindi
153	**A compound containing only carbon.....**	**An aldehyde**	
154	**The IUPAC name of the...**	$3,3-\text{dimethyl}-1-\text{bute}$	
155	**Which of the isomerism is ....**	Metamerism	
156	**That which is not....**	Gasoline	
157	**The petrol of octane...**	$20\%\,n-\text{heptane}+80\%$	
158	**Structure of diethyl ether....**	Williamson's shythesis	
159	CH_3CHO gives....	PCl_5	
160	Which of the following acids acids cannot be...	Formic acid	
161	Chlorobenzene is prepared	Raschig Process	
162	$\text{Phenol} \xrightarrow[\Delta]{Zn} x.$	Friedal-Craft;s reaction	
163	Which of the following reduces Tollens's reagent	Glucose	
164	Glucose converts into alcohol by action	Zymase	
165	Amino acids are formed	Proteins	
166	Which of the following called polyamide	Nylon	
167	Which of the following is an example ...	All of these	
168	Which has maximum number of atoms ?	$24\ \text{gms of}\ C_{(12)}$	
169	Which has the maximum number of unpaired...	Fe^{2+}	

170	Bond order in species is as the following :	$O_2^+ > O_2 > O_2^-$	
171	Which compound has electrovalent bond ?	NaBr	
172	Weight Of Urea required to prepare 200 ml	24 gm	
173	In Bragg's reaction $n\lambda = 2d\sin\theta$, n present	Order of reflection	
174	The differences between number of Neutrons	Tritium atom	
175	For the reaction $2NO_{(g)} + Cl_{2(g)} \rightleftharpoons 2NOCl_{(g)}$	$K_p = \frac{K_c}{RT}$	
176	$CaCO_3(s) \rightleftharpoons CaO(s) + CO_2(g)$,	Increases if T is raised	
177	pH of water is 7.0 at 25^0C . If water is ...	pH will be decreases	
178	In the reaction $H_2O + HCl \rightarrow H_3O^+ + Cl^-$	H_2O	
179	The enthalpies of combustion of carbon and carbon....	$-110.5 kJ\,mole^{-1}$	
180	The quantity of K in a rate of expansion	Is independent of concentration of reactants	
181	The half life of radioactive sodium is 15.0 hours. How many ...	45	
182	Which of the following is not true for the reaction	Both Fe^{3+} and Fe^{2+} are called acid radicals	
183	In the reaction $Pb(s) + Cu^{2+}(aq) \rightarrow Pb^{2+}(aq) + Cu(s)$ which is...	Pb(s)	
184	The phenomenon of negative	Inhibition	
185	..... is the gold number of hydrophilic colloid, then	Lower	
186	In metallurgy if iron when limestone	Slag	
187	Identify the least stable ion	Be^-	

188	Transition metals have generals electronic	in option (c) there should be ns^{1-2} rather than ns^{12}	
189	Variable valency is a general feature of ...	d-block elements	
190	The amount of energy released when 10^6 atoms of iodine in....	3.06	
191	Sodium hydride when dissolved in water	Basic solution	
192	When zinc reacts with very dilute.....	NH_4NO_3	
193	A black sulphide when reacts with ozone becomes....	$PbSO_4$	
194	Strongest reducing agent is ...	I^-	
195	The formula of hematite is ...	Fe_2O_3	
196	Which of the following forms with an excess of CN^-	Ag^+	
197	The IUPAC name of Ni $(CO)_4$ is	Tetracarbonylnickel(0)	
198	A 5 molar solution of H_2SO_4 acid is diluted from 1 litre to 10 lite...	1N	
199	Ferric ions form pressian blue coloured	$Fe_4[Fe(CN)_6]_3$	
200	The volume of water to be added to 100 ml of 0.5N H_2SO_4	400 ml	