DIPLOMAWING

RAJIVGANDHIPROUDYOGIKIVISHWAVIDYALAYA,BHOPAL

SCHEMEOFSTUDIES&EXAMINATIONS(IMPLEMENTEDFROMSESSION:JULY-2023)

FIRSTSEMESTER-GROUP'A'

: NAMEOFTHE PROGRAMME:

Agriculture,Aircraft Maintenance,Automobile,Chemical,CSE,CHM,Electronics & Tele.,Electronics & Inst., Electrical&ElectronicsEngg.,Electrical&Mech.Engg.,ElectronicsEngg.,IT,Mechanical,OptoElectronics,RAC

S.N.	PAPER CODE	SUBJECT CODE	SUBJECTNAME	THEORYCOMPONENT								PRACTICALCOMPONENT					TOTALCREDITS	TOTALMARKS
				HRSPERWEEK	CREDITS	TERMWORK				THEORYPAPER		HRSPERWEEK	CREDITS	LABWORK	PRACTICAL EXAM/VIVA			
						QUIZ/ASSIGNMENT	MID TERM TEST*		TOTAL	MARKS	DURATION				MARKS	DURATION		
							I	II										
1	7350	101	MATHEMATICS-I	4	4	10	10	10	30	70	03Hrs.	0	0	0	0	0	4	100
2	7351	102	APPLIEDPHYSICS-I	3	3	10	10	10	30	70	03Hrs.	4	2	20	30	3Hrs.	5	150
3	7352	103	APPLIEDCHEMISTRY	4	4	10	10	10	30	70	03Hrs.	4	2	20	30	3Hrs.	6	150
4	7353	104	COMMUNICATION SKILLS IN ENGLISH	4	4	10	10	10	30	70	03Hrs.	2	1	20	30	3Hrs.	5	150
5			ENGINEERINGGRAPHICS	0	0	0	0	0	0	0	0	4	2	40	60	3Hrs.	2	100
6			ENGINEERINGWORKSHOP PRACTICE	0	0	0	0	0	0	0	0	4	2	40	60	3Hrs.	2	100
7			SPORTSANDYOGA	0	0	0	0	0	0	0	0	2	1	20	30	3Hrs.	1	50
8			LIBERARY	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
TOTAL				15	15				120	280		21	10	160	240		25	800

NOTE- (1) *Two Best,out of Three MidTermTests(ProgressiveTests)Marks should be entered here.

(2) Mandatory Induction Program,right at thes tart of the first year.

GRAND TOTAL OF CREDITS
25

GRAND TOTAL OF MARKS
800

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA WING

DIPLOMA IN CHE/CSE/ETE

SEMESTER I

COURSE TITLE	:	MATHEMATICS-I
PAPER CODE	:	7350
SUBJECT CODE	:	101
TREORY CREDITS	:	4
PRACTICAL CREDITS	:	0

Course Objective:

This course is designed to give a comprehensive coverage at an introductory level to the subject of Trigonometry, Differential Calculus and Basic elements of algebra.

Course Content:

Unit	Topics and Sub-topics	Hours	Marks
Unit 1 **Trigonometry**	• Concept of angles, measurement of angles in degrees, grades and radians and their conversion. • T-ratios of allied angles (without proof) • Sum, difference formulae (without proof) and related problems. • Product formulae (transformation of product to sum, difference and vice versa) • T-rations of multiple angles (2A,3A)	12	23
Unit 2 **Differential Calculus**	• Definition of function, concept of limits, Two standard limits $\lim_{x\to a}\frac{x^n-a^n}{x-a}$, $\lim_{x\to 0}\frac{Sinx}{x}$ • Differentiation by definition of x^n, sinx,cos x, tan x, e^x and $\log_e x$. • Differentiation of sum, product and quotient of functions. • Differentiation of function of a function. Differentiation of trigonometric functions. • Logarithmic differentiation,	14	23

	Exponential functions.		
Unit 3 **Algebra**	• Complex Numbers: Definition, real and imaginary parts of a Complex number, polar and Cartesian, representation of a complex number and its conversion from one form to other. conjugate of a complex number, modulus and amplitude of a complex number Addition, Subtraction, Multiplication and Division of a complex number. De-movier's theorem, related simple problems. • Partial fractions: Definition of polynomial fraction proper & improper fractions and definition of partial fractions. To resolve proper fraction into partial fraction with denominator containing non-repeated linear factors. • Permutations and Combinations: Value of ${}^{n}P_{r}$ and ${}^{n}C_{r}$. • Binomial theorem: Binomial theorem (without proof) for positive integral index (expansion and general form). Middle term.	14	24

BLUE PRINT OF QUESTION PAPER

TIME: THREE HOURS **MAXIMUM MARKS: 70**

Unit	Question-1	Question-2	Question-3	Question-4	Question-5	
	2 MARKS	2 MARKS	3 MARKS	4 MARKS	5 MARKS	
1- Trigonometry **2- Calculus.** **3- Algebra.**	**Pattern:** Objective type 5 questions. (At least 1 from each unit.)	**Pattern:** Match the column. 5 parts (At least 1 from each unit.)	**Pattern:** Short Numerical problems. (8 questions set, At least 2 from each unit. 5 questions are to be attempted.)	**Pattern:** Numerical problems. (8 questions set, At least 2 from each unit. 5 questions are to be attempted.)	**Pattern:** Numerical problems. (6 questions set, 2 from each unit. 3 questions are to be attempted.)	
TOTAL MARKS	**10**	**10**	**15**	**20**	**15**	**= 70**

Guidelines for Question Paper Design:

1. The question paper should be prepared on the basis of the blueprint.

2. The question paper should carry 70 marks and be of 3 hours duration.

3. There should be a total of five questions. All are compulsory for students to attempt.

4. No choice in question number-1 and 2.

5. Internal choice in Question number-3. It will contain total 8 questions and students will attempt 5 questions out of 8.

6. Internal choice in Question number-4. It will contain total 8 questions and students will attempt 5 questions out of 8.

7. Internal choice in Question number-5. It will contain total 6 questions and students will attempt 3 questions out of 8.

Module Question Paper

Mathematics-1

Time: Three Hours | Maximum Marks: 70

All parts are mandatory (सभी भाग अनिवार्य हैं।)

Parts-1

Q.1) Choose the correct answers. $2\ each \times 5 = 10\ Marks$

सही उत्तर का चयन कीजिए।

1(A) If $\sin A = \frac{3}{5}$, then sin2A is equal to

यदि $\sin A = \frac{3}{5}$ हैं तो sin2A का मान होगा

(a) $\frac{6}{5}$ (b) $\frac{12}{13}$

(c) $\frac{24}{25}$ (d) $\frac{9}{25}$

1(B) The value of 60^0 in radian

60^0 का रेडियन में मान होगा

(a) $\left(\frac{\pi}{4}\right)^c$ (b) $\left(\frac{\pi}{5}\right)^c$

(c) $\left(\frac{\pi}{6}\right)^c$ (d) $\left(\frac{\pi}{3}\right)^c$

1(C) $\lim_{x\to a} \frac{x^2-a^2}{x-a}$ is equal to

$\lim_{x\to a} \frac{x^2-a^2}{x-a}$ का मान हैं

(a) $2a$ (b) $-2a$

(c) 0 (d) 1

1(D) Complex conjugate of $2-3i$ is

$2-3i$ का संयुग्मी सम्मिश्र रूप होगा

(a) $2+3i$ (b) $2-3i$

(c) $3-2i$ (d) $3+2i$

1(E) If ${}^{n}\mathrm{P}_{2}=12$ then the value of n is

यदि ${}^{n}\mathrm{P}_{2}=12$ हैं तो n का मान होगा

(a) 2 (b) 4

(c) 5 (d) 6

Parts-II

Q.2) Match the Column (सही जोड़ी का मिलान कीजिए) $2\ each \times 5 = 10\ Marks$

(A)	$\sin(180^0-\theta)$	(a)	11
(B)	$\frac{d}{dx}secx$	(b)	0
(C)	$f(x)=cos2x$ Then $f\left(\frac{\pi}{4}\right)$	(c)	$\sin\theta$
(D)	Total terms in $(2x+3y)^{10}$	(d)	1
(E)	${}^{n}\mathrm{C}_{n}$	(e)	$secxtanx$

Parts-III

$3\ each \times 5 = 15\ Marks$

(Attempt any five out of eight questions) 8 में से कोई 5 प्रश्न हल कीजिए।

3(A) Find the value of $(1+i)^2$

$(1+i)^2$ का मान ज्ञात करो

3(B) Prove that

सिध्द कीजिए

$$\sqrt{\frac{1-\sin A}{1+\sin}} = \text{Sec}A - \tan A$$

3(C) If $y = x.sinx$, then find $\frac{dy}{dx}$

यदि $y = x.sinx$, तब $\frac{dy}{dx}$ ज्ञात करो

3(D) If $x^2 + y^2 = a^2$, then find $\frac{dy}{dx}$

यदि $x^2 + y^2 = a^2$, तब $\frac{dy}{dx}$ ज्ञात करो

3(E) Resolve into partial fractions

आंशिक भिन्नो में विभक्त कीजिए

$$\frac{2x+5}{(x-1)(x-2)}$$

3(F) Prove that

सिध्द कीजिए

$$\tan(45^0 - A) = \frac{1-tan}{1+tan}$$

3(G) If $f(x) = x^2 - \frac{1}{x^2}$ then prove that $f(x) + f\left(\frac{1}{x}\right) = 0$

यदि $f(x) = x^2 - \frac{1}{x^2}$ तब सिध्द कीजिए $f(x) + f\left(\frac{1}{x}\right) = 0$

3(H) Find multiplicative inverse of $4 - 3i$

$4 - 3i$ का गुणन प्रतिलोम ज्ञात कीजिए

Parts-IV

$4\ each \times 5 = 20\ Marks$

(Attempt any five out of eight questions) 8 में से कोई 5 प्रश्न हल कीजिए।

4(A) Prove that $sin50^0 - sin70^0 + sin10^0 = 0$

सिद्ध कीजिए $sin50^0 - sin70^0 + sin10^0 = 0$

4(B) If $\sin A = \frac{2}{5}$, $\cos B = \frac{12}{13}$ then find $\sin(A+B)$ and $\cos(A-B)$

यदि $\sin A = \frac{2}{5}$, $\cos B = \frac{12}{13}$ तब $\sin(A+B)$ तथा $\cos(A-B)$ के मान ज्ञात कीजिए

4(C) If $y = x^x$, then find $\frac{dy}{dx}$

यदि $y = x^x$, तब $\frac{dy}{dx}$ ज्ञात करो

4(D) Find the value of $\lim_{x\to 0}\left(\frac{1-cosx}{x^2}\right)$

$\lim_{x\to 0}\left(\frac{1-cosx}{x^2}\right)$ का मान ज्ञात कीजिए

4(E) If $y = \frac{sinx}{1+cosx}$, then find $\frac{dy}{dx}$

यदि $y = \frac{sinx}{1+cosx}$, तब $\frac{dy}{dx}$ ज्ञात करो

4(F) Resolve into partial fractions

आंशिक भिन्नो में विभक्त कीजिए

$$\frac{x^2}{(x+2)(x+3)(x+4)}$$

4(G) If ${}^{n}C_8 = {}^{n}C_{12}$, then find ${}^{23}C_n$

यदि ${}^{n}C_8 = {}^{n}C_{12}$, तब ${}^{23}C_n$ का मान ज्ञात कीजिए

4(H) Find the 6th term in the expansion of $\left(x^2 - \frac{1}{x}\right)^{10}$

$\left(x^2 - \frac{1}{x}\right)^{10}$ के विस्तार में छटवां पद ज्ञात कीजिए

Parts-V

$5\ each \times 3 = 15\ Marks$

(Attempt any five out of eight questions) 6 में से कोई 3 प्रश्न हल कीजिए।

5(A) If $tanA = \frac{5}{6}$ and $tanB = \frac{1}{11}$, then prove that $A + B = 45^0$

यदि $tanA = \frac{5}{6}$ और $tanB = \frac{1}{11}$, तब सिध्द कीजिए $A + B = 45^0$

5(B) Prove that $sin20^0 sin40^0 sin60^0 sin80^0 = \frac{3}{16}$

सिध्द कीजिए $sin20^0 sin40^0 sin60^0 sin80^0 = \frac{3}{16}$

5(C) Find the differential coefficients of $sinx$ from the first principles.

$sinx$ का प्रथम सिध्दांत से अवकल गुणांक ज्ञात कीजिए

5(D) If $y = \sqrt{sinx + \sqrt{sinx + \sqrt{sinx + \sqrt{sinx + \cdots \infty}}}}$, then find $\frac{dy}{dx}$

यदि $y = \sqrt{sinx + \sqrt{sinx + \sqrt{sinx + \sqrt{sinx + \cdots \infty}}}}$, तब $\frac{dy}{dx}$ ज्ञात कीजिए

5(E) Find the middle term in the expansion of $\left(\frac{x}{2} + 2y\right)^6$

$\left(\frac{x}{2} + 2y\right)^6$ के विस्तार में मध्य पद ज्ञात कीजिए

5(F) Express $(1 - i)^4$ into $a + ib$ form.

$(1 - i)^4$ को $a + ib$ के रूप में व्यक्त कीजिए

MODEL QUESTION PAPER -1

MATHEMATICS-I (7350)

Time: Three Hours **Maximum Marks: 70**

Note –

1) All questions are compulsory. Question no-1 is multiple choice type, Question no-2 is match the column type.
2) Internal choices are given in Question no- 3, 4 & 5.
3) In case of any doubt or dispute, the English version question should be treated as final.

Q1- Choose the correct answer (2 *each* $\times$ 5 $=$ 10 Marks)

(i) Value of $^{8}C_{2}$ is

(a) 28 (b) 26 (c) 11 (d) None of these

(ii) Total number of terms in the expansion of $(ax-by)^{11}$ is

(a) 13 (b) 24 (c) 12 (d) 0

(iii) The value of $i^4 + i^2 + 1$ is

(a) 1 (b) i (c) -i (d) -1

(iv) The value of $\frac{d}{dx}(logx)$ is

(a) $\frac{1}{x}$ (b) 0 (c) x (d) e^x

(v) The value of $cos\,30^{\circ}$ is

(a) $\frac{\sqrt{3}}{2}$ (b) 1 (c) $\frac{1}{2}$ (d) 0

Q2 - Match the column (2 *each* $\times$ 5 $=$ 10 Marks)

(i) $^{n}P_{r}$ =	(i) $T_{r+1} = {}^{n}C_{r}x^{n-r}a^{r}$
(ii) General term in expansion of $(x + a)^n$	(ii) $\cos 2x$
(iii) $(\cos\theta + i\,\sin\theta\,)^{n}$	(iii) $\frac{n!}{(n-r)!}$
(iv) $cos^2x - sin^2x =$	(iv) $1 + logx$
(v) $\frac{d}{dx}(xlogx) =$	(v) $\cos(n\theta) + i\sin(n\theta)$

Q3 - Attempt any five out of eight questions (3 $each$ $\times 5$ $= 15$ Marks)

(i) $If\ \ tan\theta\ = \frac{3}{4},\ then\ evaluate\ \ sin2\theta$

(ii) Find the value of $\lim_{x\to 3} \frac{(x^2-9)}{(x-3)}$

(iii) If $y = x^5 secx + 10^x$ then find the value of $\frac{dy}{dx}$

(iv) Find the multiplicative inverse of $3 + 2$ i

(v) Resolve into partial fractions $\frac{1}{(x+1)(x-2)}$

(vi) If $y = x\sin x$, then find the value of $\frac{dy}{dx}$

(vii) Evaluate $sin\,480^\circ$

(viii) If ${}^nP_{10} = {}^nP_{18}$ then find the value of n

Q4 - Attempt any five out of eight questions (4 $each$ $\times 5$ $= 20$ Marks)

(i) Prove that $\sqrt{\left(\frac{1+sinx}{1-sinx}\right)} = tanx + secx$

(ii) Find the 4th term in the expansion of $\left(\frac{2x}{3} - \frac{3}{2x}\right)^6$

(iii) If $x^n + y^n = a^n$, then find the value of $\frac{dy}{dx}$

(iv) If $tanA = \frac{5}{6}$ and $tanB = \frac{1}{11}$ then show that $A + B = 45^\circ$

(v) Resolve into partial fractions $\frac{x}{(x-1)(x+3)(x-5)}$

(vi) If $y = xe^x$, then prove that $\frac{1}{y}\frac{dy}{dx} = 1 + \frac{1}{x}$

(vii) Prove that $\left(\frac{1+\mathrm{i}}{1-\mathrm{i}}\right)^n = i^n$

(viii) Find Differential coefficient of e^x by first principles.

Q5 - Attempt any Three out of Five questions ($5\ each \times 3 = 15$ Marks)

(i) Prove that $2tan50° - tan70° + tan20° = 0$

(ii) Prove that $sin20°sin40°sin60°sin80° = \frac{3}{16}$

(iii) If $y = \sqrt{x}^{\sqrt{x}^{\sqrt{x}^{\sqrt{x}\text{-------}\infty}}}$, then find the value of $\frac{dy}{dx}$

(iv) Find the middle term in the expansion of $\left(\frac{4x^2}{3} - \frac{3}{2x}\right)^9$

(v) If $siny = x\ sin(a + y)$ then prove that $\frac{dy}{dx} = \frac{sin^2(a+y)}{sina}$

Unit-1 Trigonometry

Question Bank

Part-I

Q.1) If $\cos\theta = \frac{4}{5}$, then $\cos 2\theta$ =

(a) $\frac{7}{25}$ (b) $\frac{9}{25}$ (c) $\frac{16}{25}$ (d) $\frac{24}{25}$

Q.2) If $\sin\theta = \frac{3}{5}$, then $\sin 2\theta$ =

(a) $\frac{7}{25}$ (b) $\frac{9}{25}$ (c) $\frac{16}{25}$ (d) $\frac{24}{25}$

Q.3) If $A + B = 45^0$; then the value of $(1 + \tan A)(1 + \tan B)$ is:

(a) 0 (b) 1 (c) 2 (d) 3

Q.4) Value of $2\sin 15^0 \cos 15^0$ =will be:

(a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{2}$ (c) $-\frac{\sqrt{3}}{2}$ (d) $\frac{\sqrt{3}}{2}$

Q.5) Value of $(\sin A - \cos A)^2 =$ is equal to:

(a) $1 + \sin 2A$ (b) $1 - \sin 2A$

(c) $\sin 2A$ (d) $\cos 2A$

Q.6) Value of $\sin(360^0 - \theta) =$ is equal to:

(a) $\sin\theta$ (b) $-\sin\theta$

(c) $\cos\theta$ (d) $-\cos\theta$

Q.7) If $\sin A = \frac{3}{5}$ and $\cos B = \frac{12}{13}$; then $\sin(A + B)$is equal to:

(a) $\frac{15}{18}$ (b) $\frac{56}{65}$ (c) $\frac{63}{65}$ (d) $\frac{36}{65}$

Q.8) If $\tan\theta = \frac{1}{2}$ and $\tan\emptyset = \frac{1}{3}$; Then $\theta + \emptyset$ is equal to:

(a) $\frac{\pi}{6}$ (b) π (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{3}$

Q.9) If $\tan\theta = \frac{p}{q}$; then the value of $\frac{p\sin\theta - q\cos\theta}{p\sin\theta + q\cos\theta}$ is equal to:

(a) $\frac{p^2+q^2}{p^2-q^2}$ (b) $p^2 + q^2$

(c) $\frac{p^2-q^2}{p^2+q^2}$ (d) $p^2 - q^2$

Q.10) $\frac{\cos 11^0 + \sin 11^0}{\cos 11^0 - \sin 11^0}$ =

(a) $\tan 22^0$ (b) $\tan 56^0$

(c) $\tan 34^0$ (d) $\cot 11^0$

Q.11) $\sin 40^0 - \sin 20^0$ =

(a) $\sqrt{3}\sin 10^0$ (b) $\sqrt{3}\cos 10^0$

(c) $-\cos 10^0$ (d) $\sin 10^0$

Q.12) If $\sin A = \frac{1}{\sqrt{5}}$ and $\sin B = \frac{1}{\sqrt{10}}$;

then $A + B$ is equal to:

(a) $\frac{\pi}{6}$ (b) π (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{3}$

Q.13) $\frac{\cos\theta}{\sin(90^0-\theta)} + \frac{\sin\theta}{\cos(90^0-\theta)}$ =

(a) 0 (b) 1 (c) -1 (d) 2

Q.14) $\sin^2 20^0 + \cos^2 20^0$ =

(a) 0 (b) 1 (c) -1 (d) 2

Q.15) $(1-\cos\theta)(1+\cos\theta)(1+\cot^2\theta) =$

(a) 0 (b) 1 (c) -1 (d) 2

Q.16) $\sin 30^0 . \cos 60^0 + \cos 30^0 . \sin 60^0 =$

(a) 0 (b) 1 (c) -1 (d) 2

Q.17) $\cos\theta . \cos(90^0-\theta) - \sin\theta . \sin(90^0-\theta) =$

(a) 0 (b) 1 (c) -1 (d) 2

Q.18) $\sec(90^0-\theta) =$

(a) $\sin\theta$ (b) $\operatorname{cosec}\theta$

(c) $\cos\theta$ (d) $\cot\theta$

Q.19) $\sqrt{\sec^2\theta - 1}$ =

(a) $\tan\theta$ (b) $\operatorname{cosec}\theta$

(c) $\cos\theta$ (d) $\cot\theta$

Q.20) $\frac{\cot A+\tan B}{\cot B+\tan A} =$

(a) $\tan A . \tan B$ (b) $\cot A . \tan B$

(c) $\cot A . \cot B$ (d) $\tan A . \cot B$

Q.21) $\frac{\sin\theta+\sin 2\theta}{1+\cos\theta+\cos 2\theta} =$

(a) $\tan\theta$ (b) $\operatorname{cosec}\theta$

(c) $\cos\theta$ (d) $\cot\theta$

Q.22) Value of $\sec^2 10^0 - \tan^2 10^0 =$

(a) 0 (b) 1 (c) -1 (d) 2

Q.23) Value of $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}} =$

(a) $\sec\theta + \tan\theta$ (b) $\operatorname{cosec}\theta - \cot\theta$

(c) $\sec\theta - \tan\theta$ (d) $\operatorname{cosec}\theta + \cot\theta$

Q.24) Value of $\sqrt{\operatorname{cosec}^2\theta - 1} =$

(a) $\tan\theta$ (b) $\operatorname{cosec}\theta$

(c) $\cos\theta$ (d) $\cot\theta$

Q.25) $\sin(90^0 - \theta).\cos\theta + \cos(90^0 - \theta).\sin\theta =$

(a) 0 (b) 1 (c) -1 (d) 2

Q.26) $\sin(180^0 - \theta) =$

(a) $\sin\theta$ (b) $\operatorname{cosec}\theta$ (c) $\cos\theta$ (d) $\cot\theta$

Q.27) Value of $\frac{\tan\theta}{\sin\theta} =$

(a) $\sec\theta$ (b) $\operatorname{cosec}\theta$ (c) $\cos\theta$ (d) $\cot\theta$

Q.28) If $\sin A = \frac{3}{5}$, then cosA is equal to

(a) $\frac{6}{5}$ (b) $\frac{2}{3}$

(c) $\frac{4}{5}$ (d) $\frac{2}{5}$

Q.29) The value of 60^0 in radian

(a) $\left(\frac{\pi}{4}\right)^c$ (b) $\left(\frac{\pi}{5}\right)^c$

(c) $\left(\frac{\pi}{6}\right)^c$ (d) $\left(\frac{\pi}{3}\right)^c$

Part-II

Q.1) Match the column (सही जोड़ी का मिलान कीजिए)

(A)	$sin60^0$	(a)	$\frac{2}{\sqrt{3}}$
(B)	$\sec 30^0$	(b)	0
(C)	$\text{cosec}\, 45^0$	(c)	$\frac{\sqrt{3}}{2}$
(D)	$\cos 90^0$	(d)	$\sqrt{2}$
(E)	$\tan 30^0$	(e)	$\frac{1}{\sqrt{3}}$

Q.2) Match the column (सही जोड़ी का मिलान कीजिए)

(A)	$\frac{\pi}{4}$	(a)	120^0
(B)	$\frac{2\pi}{3}$	(b)	18^0
(C)	$\frac{\pi}{10}$	(c)	30^0
(D)	$\frac{\pi}{6}$	(d)	360^0
(E)	2π	(e)	45^0

Q.3) Match the column (सही जोड़ी का मिलान कीजिए)

(A)	$\cos(180^0 - \theta)$	(a)	$\cos\theta$
(B)	$\sin(90^0 - \theta)$	(b)	$-\sin\theta$
(C)	$\sin(180^0 + \theta)$	(c)	$-\cos\theta$
(D)	$\tan(90^0 - \theta)$	(d)	$\sin\theta$
(E)	$\sin(180^0 - \theta)$	(e)	$\tan\theta$

Q.4) Match the column (सही जोड़ी का मिलान कीजिए)

(A)	$1 + \tan^2 \theta$	(a)	$\cos 2\theta$
(B)	$\sin^2 \theta + \cos^2 \theta$	(b)	1
(C)	$\cos^2 \theta - \sin^2 \theta$	(c)	$\sec^2 \theta$
(D)	$2 \sin \theta cos\theta$	(d)	$\text{cosec}^2 \theta$
(E)	$1 + \cot^2 \theta$	(e)	$\sin 2\theta$

Q.5) Match the column (सही जोड़ी का मिलान कीजिए)

(A)	$\frac{\sin \theta}{\cos \theta}$	(a)	$\cot \theta$
(B)	$\frac{\cos \theta}{\sin \theta}$	(b)	$\text{cosec}\, \theta$
(C)	$\frac{1}{\sin \theta}$	(c)	$\tan \theta$
(D	$\frac{1}{\cos \theta}$	(d)	$\sin \theta$
(E)	$\frac{\tan \theta}{\sec \theta}$	(e)	$\sec \theta$

Q.5) Match the column (सही जोड़ी का मिलान कीजिए)

(A)	$\sin(A + B)$	(a)	$cosAcosB - sinAsinB$
(B)	$\cos(A + B)$	(b)	$sinAcosB - cosAsinB$
(C)	$\sin(A - B)$	(c)	$sinAcosB + cosAsinB$
(D	$\cos(A - B)$	(d)	$cosAcosB + sinAsinB$
(E)	$\sin A + sinB$	(e)	$2 \cos\left(\frac{A+B}{2}\right) \sin\left(\frac{A-B}{2}\right)$
(F)	$\sin A - sinB$	(e)	$2 \sin\left(\frac{A+B}{2}\right) \cos\left(\frac{A-B}{2}\right)$
(G)	$\cos A + cosB$	(e)	$2 \sin\left(\frac{A+B}{2}\right) \sin\left(\frac{B-A}{2}\right)$
(H)	$\cos A - cosB$	(f)	$2 \cos\left(\frac{A+B}{2}\right) \cos\left(\frac{A-B}{2}\right)$

Part-III

Q.1) If $\tan\theta = \frac{4}{5}$, find the value of $\frac{2sin\theta+3\cos\theta}{4cos\theta+3\sin\theta}$

Q.2) Find the value of $tan\theta$ If $cos\theta = \frac{9}{41}$

Q.3) If $\sin\theta = \frac{3}{5}$ then find the value of $sin2\theta$ and $cos2\theta$

Q.4) Find the value of following:

(i) $sin15^0$ (ii) $sin75^0$ (iii) $sin105^0$

(iv) $cos15^0$ (v) $cos75^0$ (vi) $cos105^0$

(vii) $tan15^0$ (viii) $tan75^0$ (ix) $tan105^0$

Q.5) If $\cos\alpha = \frac{5}{13}$, Then find the values of $\sin 2\alpha, \cos 2\alpha$ and $\tan 2\alpha$

Q.6) Prove that: $\tan(45^0 - A) = \frac{1-tanA}{1+tanA}$

Q.7) Prove that: $\frac{1+\sin 2\theta-\cos 2\theta}{1+\sin 2\theta+\cos 2\theta} = \tan\theta$

Q.8) If $\tan\theta = \frac{2}{3}$, then find the values of $sin\theta + cos\theta$ and $sec\theta + cosec\theta$.

Q.9) Prove that $\sqrt{\frac{1-sinA}{1+sinA}} = SecA - tanA$

Q.10) Prove that $\frac{cotA+tanB}{cotB+tanA} = cotAtanB$

Q.11) Find the value of following

(i) $tan135^0$ (ii) $sin210^0$ (iii) $cos330^0$

Q.12) Prove that $cotA + tanA = 2cosec2A$

Q.13) Prove that $cos80^0 + cos40^0 = cos20^0$

Part-IV

Q.1) Prove that: $\sin 50^0 - \sin 70^0 + \sin 10^0 = 0$

Q.2) Simplify: $\frac{\sin\theta}{\cos(90^0-\theta)} + \frac{\sin(-\theta)}{\sin(180^0-\theta)} - \frac{\tan(90^0-\theta)}{\cot\theta}$

Q.3) Prove that: $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$

Q.4) If $\sin A = \frac{1}{\sqrt{5}}$ and $\sin B = \frac{1}{\sqrt{10}}$ then show that $A + B = 45^0$

Q.5) Prove that: $\frac{\sin A - \sin B}{\cos A + \cos B} + \frac{\cos A - \cos B}{\sin A + \sin B} = 0$

Q.6) If $\tan A = \frac{5}{6}$ and $\tan B = \frac{1}{11}$ then show that $A + B = 45^0$

Q.7) Prove that $\frac{1+sin2\theta-cos2\theta}{1+sin2\theta+cos2\theta} = tan\theta$

Q.8) Prove that $\frac{sin\theta+sin2\theta}{1+cos\theta+cos2\theta} = tan\theta$

Q.9) Prove that $\frac{cos11^0+sin11^0}{cos11^0-sin11^0} = tan56^0$

Q.10) If $A + B = 45^0$ then show that $(1 + tanA)(1 + tanB) = 2$

Q.11) If $\sin A = \frac{2}{5}$ and $\cos B = \frac{12}{13}$

then find the values of $\sin(A + B)$ and $\cos(A - B)$

Part-V

Q.1) Prove that: $\frac{\cos 2\theta}{1+\sin 2\theta} = \tan\left(\frac{\pi}{4} - \theta\right)$

Q.2) Prove that: $\cos 20^0 \cos 40^0 \cos 60^0 \cos 80^0 = \frac{1}{16}$

Q.3) Prove that: $\sin 20^0 \sin 40^0 \sin 60^0 \sin 80^0 = \frac{3}{16}$

Q.4) Prove that: $\sin(A + B)\sin(A - B) = \sin^2 A - \sin^2 B$

Q.5) Prove that: $\sin(A + B)\sin(A - B) = \cos^2 B - \cos^2 A$

Q.6) Prove that: $\sin^2\left(\frac{\pi}{8} + \frac{A}{2}\right) - \sin^2\left(\frac{\pi}{8} - \frac{A}{2}\right) = \frac{1}{\sqrt{2}}\sin A$

Q.7) Prove that: $\frac{\sin(A+B)-2sinA+\sin(A-B)}{\cos(A+B)-2cosA+\cos(A-B)} = tanA$

Q.8) Prove that: $2\tan 50^0 - tan70^0 + tan20^0 = 0$

DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL (M.P.)

SEMESTER– I

COURSE TITLE	:	APPLIED PHYSICS - I
PAPER CODE	:	7351
SUBJECT CODE	:	102
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	02

Course Objectives:

Applied Physics includes the study of a large number of diverse topics all related to materials/things that exist in the world around us. It aims to give an understanding of this world both by observation and by prediction of the way in which such objects behave. Concrete use of physical principles and analysis in various fields of engineering and technology are given prominence in the course content. The course will help the diploma engineers to apply the basic concepts and principles to solve broad based engineering problems and to understand different technology based applications.

Teaching Approach:

- Teachers should give examples from daily routine as well as, engineering/technology applications on various concepts and principles in each topic so that students are able to understand and grasp these concepts and principles. In all contents, SI units should be followed.
- Use of demonstration can make the subject interesting and develop scientific temper in the students. Student activities should be planned on all the topics.
- Activity- Theory - Demonstrate/practice approach may be followed throughout the course so that learning may be outcome and employability based.

Course Content:

Unit 1: Units and Measurements

Physical quantities: fundamental and derived, Units and systems of units (FPS, CGS, MKS and SI units), Dimensions and dimensional formulae of physical quantities, Errors in measurements (systematic and random), absolute error, relative error, error propagation, error estimation and significant figures.

Scalar and Vector quantities – examples, representation of vector, types of vectors. Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statement only), Scalar and Vector Product, Resolution of a Vector.

Unit 2: Force and Motion

Force, Momentum, Conservation of linear momentumits statement and applications, Impulse and its applications.

Friction: concept, types, laws of limiting friction, coefficient of friction, reducing friction and its engineering applications.

Circular motion, definition of angular displacement, angular velocity, angular acceleration, frequency, time-period, Relation between linear and angular velocity, linear acceleration and angular acceleration, Centripetal and Centrifugal forces with live examples, Expression and applications such as banking of roads and bending of cyclist.

Unit 3: Work, Energy, Power and Rotational Motion

Work: Concept and units, examples of zero, positive and negative work.

Energy and its units, kinetic energy, gravitational potential energy with examples and derivations, mechanical energy, conservation of mechanical energy for freely falling bodies, transformation of energy (examples). Power and its units, Calculation of power.

Translational and rotational motions with examples, Definition of torque and angular momentum and their examples, Conservation of angular momentum (quantitative) and its applications. Moment of inertia and its physical significance.

Unit 4: Properties of Matter

Elasticity: definition of stress and strain, moduli of elasticity, Hooke's law, significance of stress-strain curve

Surface tension: concept and unit.Cohesive and adhesive forces,Angle of contact, Ascent Formula (No derivation),Applications of surface tension,Effect of temperature and impurity on surface tension.

Viscosity and coefficient of viscosity, Terminal velocity, Stoke's law, effect of temperature on viscosity, stream line and turbulent flow, Reynold's number Equation of continuity, Bernoulli's Theorem (only statement) and its applications.

Unit 5: Heat and Thermometry

Concept of heat and temperature, Mercury thermometer, scales of temperature and their relationship, specific heat, modes of heat transfer (conduction, convection and radiation with examples), Co-efficient of thermal conductivity and its engineering applications. Expansion of solids, coefficient of linear, surface and cubical expansions and relation amongst them.

Learning Outcome:

After undergoing this subject, the student will be able to:

- Identify physical quantities, select their units for use in engineering solutions, and make measurements with accuracy by minimizing different types of errors.
- Represent physical quantities as scalar and vectors and solve real life relevant problems.
- Analyse type of motions and apply the formulation to understand banking of roads/railway tracks and conservation of momentum.
- Define scientific work, energy and power and their units. Drive relationships for work, energy and power and solve related problems.
- Describe forms of friction and methods to minimize friction between different surfaces.

- Identify various forms of energy, and energy transformations.
- Compare and relate physical properties associated with linear motion and rotational motion and apply conservation of angular momentum principle to known problems.
- Describe the phenomenon of surface tension, effects of temperature on surface tension and solve statics problems that involve surface tension related forces.
- Describe the viscosity of liquids, coefficient of viscosity and the various factors affecting its value. Determine viscosity of an unknown fluid using Stokes' Law and the terminal velocity.
- Define stress and strain. State Hooke's law and elastic limits, stress–strain diagram, determine; (a) the modulus of elasticity, (b) the yield strength (c) the tensile strength, and (d) estimate the percent elongation.
- Illustrate the terms; heat and temperature, measure temperature in various processes on different scales (Celsius, Fahrenheit, and Kelvin etc.)
- Distinguish between conduction, convection and radiation; identify different methods for reducing heat losses and mode of heat transfer between bodies at different temperatures.
- State specific heats and measure the specific heat capacity of solids and liquids.

References:

1. Text Book of Physics for Class XI& XII (Part-I, Part-II); N.C.E.R.T., Delhi

2. Applied Physics, Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, Delhi.

3. Concepts in Physics by HC Verma, Vol. I & II, BhartiBhawan Ltd. New Delhi

4. अनुप्रयुक्त भौतिकी – I, अमित जैन एवम इन्दर कुमार सिंह, संजय पब्लिकेशन्स, जयपुर

5. Practical Physics by C. L. Arora, S. Chand Publication.

6. e-books/e-tools/ learning physics software/websites etc.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL (M.P.)

SEMESTER – I

COURSE TITLE: APPLIED PHYSICS – I

SUBJECT CODE: 102

PAPER CODE: 7351

THEORY CREDIT: 03

BLUE PRINT OF QUESTION PAPER

UNIT NO.	UNIT NAME	MARKS WISE NO OF QUESTIONS				TOTAL MARKS
		2 MARKS (Multiple choice type question)	2 MARKS (Fill in the blanks or match the column or very short answer type question)	4 MARKS (Short answer type question)	6 MARKS (Long answer type question)	
1	UNITS & MEASUREMENTS	1	1	1	1	**14**
2	FORCE AND MOTION	1	1	1	1	**14**
3	WORK, ENERGY, POWER & ROTATIONAL MOTION	1	1	1	1	**14**
4	PROPERTIES OF MATTER	1	1	1	1	**14**
5	HEAT AND THRMOMETRY	1	1	1	1	**14**
TOTAL MARKS		**10**	**10**	**20**	**30**	**70**

Guidelines for Question Paper Design:

1. The question paper should be prepared on the basis of the blueprint.
2. The question paper should carry 70 marks and be of 3 hours duration.
3. Each unit is given equal weightage (14 marks for each unit).
4. There should be a total of six questions. All are compulsory for students to attempt.
5. Question no. 1 should be of multiple-choice type and carry 10 marks. It has 5 sub-questions (one from each unit). Each sub-question is of 02 marks.
6. Other questions (from question no. 02 to question no.06), one from each unit, has three sub-questions like (a), (b) and (c).
7. Sub-question (a) has 2 marks. It can be of fill-in-the-blanks / match-the column / very short answer (VSA) type question. This question should be of cognitive type only.
8. Sub-questions (b) and (c) have 4 and 6 marks respectively. Sub-questions (b) should be of short answer (SA) type and Sub-questions (c) should be of long answer (LA) type. **Internal choices should be given to these sub-questions.**
9. Numerical questions can be asked only of 2 and 4 marks. Numerical questions can not be asked more than 10 marks.
10. Questions which are based on the same concept, law, fact etc. should not be repeated under different forms like MCQ. VSA, SA, LA.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL (M.P.)

SEMESTER – I

MODEL QUESTION PAPER : APPLIED PHYSICS –I

SUBJECT CODE: 102 **PAPER CODE: 7351**

TIME: 3 hours **MAXIMUM MARKS: 70**

NOTE: (1) All questions are compulsory. Question no. 1 is of multiple choice type.
सभी प्रश्न अनिवार्य हैं। प्रश्न क्रमांक 1 बहुविकल्पीय प्रकार का है।

(2) Internal choices are given in 4 marks and 6 marks questions.
4 अंक तथा 6 अंक वाले प्रश्नों में आन्तरिक विकल्प दिए गए हैं।

(3) In case of any doubt or dispute, the English version question should be treated as final.
किसी भी संदेह अथवा विवाद की स्थिति में अंग्रेजी भाषा के प्रश्न को अन्तिम माना जायेगा।

Q.1 Choose the correct answer:
सही उत्तर का चयन कीजिए : **2x5 marks**

(i) 'light year' is the unit of -
(a) Time (b) Distance (c) Light (d) None of these

'प्रकाश वर्ष' मात्रक है -
(a) समय (b) दूरी (c) प्रकाश (d) इनमें से कोई नहीं

(ii) Friction between two surfaces depends on -
(a) Size of surface (b) Area of surface
(c) Shape of surface (d) Roughness of surface

दो सतहों के मध्य लगने वाला घर्षण निर्भर करता है -
(a) सतह के आकार पर (b) सतह के क्षेत्रफल पर
(c) सतह की आकृति पर (d) सतह के खुरदुरेपन पर

(iii) Which of the following is not a unit of energy?
(a) calorie (b) joule (c) electron-volt (d) watt

निम्न में से कौन सा मात्रक ऊर्जा का मात्रक नहीं है?
(a) कैलोरी (b) जूल (c) इलेक्ट्रॉन-वोल्ट (d) वाट

(iv) Rain drops are spherical in shape. It is due to -
(a) Viscosity (b) Surface tension (c) Gravity (d) Pressure

वर्षा की बूँदें गोल होती हैं। इसका कारण है -

(a) श्यानता (b) पृष्ठ तनाव (c) गुरुत्वाकर्षण (d) दाब

(v) Heat transfer in solids takes place by -

(a) Conduction (b) Convection

(c) Radiation (d) All of the above

ठोस पदार्थों में ऊष्मा स्थानान्तरण होता है -

(a) चालन द्वारा (b) संवहन द्वारा

(c) विकिरण द्वारा (d) उपरोक्त सभी के द्वारा

Q.2 a) Fill in the blank: 1x**2 marks**

(i) Total number of significant figures in 0.0050 m are ……

(ii) 1 nanometre = ……. metre.

रिक्त स्थान भरें:

(i) 0.0050 मीटर में सार्थक अंकों की कुल संख्या …… है

(ii) 1 नैनोमीटर = ……. मीटर

b) Define negative vector and unit vector. **4 marks**

ऋण सदिश तथा इकाई सदिश को परिभाषित कीजिए।

OR (अथवा)

If error in the measurement of side of a cube is 5% then calculate the percentage error in its volume.

यदि किसी घन की भुजा के मापन में 5% की त्रुटि होती है तो उसके आयतन में त्रुटि की गणना कीजिए।

c) Describe SI system of units. Write its merits. **6 marks**

मात्रकों की SI पद्धति का वर्णन करते हुए इसकी विशेषतायें लिखिए।

OR (अथवा)

What do you mean by error in measurement. Explain the types of error in brief.

मापन में त्रुटि से क्या तात्पर्य है? विभिन्न प्रकार की त्रुटियों का संक्षिप्त वर्णन कीजिए।

Q.3 a) A particle is moving along a circular path of radius 50 m. Calculate its angular speed if it makes 7 revolutions per second. **2 marks**

एक कण 50 m त्रिज्या के वृत्तीय मार्ग पर प्रति सेकण्ड 7 चक्कर लगा रहा है। कण की कोणीय चाल ज्ञात कीजिए।

b) What is limiting friction? Write its laws. **4 marks**

सीमान्त घर्षण क्या है? इसके नियम लिखिए।

OR (अथवा)

Define force and momentum.

बल तथा संवेग को परिभाषित कीजिए।

c) Define centripetal acceleration and obtain an expression of it. **6 marks**

अभिकेन्द्र त्वरण को परिभाषित करते हुए इसका व्यंजक प्राप्त कीजिये।

OR (अथवा)

Deduce an expression for the maximum safe speed of a car on a banked circular road.
वृत्ताकार बंकित सड़क पर किसी कार की अधिकतम सुरक्षित चाल के लिए सूत्र प्राप्त कीजिए।

Q.4 a) Arrange in proper pairs - **2 marks**

(i) Work	(a) watt-second
(ii) Energy	(b) kilogram-metre^2
(iii) Angular momentum	(c) newton-metre
(iv) Moment of inertia	(d) joule-second

सही जोडियाँ बनाइये -

(i) कार्य	(a) वाट-सेकण्ड
(ii) ऊर्जा	(b) किलोग्राम-मीटर^2
(iii) कोणीय संवेग	(c) न्यूटन-मीटर
(iv) जड़त्व आघूर्ण	(d) जूल-सेकण्ड

b) Explain positive, negative and zero work with one example of each. **4 marks**
धनात्मक, ऋणात्मक तथा शून्य कार्य को एक-एक उदाहरण सहित समझाइये।

OR (अथवा)

The power of a pump is 1 kW. How much water can this pump lift to a height of 50 m in I hour?
एक पम्प की शक्ति 1 kW है। यह पम्प 1 घंटे में कितना पानी 50 m की ऊँचाई तक उठा पायेगा?

c) Define kinetic energy and drive a formula of it. **6 marks**
गतिज ऊर्जा को परिभाषित करते हुए इसका सूत्र प्राप्त कीजिए।

OR (अथवा)

Define moment of inertia and explain its significance with an example.
जड़त्व आघूर्ण को परिभाषित करते हुए इसका महत्व एक उदाहरण सहित समझाइये।

Q.5 a) What is the effect of temperature on the viscosity of liquid? **2 marks**
द्रव की श्यानता पर ताप का क्या प्रभाव होता है?

b) Explain why Steel is more elastic than rubber. **4 marks**
रबर की तुलना में स्टील अधिक प्रत्यास्थ क्यों होती है ? समझाइये।

OR (अथवा)

Define angle of contact. Write the factors on which it depends.
स्पर्श कोण को परिभाषित कीजिए। इसका मान किन-किन कारकों पर निर्भर करता है?

c) What do you understand by terminal velocity. Obtain an expression for it. **6 marks**
सीमान्त वेग से क्या तात्पर्य है? इसके लिए सूत्र प्राप्त कीजिए।

OR (अथवा)

State Bernoulli's Theorem and explain magnus effect.
बरनौली प्रमेय का कथन लिखिए तथा मैगनस प्रभाव को समझाइये।

Q.6 a) Temperature of an object on Celsius scale is 70^0. What would be its temperature on Fahrenheit scale? **2 marks**

किसी वस्तु का सेल्सियस स्केल पर ताप 70^0 है। फाह्रेनहाइट स्केल पर इसका ताप क्या होगा?

b) Define specific heat. Write a daily life use of specific heat of water. **4 marks**

विशिष्ट ऊष्मा को परिभाषित कीजिए। जल की विशिष्ट ऊष्मा का दैनिक जीवन में कोई एक उपयोग बताइए।

OR (अथवा)

Differentiate between heat and temperature.

ऊष्मा तथा ताप में अन्तर स्पष्ट कीजिए।

c) What is heat conduction? Explain the coefficient of thermal conductivity. **6 marks**

ऊष्मा चालन क्या है? ऊष्मा चालकता गुणांक को समझाइये।

OR (अथवा)

Define coefficients of linear and surface expansion of solid. Establish relation between them.

ठोस के रेखीय तथा क्षेत्रीय प्रसार गुणांकों को परिभाषित करते हुए उनमें सम्बन्ध प्राप्त कीजिए।

DIPLOMA WING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

SEMESTER I–GROUP'A'

COURSE TITLE	:	APPLIED CHEMISTRY
PAPER CODE	:	7352
SUBJECT CODE	:	103
TREORY CREDITS	:	04
PRACTICAL CREDITS	:	02

Course Objectives:

There are numerous number materials are used in fabricating and manufacturing devices for the comfort of life. The selection, characterization and suitability assessment of natural raw materials essentially requires principles and concepts of Applied Chemistry for technicians. On successful completion of this course content will enable technicians to understand, ascertain and analyse and properties of natural raw materials require for producing economical and eco-friendly finished products.

- Solve various engineering problems applying the basic knowledge of atomic structure and chemical bonding.
- Use relevant water treatment method to solve domestic and industrial problems.
- Solve the engineering problems using knowledge of engineering materials and properties.
- Use relevant fuel and lubricants for domestic and industrial applications
- Solve the engineering problems using concept of Electrochemistry and corrosion.

Course Content:

- **Unit1:AtomicStructure, ChemicalBonding and Solutions**

  Rutherford model of atom, Bohr's theory(expression of energy and radius to be omitted), orbital concept. Shapes of s, p and d orbitals, Pauli's exclusion principle, Hund's rule of maximum multiplicity Aufbau rule, electronic configuration upto atomic number 30

  Concept of chemical bonding – cause of chemical bonding, types of bonds: ionic bonding (NaCl example), covalent bond(H_2,F_2,HF hybridization in $BeCl_2$,BF_3,CH_4,NH_3,H_2O),coordination bond in NH_4

  Solution – idea of solute, solvent and solution, methods to express the concentration of solution molarity(*M*= mole per liter), ppm,

  Unit2: Water

  Graphical presentation of water distribution on Earth(pie or bar diagram).Classification of soft and hard water based on soap test ,salts causing water hardness, unit of hardness and simple numerical on water hardness.

  Cause of poor lathering of soap in hard water, problems caused by the use of hard water in boiler (scale and sludge, foaming and priming, corrosion etc), and quantitative measurement of water hardness by ETDA method, total dissolved solids (TDS) alkalinity estimation.

  i). Water softening techniques– soda lime process, zeolite process and ion exchange process.

  ii). Municipal water treatment (in brief only) – sedimentation, coagulation, filtration, sterilization.

- **Unit3: Engineering Materials**

  Brief account of general principles of metallurgy.

  Extraction of-iron from haematite ore using blast furnace ,

  Alloys – definition, purposes of alloying, ferrous alloys and non-ferrous with suitable examples, properties and applications.

  General chemical composition, composition based applications (elementary idea only details omitted):

  Portland cement and hardening and setting of cemet. Composite materials.

  Polymers–monomer , homo and copolymers ,degree of polymerization, simple reactions involved in preparation and their application of thermoplastics and thermosetting plastics (using PVC, PS, nylon-6,6 andBakelite), rubber and vulcanization of rubber.

- **Unit4: Chemistry of Fuels and Lubricants**

  Definition of fuel and combustion of fuel, classification of fuels, calorific values (HCV and LCV),

  Proximate analysis of coal solid fuel

  Petrol and diesel-fuel rating(octane and cetane numbers),

  Chemical composition, calorific values and applications of LPG, CNG, water gas, coal gas, producer gas and biogas.

  Lubrication – function and characteristic properties of good lubricant, classification with examples, physical properties (viscosity and viscosity index, oiliness, flash and fire point, could and pour point only)

- **Unit5: Electro Chemistry**

  Electronic concept of oxidation, reduction and redox reactions.

  Definition of terms: electrolytes, non-electrolytes with suitable examples, Faradays laws of electrolysis and simple numerical problems.

  Industrial Application of Electrolysis–
  - Electrometallurgy
  - Electroplating
  - Electrolytic refining.
  - Introduction to Corrosion of metals –
  - definition, types of corrosion (chemical and electrochemical),H_2liberation and O_2absorption mechanism of electrochemical corrosion, factors affecting rate of corrosion.

  corrosion preventive measures–
  surface coatings and organic inhibitors.

Suggested Sessional work:

- **Unit1:AtomicStructure, Chemical Bonding and Solutions**

  Assignments: Writing electronic configuration of elements up to atomic number 30 (Z= 30). Numerical on molarity, ppm,

  Projects: Model of molecules $BeCl_2$, BF_3,CH_4,NH_3, H_2O.

- **Unit2: Water**

  Assignments: Simple problems on hardness calculation.

  Seminar:1. Quality and quantity requirement of water in house and industry.

  Projects: Collect water samples from different water sources and measure of hardness of water.

- **Unit3:Engineering Materials**

  Assignments: Preparation of table showing different ores of iron metals along with their chemical compositions

  Seminar: Discuss the chemical reactions taking place in blast furnace in extraction of Fe

  Projects: Make table showing place of availability of different ores in India and show places on India map. (Iron, Aluminium and Copper)

- **Unit4: Chemistry of Fuels and Lubricants**

  Seminar: Chemical structure of fuel components influence on fuel rating.

  Projects: Mapping of energy resourses in India. Collection of data of various lubri-Cants available in the market.

- **Unit5:Electro Chemistry**

  Assignments: Simple problems on Faradays laws of

  electrolysis.

Learning Outcomes

At the end of the course student will be able to

1. Understand the classification and general properties of engineering materials such as metal, alloys, cement and composite materials using knowledge of chemical bonding.
1. Understand and assess the suitability of water source for domestic and industrial application, effluents and minimize water pollution.
2. Qualitatively analyze the engineering materials and understand their properties and applications.
3. Choose fuel and lubricants suitable for economical industrial processing to obtain eco-friendly finished products.
4. a)Ascertain construction, mechanism efficiency of electrochemical cells, solar cell fuel cells
   b)Understand corrosion and develop economical prevention techniques.

References/ Suggested Learning Resources:

(a) Books:

1) Text Book of Chemistry for Class XI& XII (Part-I,Part-II); N.C.E.R.T., Delhi,2017-18.
2) Agarwal,& Shikha, Engineering Chemistry, Cambridge University Press; NewDelhi,2015.
3) C.N.R.Rao, Understanding Chemistry, Universities Press(India)Pvt.Ltd.,2011.
4) Dara, S. S. & Dr.S.S.Umare, Engineering Chemistry, S.Chand. Publication, New Delhi, New Del-hi, 2015.
5) Jain&Jain, Engineering Chemistry, Dhanpat Rai and Sons;NewDelhi,2015.
6) Dr.Vairam, S., Engineering Chemistry,Wiley IndiaPvt.Ltd.,NewDelhi,2013.
7) Dr. G. H. Hugar & Prof A. N. Pathak, Applied Chemistry Laboratory Practices, Vol. I and Vol. II, NITTTR, Chandigarh, Publications, 2013-14.
8) Agnihotri, Rajesh, Chemistry for Engineers, Wiley IndiaPvt.Ltd.,2014.

(b) Open source software and website address:

1 www.chemguide.co.uk/atommenu.html(Atomicstructureandchemicalbonding)
2 www.visionlearning.com(Atomicstructureandchemicalbonding)
3 www.chem1.com(Atomicstructureandchemicalbonding)
4 https://www.wastewaterelearning.com/elearning/(WaterTreatment)
5 www.capital-refractories.com(Metals,Alloys,Cement,andRefractoryMaterials)
6 www.em-ea.org/guide%20books/book-2/2.1%20fuels%20and%20combustion.pdf
7 www.chemcollective.org(Metals,Alloys)

APPLIED CHEMISTRY LAB

Course Objectives:

There are numerous number of materials used in fabricating and manufacturing devices for the comfort of life. The selection, characterization and suitability assessment of natural raw materials essentially requires principles and concepts of Applied Chemistry for technicians. The course aims to supplement the factual knowledge gained in the lectures by first hand manipulation of processes and apparatus. This will develop scientific temper and help to apply the basic concepts and principles in solving engineering problems.

LIST OF PRACTICALS:

Perform any8 (eight) Laboratory Practicals atleast one from each type

Volumetric and Gravimetric analysis:

1 Preparation of standard solution of oxalic acid or potassium permanganate.

2 To determine strength of given sodium hydroxide solution by titrating against standard oxalic acid solution using phenolphthalein indicator.

3 Standardization of $KMnO_4$ solution using standard oxalic acid and Determine the percentage of iron present in given Hematite ore by $KMnO_4$ solution.

4 Volumetric estimation of

   a) Total hardness of given water sample using standard EDTA solution.

   b) Alkalinity of given water sample using 0.01M sulphuric acid

5 Proximate analysis of coal

   a) Gravimetric estimation moisture in given coal sample

   b) Gravimetric estimation ash in given coal sample

Instrumental analysis

8. Determine the conductivity of given water sample.
9. Determination of the Iron content in given cement sample using colorimeter.
10. Determination of calorific value of solid or liquid fuel using bomb calorimeter.
11. Determination of viscosity of lubricating oil using Redwood viscometer.
12. Determination of flash and fire point of lubricating oil using Able's flash point apparatus.
13. To verify the first law of electrolysis of copper sulfate using copper electrode.

Teacher should use the following strategies to achieve the various outcomes of the course.

- Different methods of teaching and media to be used to attain classroom attention.
- Massive open online courses(MOOCs) may be used to teach various topics / subtopics.
- 15-20% of the topics which are relatively simpler of descriptive e in nature should be given to the students for self-learning and assess the development of competency through classroom presentations.
- Micro-projects may be given to group of students for hand-on experiences
- Encouraging students to visit to sites such as Railway station and research establishment around the institution.

Learning Outcomes:

At the end of the course student will be able to

- To express quantitative measurements accurately.
- To practice and adapt good measuring techniques.
- To use various apparatus for precise measurements.
- To understand and differentiate different methods of quantitative analysis.
- To know and understand principles of quantitative analysis using instruments.
- To construct different electrochemical cells used in developing batteries.
- To understand and appreciate methods of corrosion abetments.

Reference Books:

1. TextBookofChemistryforClassXI&XII(Part-I,Part-II);N.C.E.R.T.,Delhi,2017-18.
2. Dr. G. H. Hugar and Prof A. N. Pathak, Applied Chemistry Laboratory Practices, Vol. I and Vol. II,NITTTR, Chandigarh, Publications, 2013-14.
3. Agnihotri, Rajesh, Chemistry for Engineers, Wiley IndiaPvt.Ltd.,2014.
4. Jain& Jain, Engineering Chemistry, Dhanpat Rai and Sons;NewDelhi,2015.

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DIPLOMAWING
RAJIVGANDHIPROUDYOGIKIVISHWAVIDYALAYA,BHOPAL

SEMESTERI–GROUP'A'

COURSETITLE	:	COMMUNICATION SKILLS IN ENGLISH
PAPERCODE	:	7353
SUBJECTCODE	:	104
TREORYCREDITS	:	04
PRACTICALCREDITS	:	01

Course Objectives:

Communication skills play an important role in career development.This course aims at introducing basic concepts of communication skills with an emphasis on developing personality of the students.Thus,the main objectives of this course are:

1. To develop confidence in speaking English with correct pronunciation.
2. To develop communication skills of the students i.e. Listening, Speaking, Reading and Writing skills.
3. To introduce the need for Personality Development- Focus will be on developing certain qualities which will aid students in handling personal and career challenges like self-awareness, inter personal skills, empathy, motivation, team spirit, leadership skills etc.

Course Content

Unit-I Communication:Theory and Practice (6lectures) 14Marks

Basics of Communication: Introduction, Meaning and Definition, Process of Communication.

Types of Communication: **Verbal** (Oral, Written) and **Non-verbal**–Signs, Symbols, Maps, Body Language(Kinesics)Para Language.

Channels: Formal (Upward,Downward,Horizontal and Diagonal)and Informal

(Grapevine).

Principles of Effective Written and Oral Communication (including7C's)

Barriers to Effective Communication (Semantic, Physical, Psychological, Organizational) and ways to overcome them.

Unit-II Soft Skills for Professional Excellence (5lectures) 12Marks

Introduction: Soft Skills and Hard Skills.

Importance of Soft Skills as Life skills : Self-awareness and Self-analysis, Interpersonal effectiveness, Adaptability, Resilience, Emotional Intelligence, Empathy, Assertiveness, Conflict management, Problem Solving, Decision Making, Leadership, Motivation, Time Management and Team spirit.

Unit-III: Reading Comprehension(14lectures) **16Marks**

Comprehension, vocabulary enhancement and grammar exercises based on reading of the following texts:

Section-1-Prose

'An Astrologer'sDay' from Malgudi Days by R.K.Narayan
'The Gift of the Magi' by O'Henry
'Uncle Podger Hangs a Picture 'by JeromeK.Jerome

Section-2-Poetry

'Night of the Scorpion 'by Nissim Ezekiel
'Stopping by Woods on a Snowy Evening' by Robert Frost
'Where the Mind is Without Fear' by Rabindranath Tagore

Unit-IV: Professional Writing and Business Communication(10lectures) **14Marks**

Précis writing and Comprehension exercises based on Unseen Passages.

E-mail etiquette, format of e-mail.

Draft a short email message requesting for one day leave from your workplace due to sickness.
Draft a short email message informing that you have resumed your duty after availing leave.
Draft a short email message informing about inferior/ defective quality of goods supplied.

Drafting Letters

Parts of letters, mechanics, style and format.
Application for Job or Covering letter with Resume
Letters related to purchase: Enquiry, Order and Complaints
(damaged or defective goods or for shortage in supply)

Unit-V:Vocabulary and Grammar(10lectures**)** **10Marks-Grammar+4Marks-Vocabulary**

Vocabulary of commonly used words, Synonyms Antonyms and usage of same words as different parts of speech.
One-word substitutions from the prescribed prose and poetry.

Determiners, Auxiliary verbs, Subject-verb agreement, Tense, Prepositions, Active and Passive Voice.

Course outcomes:

At the end of this course, the students will be able to:

1. Formulate grammatically correct sentences in English using appropriate vocabulary, to develop basic Speaking and Writing skills.
2. Demonstrate Reading skills with correct pronunciation and comprehension.
3. Understand the importance of personality development with reference to soft skillsto handle personal and professional challenges.
4. Apply principles of effective communication in oral and written professional communication.

References:

1. Anjana Tiwari, Communication Skills in English ,Khanna Publishing House, NewDelhi,2022.
2. TTTI Bhopal, Communication Skills for Technical Students, BookI, Somaiya Publication Mumbai, NewDelhi.
3. Raymond Murphy, Essentials of English Grammar, Cambridge UniversityPress,2000.
4. Rajendra PalandJ.S.Korlahalli, Essentials of Business Communication, S. Chand& Sons NewDelhi,2019.
5. J.D.O' Connor, Better English Pronunciation, Cambridge University Press,1980.
6. Lindley Murray, An English Grammar, Comprehending Principles and Rules, WilsonandSons,London,1908.
7. Kulbhushan Kumar, Effective Communication Skills, Khanna Publishing House, New Delhi(Revised Edition2018)
8. Margaret M.Maison, Examine your English, OrientLongman,NewDelhi,1964.
9. M.Ashraf Rizvi ,Effective Technical Communication ,Mc-GrawHill,Delhi,2002.
10. John Nielson ,Effective Communication Skills,Xlibris,2008.
11. Oxford Advanced Learners Dictionary
12. Roget's Thesaurus of English Words and Phrases
13. Levine, Levine&Levine, The Joy of Vocabulary
14. Collin's English Dictionary

Web Sources:

https://agendaweb.org/listening-

exercises.htmlwww.grammarly.com/

Suggested Further Reading (to enhance reading skills of students):

1. R.KNarayan:"Malgudi Days" (32ShortStories)," Swami And His Friends"(novel)
2. OHenry: Short Stories:'The Last Leaf','After Twenty Years'
3. Rabindranath Tagore:Poems from"Geetanjali"'Freedom','LastCurtain'
4. RuskinBond: ShortStories: 'The Cherry Tree', 'The Thief', 'The Kite Maker'. "The Room on the Roof"(novel)

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COMMUNICATION SKILLS IN ENGLISH LAB

Course Objectives:

Communication skills play an important role in career development. This lab/practical course aims at actively involving students in various activities to improve their communication skills with an emphasis on developing personality of the students. Thus, the objectives of this course are:

1. To develop Listening Skills for enhancing communication.
2. To develop Speaking and Reading Skills with a focus on correct pronunciation and fluency.
3. To introduce the need for Personality Development- Focus will be on developing Soft Skills which will aid students in handling personal and career challenges. For that purpose group discussion, extempore and other activities to be conducted during practical classes and technology enabled learning should be integrated for effective learning.

Course Content:

UnitI Listening Skills (6lectures)

Listening Process and Practice
Listening to recorded lectures, conversations, poems, interviews and speeches,
Listening comprehension tests.

UnitII Reading Skills with correct Pronunciation (6lectures)

Phonetics: Articulation of Sounds-Consonant, Vowels and Diphthongs.
Division of Words into Syllables, Practice of Word stress and Intonation.
Reading the prescribed text with correct pronunciation, intonation and comprehension.

UnitIII Speaking Skills (6 lectures)

Introducing self, Introducing others(each student will also have to write the content of this activity during exam which will be submitted for record purpose)
Conversation practice in routine situations (greeting, thanking, apologizing, requesting, congratulating, inviting, expressing likes and dislikes, etc.
Role Play-
Making Enquiries at important public places.
Question Tags and giving short answers for ease of conversing.

Unit IV Professional Skills(6lectures)

Delivering formal short-speech, extempore (of 2minutes duration)
Making **Oral presentation** of Mini Project* before external examiner in Practical exam (Written content of presentation (along with tools or aids), also to be submitted by each Student / group for the purpose of record)
Telephonic Conversations, Video Conferencing, Describing Telephone manners and Netiquette.(watching videos, role play and demonstrations)
Mock interviews for Jobs (videos and demonstrations)
Group Discussions(videos and demonstrations)

Unit V Building Vocabulary (6lectures)

Phrasal verbs
Idioms and phrases, Administrative terms(English and Hindi)
Word exercises (homonyms), words with silent letters, commonly misspelled and mispronounced words.
Word games such as crosswords, scrabble, quiz, spell-it, etc. to enhance self-expression and vocabulary of participants.
Punctuation Exercises

Note:

*__Mini Project__: Topics of Mini-projects may be assigned individually; or the whole batch of students may be divided into groups of 4-5 students each. Each student/group has to be assigned a topic for Mini-Project in the beginning of the semester. Each student/group will prepare a short presentation using various aids and tools e.g., charts, graphics, models, flow charts, examples and illustrations, power point, dialogues, role play etc. during the semester and submit it before the last teaching day after planning and rehearsing the oral presentation under supervision of the teacher. Each group will orally deliver this presentation of five to six minutes duration, using the prepared aids and tools during practical exam. Each student individually or as part of a group must participate in oral presentation for at least 1-2 minutes. The suggested topics for Mini- Project are-

1. (i)Describe Process of Communication (ii) Verbal and Non-verbal communication (iii) Oral and Written Communication (iv)Principles of Effective Communication (any four principles) (v)Explain Barriers to Communication (anyone category of barriers) and ways to overcome them. Unit1

2. Explain any three of these soft skills -Time Management, Grooming, Stress Management, Team Work, Self-analysis, Interpersonal effectiveness, Adaptability, Resilience, Emotional Intelligence, Empathy, Assertiveness, Conflict management, Problem Solving, Decision Making, Leadership, Motivation. Unit2

3. Prepare a Phonetic Chart of Sounds of English. Unit2

4. Read short stories of famous writers and present a summary along with sharing the new words learnt with their usage (any one short story may be chosen from 'suggested further reading'). Unit3

5. Compose short poems and write stories on topics of your choice.(Any One Story or Poem)-Unit3

   Enumerate Qualities of a good letter, present different formats. Unit4

6. Demonstrate the format of e-mail, and enlist email etiquette. Unit4

7. (i)Describe Importance of Netiquette (ii) Describe Telephone Manners. Unit5

8. Preparing for an Interview–Do's and Don'ts. Unit5

9. Any other relevant topic considered appropriate by the teacher according to students' interest.

Learning Outcome:

At the end of this course the students will be able to:

1. Demonstrate Reading with correct Pronunciation and Comprehension.
2. Ask and Answer relevant questions orally after Listening to the spoken /delivered content in technologically enabled learning environment.
3. Introduce themselves orally, introduce others, converse in routine and professional situations with proper usage of language and vocabulary.
4. Prepare, organize and effectively deliver an oral presentation using digital or other tools.

Recommended Readings:

1. T.Balasubramanian,AtextBookofEnglishPhoneticsforIndianStudents,3rdEd.2022
2. DanielJones , English PronouncingDictionary,Cambridge,CambridgeUniversityPress,1956.
3. James Hartman& etal .English Pronouncing Dictionary, Cambridge, CambridgeUniversityPress,2006.
4. Kulbhushan Kumar, Effective Communication Skills, Khanna Publishing House, NewDelhi(RevisedEd.2018)
5. J.D.O'Connor, Better English Pronunciation,Cambridge,CambridgeUniversityPress,1980.
6. LindleyMurray, English Grammar:ComprehendingPrinciplesandRules,.London,WilsonandSons,1908.
7. MargaretM. Maison, Examine your English,OrientLongman,NewDelhi,1964.
8. J. Sethi& etal, A Practice Course in English Pronunciation,NewDelhi,PrenticeHall,2004.

Web Sources For Speaking Skills

http://7esl.com**https://agendaweb.org/listening-exercises.html**http://grammarly.com

https://www.duolingo.com

https://learnenglish.britishcouncil.o

rghttp://www.ummoapp.com

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DIPLOMAWING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA,BHOPAL

SEMESTER I–GROUP'A'

COURSE TITLE	:	ENGINEERING GRAPHICS
PAPER CODE	:	--
SUBJECT CODE	:	--
TREORY CREDITS	:	00
PRACTICAL CREDITS	:	02

Course Objectives:

- To understand the language of graphics which is used to express ideas, convey instructions while carrying out engineering jobs.
- To develop drafting and sketching skills, to know the applications of drawing equipments, and get familiarize with Indian Standards related to engineering drawings.
- To develop skills to visualize actual object or a part of it, on the basis of drawings.
- To develop skills to translate ideas into sketches and to draw and read various engineering curves, projections and dimensioning styles.
- To understand the basic commands and develop basic skills related to computer aided drafting, of how to draw, modify, and edit basic shapes (2D), using AUTOCAD.

Course Content

Unit–I Basic elements of Drawing

Drawing Instruments and supporting materials: method to use them with applications.

Convention of lines and their applications.

Representative Fractions–reduced, enlarged and full size scales; Engineering Scales such as plain and diagonal scale.

DimensioningtechniquesasperSP-46:2003–typesandapplicationsofchain,parallel and coordinate dimensioning.

Geometrical and Tangency constructions.(Redraw the figure)

Unit–II Orthographic projections

Introduction of projections-orthographic, perspective, isometric and oblique: concept and applications. (No question to be asked in examination).

Introduction to orthographic projection, First angle and Third angle method, their symbols.

Conversion of pictorial view into Orthographic Views–object containing plain surfaces, slanting surfaces, slots, ribs, cylindrical surfaces.(use First Angle Projection method only)

Unit–III Isometric Projections

Introduction to isometric projections.

Isometric scale and Natural scale.

Isometric view and isometric projection.

Illustrative problems related to objects containing lines, circles and arcs shape only.

Conversion of orthographic views into isometric view/projection.

Unit–IV Free Hand Sketches of Engineering Elements

Free hand sketches of machine elements: Thread profiles, nuts, bolts, studs, set screws, washer, Locking arrangements. (For branches other than mechanical Engineering, the teacher should select branch specific elements for free hand sketching)

Free hand sketches of orthographic view(on squared graph paper)and isometric view(on isometric grid paper)

Unit–V Computer aided drafting interface

Computer Aided Drafting: concept.

Hard ware and various CAD software available.

System requirements and Understanding the interface.

Components of AutoCAD software window: Title bar, standard tool bar, menu bar, object properties toolbar, draw toolbar, modify toolbar, cursor cross hair. Command window, status bar, drawing area, UCS icon.

File features: New file, Saving the file, Opening an existing drawing file, Creating templates, Quit.

Setting up new drawing: Units, Limits, Grid, Snap.

Undoing and redoing action.

Unit–VI Computer aided drafting

Draw basic entities like Line, Circle, Arc, Polygon, Ellipse, Rectangle, Multiline, Polyline.

Method of Specifying points: Absolute co ordinates, Relative Cartesian and Polar coordinates.

Modify and edit commands like trim, extend, delete, copy, offset, array, block, layers.

Dimensioning: Linear, Horizontal Vertical, Aligned, Rotated, Baseline, Continuous, Diameter, Radius, Angular Dimensions.

Dim scale variable.

Editing dimensions.

Text: Single lineText, Multiline text.

Standard sizes of sheet. Selecting Various plotting parameters such as Paper size, paper units, Drawing orientation, plot scale, plot offset, plot area, print preview.

S. No.	Practical Exercises	Unit No.	Approx. Hrs
1	Draw horizontal, Vertical , 30degree,45degree,60and 75degreeslines,different types of lines, dimensioning styles using Tee and Setsquares/drafter. (do This exercise in sketchbook)	I	02
2	Write alphabets and numerical (Vertical only) (do this exercise in sketchbook)	I	02
3	Draw regular geometric constructions and redraw the given figure (do this exercise in sketch book) Part I	II	02
4	Draw regular geometric construction and redraw the given figure (do this exercise in sketch book) Part II	II	02
5	Draw a problem on orthographic projections using first angle method of projection having plain surfaces and slanting. Part I	III	02
6	Draw another problem on orthographic projections using first angle method of projection having slanting surfaces with slots. Part II	III	02

7	Draw two problems on orthographic projections using first angle method of projection having cylindrical surfaces, ribs. Part I	III	02
8	Draw two problems on Isometric view of simple objects having plain and slanting surface by using natural scale. Part I	IV	02
9	Draw some problems on Isometric projection of simple objects having cylindrical surface by using isometric scale. Part I	IV	02
10	Draw free hand sketches/conventional representation of machine elements In sketch book such as thread profiles, nuts, bolts, studs, setscrews, washers, Locking arrangements. Part I	V	02
11	Problem based Learning: Given the orthographic views of at least three objects with few missing lines, the student will try to imagine the corresponding objects, complete the views and draw these views in sketchbook. Part I	II I, II, V	02
12	Draw basic 2Dentitieslike: Rectangle, Rhombus, Polygon using AutoCAD (Print out should be a part of progressive assessment). Part I	V	02
13	Draw basic 2D entities like: Circles, Arcs, circular using Auto CAD (Printout should be a part of progressive assessment). Part II	V	02
14	Draw basic 2D entities like: Circular and rectangular rarray using Auto CAD (Printout should be a part of progressive assessment). Part III	V	02
15	Draw blocks of 2D entities comprises of Rectangle, Rhombus, Polygon, Circles, Arcs, circular and rectangular array, blocks using AutoCAD(Print out should Be a part of progressive assessment).Part IV	V	02
16	Draw basic branch specific components in 2D using AutoCAD (Print out should be a part of term work). Part I	VI	02
17	Draw complex branch specific components in 2D using AutoCAD (Print should be a part of progressive assessment). Part I	VI	02
	Total		34

SUGGESTED LEARNING RESOURCES

1. Bureau of Indian Standards. *Engineering Drawing Practice for Schools and Colleges IS: Sp-46.* BIS. Government of India, Third Reprint, October 1998; ISBN: 81-7061-091-2.
2. Bhatt, N. D. *Engineering Drawing*. Charotar Publishing House, Anand, Gujrat 2010; ISBN: 978-93-80358-17-8.
3. Jain & Gautam, Engineering Graphics & Design, Khanna Publishing House, New Delhi (ISBN: 978-93-86173-478)
4. Jolhe,D.A.*EngineeringDrawing*.TataMcGrawHillEdu.NewDelhi,2010;ISBN:978-0-07- 064837-1
5. Dhawan, R.K.*Engineering Drawing*.S.ChandandCompany,NewDelhi;ISBN:81-219-1431-0.
6. Shah,P.J. *Engineering Drawing*.S.ChandandCompany,NewDelhi,2008,ISBN:81-219-2964-4.
7. Kulkarni, D.M.; Rastogi, A.P.;Sarkar ,A.K. *Engineering Graphics with Auto CAD*. PHI Learning Private Limited-New Delhi (2010); ISBN: 978-8120337831.
8. Jeyapoovan, T.*Essentials of Engineering Drawing and Graphics using Auto CAD*. VikasPublishing HousePvt. Ltd, Noida, 2011; ISBN: 978-8125953005.
9. Autodesk.*AutoCADUserGuide*.AutodeskPress,USA,2015.
10. Sham, Tickoo. *AutoCAD 2016 for Engineers and Designers*. Dream tech Press; Galgotia Publication, New Delhi, 2015; ISBN 978-9351199113.

Software/Learning Websites

1. https://www.youtube.com/watch?v=TJ4jGyD-WCw
2. https://www.youtube.com/watch?v=dmt6_n7Sgcg
3. https://www.youtube.com/watch?v=_MQScnLXL0M
4. https://www.youtube.com/watch?v=3WXPanCq9LI
5. https://www.youtube.com/watch?v=fvjk7PlxAuo
6. http://www.me.umn.edu/coursesme2011/handouts/engg%20graphics.pdf
7. https://www.machinedesignonline.com

Course Outcomes

Following outcomes will be achieved:

1) Select and construct appropriate drawing scales, use drawing equipment's, and understand Indian Standards of engineering drawing

2) Draw views of given object and components 3) Sketch orthographic projections into isometric projections and vice versa.

3) Apply computer aided drafting tools to create 2D engineering drawings

DIPLOMAWING
RAJIVGANDHIPROUDYOGIKIVISHWAVIDYALAYA,BHOPAL

SEMESTER I–GROUP'A'

COURSE TITLE	:	ENGINEERING WORSHOP PRACTICE
PAPER CODE	:	--
SUBJECT CODE	:	--
TREORY CREDITS	:	00
PRACTICAL CREDITS	:	02

Course Objectives:

- To understand basic engineering processes for manufacturing and assembly.
- To understand, identify, select and use various marking, measuring, and holding, striking and cutting tools and equipment's
- To understand and interpret job drawings, produce jobs, and inspect the job for specified dimensions
- To understand the various types of wiring systems and acquire skills in house wiring
- To understand, operate, control different machines and equipment's adopting safety practices

Course Content:

S.No.	Details Of Practical Content
I	**Carpentry:** i) Demonstration of different wood working tools / machines. ii) Demonstration ofdifferentwoodworkingprocesses,likeplaining,marking,chiseling,grooving,turningof wood etc.iii)One simple job involving any one joint like mortise and tenon dove tail, bridle, Half lap etc.
II	**Fitting:** i) Demonstration of different fitting tools and drilling machines and power tools ii) Demonstration of different operations like chipping, filing, drilling, tapping, sawing, cutting etc iii)One simple fitting job involving practice of chipping, filing, drilling, tapping, cutting etc
III	**Welding:** i) Demonstration of different welding tools/machines. ii) Demonstration on Arc Welding, Gas Welding, MIG, MAG welding, gas cutting and rebuilding of broken parts with welding. iii) One simple job involving butt and lap joint
IV	**Sheet Metal Working:** i) Demonstration of different sheet metal tools / machines. ii) Demonstration of different sheet metal operations like sheet cutting , bending, edging, end curling, lancing, soldering, brazing, and riveting. iii)One simple job involving sheet metal operations and soldering and riveting.
V	**Electrical House Wiring:** Practice on simple lamp circuits (i)one lamp controlled by one switch by surface conduit wiring, (ii)Lamp circuits-connection of lamp and socket by separate switches, (iii)Connection of Fluorescent lamp/ tube light, (iv)simple lamp circuits-in- Stall bedroom lighting. And (v)Simple lamp circuits-install stair case wiring.
VI	**Demonstration:** i) Demonstration o measurement of Current, Voltage, Power and Energy. ii) Demonstration of advance power tools, pneumatic tools, electrical wiring tools and accessories. iii) Tools for Cutting and drilling

References:

2. S.K.Hajara Chaudhary, Workshop Technology, Media Promoters and Publishers, New Delhi, 2015
3. B.S.Raghuwanshi,WorkshopTechnology,DhanpatRaiandsons,NewDelhi2014
4. K.VenkatReddy,WorkshopPracticeManual,BSPublications,Hyderabad2014
5. Kents Mechanical Engineering Handbook, John Wiley and Sons, NewYork

Course outcomes

At the end of the course, the student will be able to:

CO1	Acquire skills in basic engineering practice to identify, select and use various marking, measuring, and holding, striking and cutting tools& equipment's and machines
CO2	Understandjobdrawingandcompletejobsasperspecificationsinallottedtime
CO3	Inspect the job for the desired dimensions and shape
CO4	Operate, control different machines and equipment's adopting safety practices

DIPLOMAWING
RAJIVGANDHIPROUDYOGIKIVISHWAVIDYALAYA,BHOPAL

SEMESTERI–GROUP'A'

COURSE TITLE	:	SPORTS AND YOGA
PAPER CODE	:	--
SUBJECT CODE	:	--
TREORY CREDITS	:	00
PRACTICAL CREDITS	:	01

Course Objectives:

- To make the students understand the importance of sound health and fitness principles as they relate to better health.
- To expose the students to a variety of physical and yogic activities aimed at stimulating their continued inquiry about Yoga, physical education, health and fitness.
- To create a safe, progressive, methodical and efficient activity based plan to enhance improvement and minimize risk of injury.
- To develop among students an appreciation of physical activity as a lifetime pursuit and a means to better health.

Course Content:

- **Introduction to Physical Education**
  - Meaning & definition of Physical Education
  - Aims & Objectives of Physical Education
  - Changing trends in Physical Education
- **Olympic Movement**
  - Ancient & Modern Olympics(Summer& Winter)
  - Olympic Symbols, Ideals, Objectives& Values
  - Awards and Honours in the field of Sports in India(Dronacharya Award, ArjunaAward, Dhayanchand Award, Rajiv Gandhi Khel Ratna Award etc.)
- **Physical Fitness, Wellness& Lifestyle**
  - Meaning &Importance of Physical Fitness& Wellness
  - Components of Physical fitness
  - Components of Health related fitness
  - Components of wellness
  - Preventing Health Threats through Lifestyle Change
  - Concept of Positive Lifestyle

- **Fundamentals of Anatomy & Physiology in Physical Education, Sports and Yoga**
    - Define Anatomy, Physiology& Its Importance
    - Effect of exercise on the functioning of Various Body Systems. (Circulatory System, Respiratory System, Neuro-Muscular System etc.)

- **Kinesiology , Biomechanics & Sports**
    - Meaning & Importance of Kinesiology & Bio mechanics in Physical Edu.& Sports
    - Newton's Law of Motion &its application in sports.
    - Friction and its effects in Sports.
- **Postures**
    - Meaning and Concept of Postures.
    - Causes of Bad Posture.
    - Advantages & disadvantages of weight training.
    - Concept & advantages of Correct Posture.
    - Common Postural Deformities– Knock Knee; Flat Foot; Round Shoulders; Lordosis,
    - Kyphosis, Bow Legs and Scoliosis.
    - Corrective Measures for Postural Deformities

- **Yoga**
    - Meaning & Importance of Yoga
    - Elements of Yoga
    - Introduction-Asanas, Pranayama, Meditation & Yogic Kriyas
    - Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana& Shashankasana)
    - Relaxation Techniques for improving concentration-Yog-nidra
- **Yoga & Lifestyle**
    - Asanasas preventive measures.
    - Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana.
    - Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana.
    - BackPain: Tadasana, ArdhMatsyendrasana, Vakrasana, Shalabhasana, Bhujangasana.
    - Diabetes:Procedure,Benefits&contraindicationsforBhujangasana,Paschimottasana, Pavan Muktasana, Ardh Matsyendrasana.
    - Asthema: Procedure, Benefits& contraindications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana.

- **Training and Planning in Sports**
  - Meaning of Training
  - Warming up and limbering down
  - Skill, Technique & Style
  - Meaning and Objectives of Planning.
  - Tournament–Knock-Out, League/Round Robin & Combination.
- **Psychology & Sports**
  - Definition & Importance of Psychology in Physical Edu. & Sports
  - Define & Differentiate Between Growth &Development
  - Adolescent Problems & Their Management
  - Emotion: Concept, Type & Controlling of emotions
  - Meaning, Concept & Types of Aggressions in Sports.
  - Psychological benefits of exercise.
  - Anxiety & Fear and its effects on Sports Performance.
  - Motivation, its type & techniques.
  - Understanding Stress & Coping Strategies.
  - Doping
    - Meaning and Concept of Doping
    - Prohibited Substances & Methods
    - Side Effects of Prohibited Substances
  - **Sports Medicine**
    - First Aid–Definition, Aims & Objectives.
    - Sports injuries: Classification, Causes & Prevention.
    - Management of Injuries: Soft Tissue Injuries and Bone & Joint Injuries
  - **Sports/Games**

    Following sub topics related to any one Game/Sport of choice of student out of: Athletics, Badminton, Basketball, Chess, Cricket, Kabaddi , Lawn Tennis , Swimming, Table Tennis,

    Volleyball, Yoga etc.
    - History of the Game/Sport.
    - Latest General Rules of the Game/Sport.
    - Specifications of Play Fields and Related Sports Equipment.
    - Important Tournaments and Venues.
    - Sports Personalities.
    - Proper Sports Gear and its Importance.

References:

1. Modern Trends and Physical Education by Prof. Ajmer Singh.
2. Light On Yoga ByB. K. S. Iyengar.
3. Health and Physical Education–NCERT(11thand12thClasses)

Course Outcomes:

On successful completion of the course the students will be able to:

(i) Practice Physical activities and Hatha Yoga focusing on yoga for strength, flexibility, and relaxation.

(ii) Learn techniques for increasing concentration and decreasing anxiety which leads to stronger academic performance.

(iii) Learn breathing exercises and healthy fitness activities

(iv) Understand basic skills associated with yoga and physical activities including strength and flexibility, balance and coordination.

(v) Perform yoga movements in various combination and forms.

(vi) Assess current personal fitness levels.

(vii) Identify opportunities for participation in yoga and sports activities.

(viii) Develop understanding of health-related fitness components: cardio respiratory endurance, flexibility and body composition etc.

(ix) Improve personal fitness through participation in sports and yogic activities.

(x) Develop understanding of psychological problems associated with the age and lifestyle.

(xi) Demonstrate an understanding of sound nutritional practices as related to health and physical performance.

(xii) Assess yoga activities in terms of fitness value.

(xiii) Identify and apply injury prevention principles related to yoga and physical fitness activities.

(xiv) Understand and correctly apply biomechanical and physiological principles related to exercise and training

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INDUCTIONPROGRAM

Please refer Appendix IV for guidelines.

The Essence and Details of Induction program can also be understood from the 'Detailed Guide on Student Induction program', as available on AICTE Portal, although that is for UGstudents of Engineering & Technology
(Link:https://www.aicteindia.org/sites/default/files/Detailed%20Guide%20on%20Student%20Induction%20program.pdf).

Induction program(mandatory)	**Two-week duration**
Induction program for students to be offered right at the start of the first year.	• Physical activity • Creative rts • Universal Human Values • Literary • Proficiency Modules • Lectures by Eminent People • Visits to local Areas • Familiarization to Dept./Branch & Innovations

Appendix - IV

Student Induction Program

STUDENTINDUCTIONPROGRAM

The students will have to undergo a mandatory induction program as part of their Diploma Programme Curriculum right at the start of the first year. The duration of the induction program will beoftwoweekswhereinstudentswillundergoawidevarietyofactivitieswithoutactuallystarting withtheirusualclasses. Normalclasseswillstart only afterthe inductionprogram isover.

Thiswillhelpbuildconfidenceamongthenewstudents,instila senseofconnectandappreciation towards their institution, provide them with the comfortable environment to adjust and pick up friendship with other students, facilitate them to get to know important functionaries and faculty membersof the institution, equip them with human and social values.

TheInductionProgramwillhelpthenewstudentsinbuildingsocialcharacter,leadershipqualities, self-confidence,creativityandappreciationformankindandnatureatlarge.Innutshell,theinduc-tionprogram isenvisagedto give thenew studentsthebroaderfoundationalexperienceforthe life-longsuccess.

Thenewstudents,intheprocess,willgettolearnaboutvariousprocessesandproceduresinplace intheinstitution,facilitiesandbestpractices,studentactivities,andtheculture&valuesprevailing in the institution. The Program is also expected to be used for rectifying some critical lacunas, for example, Communication Skills in English for those students who have deficiency in it. Such students canbeidentifiedbyconductingdiagnostictestsandspecialProficiencyModulescanbeconducted forthem.

Thementor-menteegroupsofthestudentsareformedwitheachgroupcomprisingsmallnumber of students and being associated with a faculty mentor. Then the different activities start with a healthy dailyroutine.

Thesuggestivelistofactivitiesisasmentionedbelow:

- PhysicalActivity
- CreativeArtsandCulture
- Mentoring&UniversalHumanValues
- Familiarizationwiththeinstitution,Dept./Branch
- LiteraryActivity
- ProficiencyModules
- Lectures&WorkshopsbyEminentPeople
- VisitsinLocalArea
- Extra-CurricularActivitiesintheinstitution
- FeedbackandReportontheProgram

InductionProgramSchedule(Suggestiveonly)

Note: Itispresumedthatthefirstyearstudentsaresodividedintotwomajorgroupsthatthenum-berofstudentsineachgroupisalmostequalwithsomebranchesformingpartofGroup-Iwhilethe rest of the branches being part of Group-II.

Time	**Activity**	**Students' Group**	**Venue**
Wholeday	Studentsarrive-Hostelallotment	I&II	
DAY1			
9.30am–10.45am	Mentor-mentee groups - Introduction with-in group.	I	SuitableVenueasper numberofmentor-men-teegroups
	Screening of Institute Documentary Movie; videoclipsofvariousfunctionsandevents	II	Conference/SeminarHall
11.00am–12.15pm	Mentor-mentee groups - Introduction with-in group.	II	Suitable Venue asper number of mentor-men-teegroups
	Screening of Institute Documentary Movie; videoclipsofvariousfunctionsandevents	I	Conference/SeminarHall
12.30pm–2.30pm	Lunch	I&II	RespectiveHostels
3.30pm–5.30pm	InstituteExcursion	I&II	AroundtheCampus
5.30pm–9.30pm	RestandDinner	I&II	RespectiveHostels
DAY2			
6:00am	Wakeupcall	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am–12.30pm	PresentationcumInteractiveSessionwith: Important Institution Functionaries like Principal, HoDs etc.	I	Conference/SeminarHall
	VisittoRespectiveDepartments	II	RespectiveDepartments
12.30pm–2.30pm	Lunch	I&II	RespectiveHostels
2.30pm–5.30pm	PresentationcumInteractiveSessionwith: Important Institution Functionaries like Principal, HoDs etc.	II	Conference/SeminarHall
	VisittoRespectiveDepartments	I	RespectiveDepartments
DAY3			
6:00am	Wakeupcall	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am–10.30am	Diagnostictest(forEnglish)	I&II	Suitablevenueasper strength of students

10.30am–11.00am	Break	I&II	
11.00am–12.30pm	UniversalHumanValues	I(Section wise-)	Suitablevenueasper number of sections
	Creative Arts / Technical Workshops / ProficiencyModules	II(Section wise)	Suitablevenueasper number of sections
12.30pm–2.30pm	Lunch	I&II	RespectiveHostels
2.30pm –4.00pm	UniversalHumanValues	II(Section wise-)	Suitablevenueasper number of sections
	Creative Arts / Technical Workshops / ProficiencyModules	I(Section wise)	Suitablevenueasper number of sections
4.00pm –4.30pm	Break	I&II	
4.30pm –6.30pm	Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists	II	Conference/SeminarHall
	Sports&Games	I	SportsGround
2.30pm –6.30pm	Localvisits	02/03 sections (byrotation)	Historical places in and around the area
6.30pm –9.30pm	RestandDinner	I&II	RespectiveHostels
DAY4			
6:00am	Wakeup call	I&II	RespectiveHostels
6:30am-7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am-9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am–10.30am	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
10.30am–11.00am	Break	I&II	
11.00am–12.00pm	Creative Arts / Technical Workshops / ProficiencyModules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
12.30pm–2.30pm	LunchBreak	I&II	RespectiveHostels
2.30pm –3.30pm	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall

3.30pm–4.30pm	Creative Arts / Technical Workshops / ProficiencyModules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
4.30pm–5.00pm	Break	I&II	
5.00pm–7.00pm	Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists	II	Conference/SeminarHall
	Sports&Games	I	SportsGround
2.30pm–7.00pm	Localvisits	02/03 sections (byrotation)	Historicalplacesinand around the area
7.00pm–9.30pm	RestandDinner	I&II	RespectiveHostels
DAY5			
6:00am	Wakeupcall	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am–10.30am	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
10.30am–11.00am	Break	I&II	
11.00am–12.00pm	Creative Arts / Technical Workshops / ProficiencyModules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
12.30pm–2.30pm	LunchBreak	I&II	RespectiveHostels
2.30pm–3.30pm	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
3.30pm–4.30pm	Creative Arts / Technical Workshops / ProficiencyModules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
4.30pm–5.00pm	Break	I&II	

5.00pm – 7.00pm	Lecture Sessions or Films on Universal HumanValues/Cultural/TalenthuntActivities/PerformancesbyClassicalorfolk artists (coordinated by Students' Clubs and TechnicalSocieties)	I	Conference/SeminarHall
	Sports&Games	II	SportsGround
2.30pm – 7.00pm	Localvisits	02/03 sections (byrotation)	Historical places in and around the area
7.00pm – 9.30pm	RestandDinner	I&II	RespectiveHostels
DAY6			
6:00am	Wakeup call	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am– 10.30am	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
10.30am– 11.00am	Break	I&II	
11.00am– 12.00pm	Creative Arts / Technical Workshops / ProficiencyModules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
12.30pm– 2.30pm	LunchBreak	I&II	RespectiveHostels
2.30pm – 3.30pm	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
3.30pm – 4.30pm	Creative Arts / Technical Workshops / ProficiencyModules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
4.30pm – 5.00pm	Break	I&II	
5.00pm – 7.00pm	Lecture Sessions or Films on Universal HumanValues/Cultural/TalenthuntActivities/PerformancesbyClassicalorfolk artists (coordinated by Students' Clubs and TechnicalSocieties)	II	Conference/SeminarHall
	Sports&Games	I	SportsGround

2.30pm–7.00pm	Localvisits	02/03 sections (byrota-tion)	Historicalplacesinand around the area
7.00pm–9.30pm	RestandDinner	I&II	RespectiveHostels
DAY7			
6:00am	Wakeupcall	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am–10.30am	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
10.30am–11.00am	Break	I&II	
11.00am–12.00pm	Creative Arts / Technical Workshops / Profi-ciencyModules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
12.30pm–2.30pm	LunchBreak	I&II	RespectiveHostels
2.30pm–3.30pm	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
3.30pm–4.30pm	Creative Arts / Technical Workshops / Profi-ciencyModules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
4.30pm–5.00pm	Break	I&II	
5.00pm–7.00pm	Lecture Sessions or Films on Universal HumanValues/Cultural/TalenthuntAc-tivities/PerformancesbyClassicalorfolk artists (coordinated by Students' Clubs and TechnicalSocieties)	I	Conference/SeminarHall
	Sports&Games	II	SportsGround
2.30pm–7.00pm	Localvisits	02/03 sections (byrota-tion)	Historicalplacesinand around the area
7.00pm–9.30pm	RestandDinner	I&II	RespectiveHostels
DAY8			
6:00am	Wakeupcall	I&II	RespectiveHostels

6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am– 10.30am	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
10.30am– 11.00am	Break	I&II	
11.00am– 12.00pm	Creative Arts / Technical Workshops / Proficiency Modules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
12.30pm– 2.30pm	LunchBreak	I&II	RespectiveHostels
2.30pm – 3.30pm	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
3.30pm – 4.30pm	Creative Arts / Technical Workshops / Proficiency Modules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
4.30pm – 5.00pm	Break	I&II	
5.00pm – 7.00pm	Lecture Sessions or Films on Universal HumanValues/Cultural/TalenthuntActivities/PerformancesbyClassicalorfolk artists (coordinated by Students' Clubs and TechnicalSocieties)	II	Conference/SeminarHall
	Sports&Games	I	SportsGround
2.30pm – 7.00pm	Localvisits	02/03 sections (byrotation)	Historical places in and around the area
7.00pm – 9.30pm	RestandDinner	I&II	RespectiveHostels
DAY9			
6:00am	Wakeup call	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels

9.30am–10.30am	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
10.30am–11.00am	Break	I&II	
11.00am–12.00pm	Creative Arts / Technical Workshops / ProficiencyModules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
12.30pm–2.30pm	LunchBreak	I&II	RespectiveHostels
2.30pm–3.30pm	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
3.30pm–4.30pm	Creative Arts / Technical Workshops / ProficiencyModules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
4.30pm–5.00pm	Break	I&II	
5.00pm–7.00pm	Lecture Sessions or Films on Universal HumanValues/Cultural/TalenthuntActivities/PerformancesbyClassicalorfolk artists (coordinated by Students' Clubs and TechnicalSocieties)	I	Conference/SeminarHall
	Sports&Games	II	SportsGround
2.30pm–7.00pm	Localvisits	02/03 sections (byrotation)	Historicalplacesinand around the area
7.00pm–9.30pm	RestandDinner	I&II	RespectiveHostels
DAY10			
6:00am	Wakeupcall	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am–10.30am	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
10.30am–11.00am	Break	I&II	

11.00am–12.00pm	Creative Arts / Technical Workshops / ProficiencyModules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
12.30pm–2.30pm	LunchBreak	I&II	RespectiveHostels
2.30pm –3.30pm	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
3.30pm –4.30pm	Creative Arts / Technical Workshops / ProficiencyModules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
4.30pm –5.00pm	Break	I&II	
5.00pm –7.00pm	Lecture Sessions or Films on Universal HumanValues/Cultural/TalenthuntActivities/PerformancesbyClassicalorfolk artists (coordinated by Students' Clubs and TechnicalSocieties)	II	Conference/SeminarHall
	Sports&Games	I	SportsGround
2.30pm –7.00pm	Localvisits	02/03 sections (byrotation)	Historical places in and around the area
7.00pm –9.30pm	RestandDinner	I&II	RespectiveHostels
DAY11			
6:00am	Wakeup call	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am–10.30am	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
10.30am–11.00am	Break	I&II	
11.00am–12.00pm	Creative Arts / Technical Workshops / ProficiencyModules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
12.30pm–2.30pm	LunchBreak	I&II	RespectiveHostels

2.30pm–3.30pm	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
3.30pm–4.30pm	Creative Arts / Technical Workshops / ProficiencyModules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
4.30pm–5.00pm	Break	I&II	
5.00pm–7.00pm	Lecture Sessions or Films on Universal HumanValues/Cultural/TalenthuntActivities/PerformancesbyClassicalorfolk artists (coordinated by Students' Clubs and TechnicalSocieties)	I	Conference/SeminarHall
	Sports&Games	II	SportsGround
2.30pm–7.00pm	Localvisits	02/03 sections (byrotation)	Historicalplacesinand around the area
7.00pm–9.30pm	RestandDinner	I&II	RespectiveHostels
DAY12			
6:00am	Wakeupcall	I&II	RespectiveHostels
6:30am -7:20am	Physicalactivity(mildexercise/yoga)	I&II	SportsGround
7.30am -9.20am	Bath,Breakfastetc.	I&II	RespectiveHostels
9.30am–10.30am	UniversalHumanValues	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
10.30am–11.00am	Break	I&II	
11.00am–12.00pm	Creative Arts / Technical Workshops / ProficiencyModules	I(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	II	Conference/SeminarHall
12.30pm–2.30pm	LunchBreak	I&II	RespectiveHostels
2.30pm–3.30pm	UniversalHumanValues	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall
3.30pm–4.30pm	Creative Arts / Technical Workshops / ProficiencyModules	II(Section wise)	Suitablevenueasper number of sections
	Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker	I	Conference/SeminarHall

4.30pm – 5.00pm	Break	I&II	
6.00pm – 8.00pm	TalentShowandValedictoryFunction Principal'sAddress	I&II	Suitablevenue(indoor/ outdoor)
8.00pm – 9.30pm	RestandDinner	I&II	RespectiveHostels

Note:

1. Total duration of the Induction Program is two weeks i.e. 12 working days with Saturdays being working and Sundays off.
2. Sundays can be utilized for screening some Patriotic / Socially Significant Movies inthe Jubilee Hall.
3. Facultymentorswouldberequiredtoobtainthefeedbackcumsuggestionsofthe students of their respective groups about the Induction programme on the last day.
4. Coordinatorscanbeassignedforvariousactivitiesduringtheinductionprogramme. Thesuggestivetemplateisasunder:
5.

S.No.	**Nameoftheactivity**	**Coordinators**
1.	Visitstodifferentdepartmentsandaroundthecampus	HoDs
2.	Physical/Sports activities in the Sports Ground (Morning as well as Evening)	InchargeofPhysicalEducation/ Sports
3.	• CreativeArts/TechnicalWorkshops. • Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists. • TalentShowandValedictoryFunction.	InchargeofTechnical/Cultural activities
4.	Presentation cum Interactive Session with Eminent Alumni/EminentSpeaker	Training&PlacementIncharge
5.	UniversalHumanValues	SuitableFacultymembers
6.	ProficiencyModule(English)	FacultyofEnglishlanguage
7.	LocalVisits	Hostel Wardens / Discipline in charge
8.	• Wakeupcall/Hostelrelatedactivities • ArrangementsatValedictoryFunction	ChiefWardens(Boys/Girls)

Scheduleoflocalvisits

Dates	Sections
…	…
…	…
…	…

Note:

1. Thefacultymentors oftherespectivementor-menteegroups/sectionswill accompanythe students on local visits.

2. The Institute buses,ifthere, maybemadeavailableforthepurposeeach dayorsome other arrangements may be made.

3. Attendanceofthestudentsbetakenatthetimeofdepartureandreturn.

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