

BIG Brands Research Excellence Service Award - 2011

LSOFT TECHNOLOGIES, PUNE

Presents

**XI, XII, JEE-MAINS, NEET/MH-CET
TEST SERIES
WITH CLASS NAME AND LOGO**



LSOFT[®] TECHNOLOGIES, PUNE

303, Nilgiri Apts., Opp. S.N.D.T. College, Karve Road, Erandwane,
Pune - 411 004 Ph: 020-25455771, 9370949449, 8421808284, 9423456101
Web : www.Lsoft.co Email : info@Lsoft.co

More than 500 educational organizations are getting benefitted from our software and Services.

To,

The concerned authority,

Respected Sir/Madam,

The world is moving ahead very fast and technology is accelerating this speed. If we do not adopt new technology, we may lag behind the world. The students, especially from the rural area are not introduced to new technology at the right time. That gives a sense of inferiority complex to them. I, being from the rural area, can better understand this fact and I decided to modernize this educational sector with the help of technology and equip students with modern techniques of study. Hence I introduce educational software to the rural & urban area, in year 2002. That was the beginning of Lsoft Technologies.

We also noticed that the time, efforts and energy spent by the teachers of the educational organization in preparing question papers, checking the answer sheets, declaring the result etc. deviate their focus from their core activity i.e. teaching. So we have started offering total solution for competitive examinations. That includes question paper and OMR answer sheets designing, printing, computerized checking of the answer sheets, declaring results, performance analysis of individual student etc. The educational organizations to which we are offering our services saves time, effort and energy as well as cost.

Honesty and sincerity are the two virtues we have been following since the inception of Lsoft Technologies and our achievements speak for the rewards we got by these virtues.

We assure you that we will keep on doing the quality work in the future as well and hope to get the same kind of support from you all.

Thanking you,

Amol Bijwe,
Director,
Lsoft Technologies, Pune
Email: admin@Lsoft.co

ABOUT LSOFT TECHNOLOGIES

VISION

To revolutionize the education sector using the latest Information Technology.

MISSION

To deliver high quality educational products and services.

GOAL

To be the leading solution provider in the education sector.

ABOUT US

Lsoft Technologies is an **ISO 9001:2008** certified company functional in educational arena for last 12 years. It was **incorporated in 2002** with a mission to create state of the art software solutions for domestic as well as international markets using the latest Information Technology to revolutionize the education sector.

CORPORATE PROFILE

Lsoft Technologies is run by young and dynamic Engineers, Management Graduates and Academicians. It combines strong management and infrastructure resources with state of the art technology and a highly skilled and versatile workforce of dedicated software professionals to conceptualize, design, develop and market software solutions for demanding and quality conscious customers.

ACHIEVEMENTS

Within a short period of 12 years, Lsoft Technologies has carved a niche for itself in the fiercely competitive market. It has become the leading educational solutions provider in Maharashtra and neighbouring states. Lsoft has developed a range of quality products for the educational institutes and students and created strong brand image through efficient service and customer satisfaction. In 2011, Lsoft was honored by BIG Brands Research **Excellence Service Award** for its quality services in education sector. Lsoft has designed products both for domestic as well as international markets with its presence in Maharashtra, Goa, Gujarat, M. P., A. P., West Bengal etc. This proves its capabilities and long term commitment to Education Sector.

OUR ESTEEMED CLIENTS

Akola: Samarth Classes, Utkarsha Academy, Nalkande Coaching Classes, Chaudhary's Chemistry Classes
Ambejogai: Yogeshwari Mahavidyalaya, Aditi Classes
Aurangabad: Institute of Physics
Ahemadpur: Mahatma Gandhi College
Ahmednagar: Efforts Academy, Vidyasagar Coaching Classes
Alibag: Gharat Coaching Classes
Baramati: Dnyanjyot Classes, K.C.C., Omkar Academy
Barshi: SC Classes
Buldhana: Bharat Junior College, Anuradha Coaching Classes
Beed: Success Academy, L. P. Shinde Math's Classes, M. J. Coaching Classes
Bhusawal: Math's Life Academy, Yash Coaching Classes, Naval Kundan Classes
Chandrapur: Vision Kota
Dhule: Kirti Classes, Trimurti Classes
Dhamangaon: S.F.L. College
Ichalkaranji: Samarth Classes
Gadhinglaj: Super Tutor's
Gondiya: Foresight Coaching Classes, D. B. Science College
Hingoli: Gatlewar Classes
Jalna: Concept Tutorials
Jalgaon: Vivekanand Coaching Classes, Shah's Mathematics Classes, Mahaveer Coaching Classes, Dhande Coaching Classes
Kagal: Shraddha Coaching Classes
Karad: Deshmukhe's Chemistry Classes, Success Academy
Khamgaon: Smt. Shingne College, Gunjkar Coaching Classes
Kolhapur: Success Academy, Pawar-Patil Classes, Kirti Classes, Abhinav Classes, Yashwant Academy, Marathe Classes
Latur: Joshi's Mathematics Classes, Dayanand College, R.C.C. Coaching Classes
Mumbai : Disha's Classes, Subramaniam's Classes, Milind Group of Tutorials, Chetna Group of Tutorials, Joshi's Group of Tutorials, Mahesh Tutorials, Bhola's Classes, Dani's Classes, Venkatesh Classes, Pioneer Classes, Prof. Nayan Varma's Physics Tutorials, Om Academy, Sonam Tutorials, Vardhaman Academy, Prof. Leena's Chemistry Group Tutorials, Samarth Classes, Velinkar Coaching Academy, Bright Classes, Jakob Classes, Nobel Classes, Aashirwad Classes, Ambition Tutorials, Prof. Avinash's Physics Tutorials, Calyx Academy, Carmel Institute of science, Gurukul Academy, Phoenix Academy, Premier Classes, Prof. Makrand and Prof. Tendulkar Group Tutorials, Prof. Binita Shah's Tutorials, Prof. Hemant Kadam Tutorials, Prof. Kishor Tak Mathematics Private Tutorials, Prof. Swati's Biology Tutorials, Rajesh Tutorials, Prof. Rane's Group Tutorials, S.P. Tutorials, Sanjeev Joshi's Tutorials, Sure Success Tutorials, Vidyabhushan Academy, Ideal Classes, Apex science Academy, Prof. Haresh Shah's Maths Classes, Real Academy, Yashada Group Tutorials, Orbit Science Classes
Malegaon: Gajanan Classes
Nandura: Riddesh Coaching Classes
Nanded: Chowgule's Coaching Classes, Patil Biology Classes, Allwin Academy
Nashik: Upadhye's Classes, Tree Academy, Saraswati Classes
Osmanabad: Shree Coaching Classes
Pune: Sudhir's Classes, Prof. Mugdha Modak's Biology Academy, Bhide's Science Classes, Upadhye's Classes, Prof. Rajan Walwe's Physics Classes, Athawale Classes, Acumen Institute, K. Sangeetraj Classes, Desai Classes, Saptarshi Classes, Dnyanmitra Academy, Exed Intellectual, Accumen Academy, Agrawal Classes, Rajput Classes, Mrs. Pathak's Chemistry Classes
Nagpur: Deshpande Physics Classes
Paratwada: Pravinya Classes
Pusad: Gundewar Coaching Classes, Vivekanand Coaching Classes
Parbhani: Indrayani Study Circle Pandharpur: Dnyanprasad Coaching Classes
Satara: Ambition Classes, Rajani Classes, J.B.M. Computers, Agate Classes, P. Kulkarni Classes, Dnyanpeeth Classes, Avishkar Classes, Marg Academy
Solapur: Shraddha Science Classes
Sangli: Naik Classes, Kulkarni Classes, Mirajkar Classes, Kawthekar Classes, Suyash Classes, Samyak Academy
Udgir: Shri Physics Classes
Wardha: Dynamic Coaching Classes, Sarade Classes, Sharma's Mathematics Classes,
Washim: Nakhale Classes, Vidya Bharti College, J.C. High School, Karanja etc.....

More than 500 educational institutes are getting benefitted from our software and services

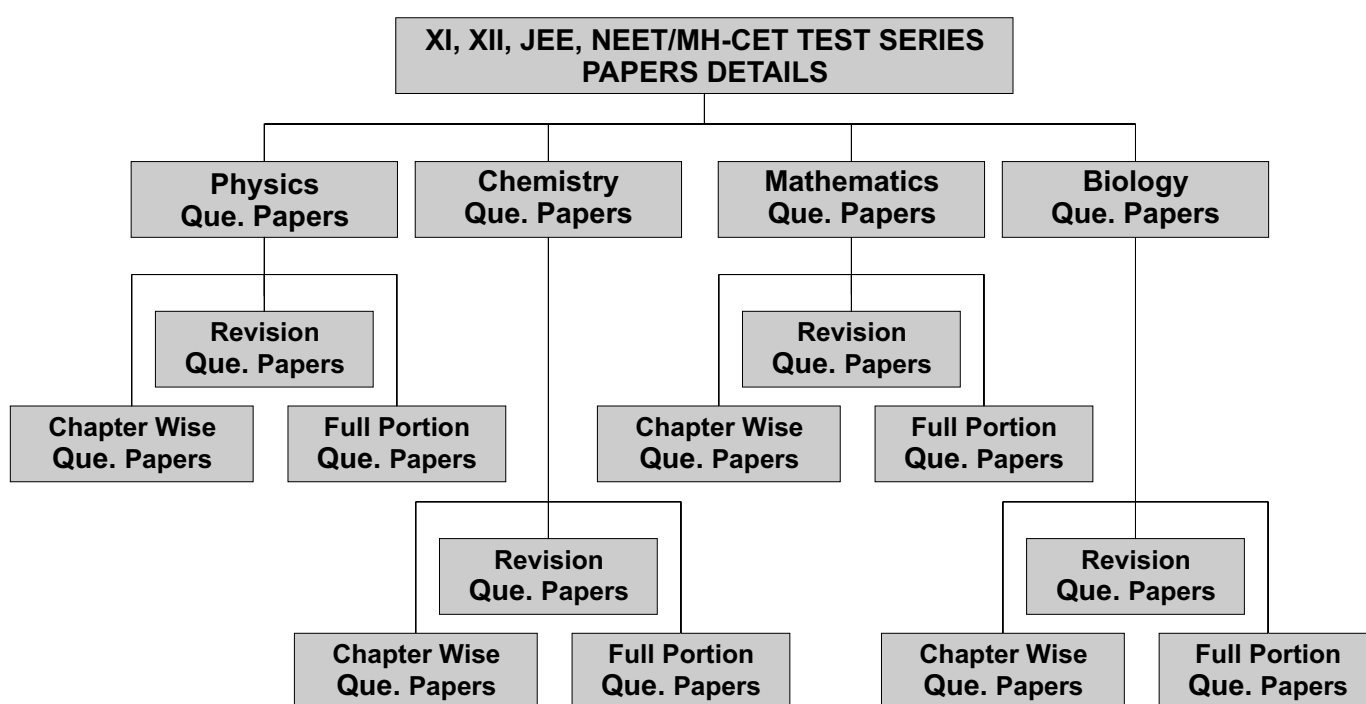
LSOFT TEST SERIES

Unique concept of test series designed especially for educational institutes, which will give you freedom from tedious job of Question paper setting for **XI, XII, JEE and NEET/ MH-CET** examinations. **Experienced professors** have designed this test series to suit **current competitive environment**. Test series will be provided with your **Institute Name** and **Watermark** to give a personal touch.

SALIENT FEATURES

- **Master Copy** of question papers and OMR answer sheets with your **Institute Name** and **Logo**.
- **Experienced professors** have designed **Quality** question papers with **hints** and **solutions**.
- Govt. Standard **OMR answer sheet** with your **Class Name** and **Logo (FREE)**.
- Save the time of **questions selection** and **data entry** operation.
- Get rid of **proof reading** and **question paper designing** job.
- **Cost Effective** and **Time Saving** solution.
- **High quality** printed question papers. Provided at once so that can be used any time as per your requirement.

TEST SERIES DETAILS



ADVANTAGES OF TEST SERIES AND OMR CHECKING SERVICES

EDUCATIONAL INSTITUTE

- **Provides National Level Test Series to your students.**
- Get rid of the headache of test conducting activity (making question paper, proof reading, checking, printing and processing the result)
- Know the strong / weak areas of students, which can help to chalk out proper teaching plan.
- Provides a professional testing environment to the students to evaluate their ability so that desired improvement is achieved.
- Standardized tests would provide better information to educational institutes.

By outsourcing test conduction process, the educational institutes are able to show proper result to parents. It would also help in building a more progressive image of the institute, which in turn attracts more students.

STUDENTS

BENEFITS FROM QUESTION PAPER SOLVING

- **REDUCES FEAR OF JEE-MAINS / MH-CET EXAM** - By following final examination pattern throughout the year, students will get rid of final examination fear.
- **IMPROVES CONFIDENCE LEVEL** - By regular test practice, student's confidence will improve remarkably.
- **IMPROVES KNOWLEDGE** - Regular solving of question papers helps to improve knowledge.
- **IMPROVES TIME MANAGEMENT SKILL** - Help students to improve time management skill and also help them to complete every question in predefined time limit.
- **BUILDS POSITIVE ATTITUDE.**

BENEFITS FROM OMR ANSWER SHEET SOLVING

- **IMPROVES AWARENESS**- Helps to know what is Version Number, Booklet Number, Test Number and what is their importance and how to fill them on OMR Answer Sheets.
- **IMPROVES QUALITY & ACCURACY** - Quality and accuracy are important factors while filling circles of OMR sheet and this test series helps students to be expert.
- **RELIEVES STRESS** - Many times different types of OMR Sheets create stress and confusion in student's mind. The regular practice helps them to overcome stress and confusion.

BENEFITS FROM ALL REPORTS

- **FINDING WEAKNESS** - Reports provided post OMR answer sheet assessment, help students to find out their weakness (Weak Subject, Chapter etc)
- **FINDING OUT TECHNICAL MISTAKES** - Usually students make many mistakes while filling OMR answer sheets, OMR reports help students to identify their mistakes and correct them which indirectly help them to improve their final score.
- **INCREASES COMPETITIVENESS** - Ranking reports help students to know where they stand which improve competitiveness.
- **SELF ASSESSMENT** - Performance Reports help students to assess their own performance.

IDEAL PROGRAM FOR STUDENTS WHO INTEND TO GET PREPARED FOR COMPETITIVE EXAMS.

YOU CAN START THESE TEST SERIES IN SCHOOL/COLLEGE OF YOUR CITY.

SAMPLE QUESTION PAPER

CLASS NAME & LOGO

XII-JEE (MAINS)-YEAR

Topic Names: Circular motion

Test Number

000001

Write/Check this Code on your
Answer Sheet

Test Booklet No.

110001

Write this number on your
Answer Sheet

: IMPORTANT INSTRUCTIONS :

01. Immediately fill in the particulars on this page of the Test Booklet with **Blue/Black Ball point Pen**. Use of pencil is strictly prohibited.
02. The Answer Sheet is kept inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully.
03. The test is of 60 **Min.** duration.
04. The Test Booklet consists of **30** questions. The maximum marks are **120**. All the Ques. consists of **FOUR (4)** marks each.
05. **PHYSICS- 30 Ques. (120 marks).**
06. Candidates will be awarded marks as stated above in Instruction No.5 for correct response of each question. $\frac{1}{4}$ (one-fourth) marks will be deducted for indicating incorrect response of each question. **No deduction** from the total score will be made **if no response** is indicated for an item in the Answer Sheet.
07. Use **Blue/Black Ball Point Pen only** for writing particulars/markings responses on **Side-1** and **Side-2** of the Answer Sheet. **Use of pencil is strictly prohibited.**
08. No candidate is allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, any electronic device, etc., except the Admit Card inside the examination hall/room.
09. Rough work is to be done on the space provided for this purpose in the Test Booklet only. This space is given at the bottom of each page of the booklet.
10. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. **However, the candidates are allowed to take away this Test Booklet with them.**
11. The CODE for this Booklet is **A**. Make Sure that the CODE printed on **Side-2** of the Answer Sheet is the same as that on this booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
12. Do not fold or make any stray marks on the Answer Sheet.
13. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.

Name of the Candidate : _____

Roll Number : In figures :

--	--	--	--	--	--	--	--	--	--

In words : _____

Examination Centre Number :

--	--	--	--	--	--

Name of Examination Centre (in Capital letters) : _____

Candidate's Signature : _____

Invigilator's Signature : _____

1. The angle turned by a body undergoing circular motion depends on time as

$$\theta = \theta_0 + \theta_1 t + \theta_2 t^2.$$

Then the angular acceleration of the body is

- (1) θ_1 (2) θ_2
(3) $2\theta_1$ (4) $2\theta_2$

2. The maximum and minimum tension in the string whirling in a circle of radius 2.5 m with constant velocity are in the ratio 5 : 3 then its velocity is

- (1) 7 m/s (2) $\sqrt{98}$ m/s
(3) $\sqrt{4.9}$ (4) $\sqrt{490}$ m/s

3. A bucket full of water is revolved in vertical circle of radius 2m. What should be the maximum time-period of revolution so that the water doesn't fall off the bucket

- (1) 1 sec (2) 2 sec
(3) 3 sec (4) 6 sec

4. The coordinates of a moving particle at any time 't' are given by $x = \alpha t^3$ and $y = \beta t^3$. The speed of the particle at time 't' is given by

- (1) $\sqrt{\alpha^2 + \beta^2}$ (2) $t^2 \sqrt{\alpha^2 + \beta^2}$
(3) $3t^2 \sqrt{\alpha^2 + \beta^2}$ (4) $3t \sqrt{\alpha^2 + \beta^2}$

5. A simple pendulum oscillates in a vertical plane. When it passes through the mean position, the tension in the string is 3 times the weight of the pendulum bob. What is the maximum displacement of the pendulum of the string with respect to the vertical

- (1) 10° (2) 45°
(3) 60° (4) 90°

6. A stone of mass m is tied to a string and is moved in a vertical circle of radius r making n revolutions per minute. The total tension in the string when the stone is at its lowest point is

- (1) mg (2) $m(g + \pi n r)$
(3) $m(g + \pi n r^2)$ (4) $m\{g + (\pi^2 n^2 r) / 900\}$

7. A stone tied with a string, is rotated in a vertical circle. The minimum speed with which the string has to be rotated

- (1) Is independent of the length of the string
(2) Is independent of the mass of the stone
(3) Decreases with increasing in length of the string
(4) Decreases with increasing mass of the stone

8. A fan is making 600 revolutions per minute. If after some time it makes 1200 revolutions per minute, then increase in its angular velocity is

- (1) 10π rad/sec (2) 20π rad/sec
(3) 40π rad/sec (4) 50π rad/sec

9. The tension in the string revolving in a vertical circle with a mass m at the end which is at the lowest position

- (1) mg
(2) $\frac{mv^2}{r} + mg$
(3) $\frac{mv^2}{r} - mg$
(4) $\frac{mv^2}{r}$

10. If the equation for the displacement of a particle moving on a circular path is given by $(\theta) = 2t^3 + 0.5$, where θ is in radians and t in seconds, then the angular velocity of the particle after 2 sec from its start is

- (1) 8 rad/sec (2) 12 rad/sec
(3) 24 rad/sec (4) 48 rad/sec

11. A weightless thread can bear tension upto 3.7 kg wt. A stone of mass 500 gms is tied to it and revolved in a circular path of radius 4 m in a vertical plane. If $g = 10\text{ms}^{-2}$, then the maximum angular velocity of the stone will be

- (1) 2 radians/sec
(2) $\sqrt{21}$ radians/sec
(3) 16 radians/sec
(4) 4 radians/sec

12. A weightless thread can support tension upto 30 N. A stone of mass 0.5 kg is tied to it and is revolved in a circular path of radius 2 m in a vertical plane. If $g = 10\text{m/s}^2$, then the maximum angular velocity of the stone will be

- (1) 10 rad/s (2) $\sqrt{60}$ rad/s
(3) $\sqrt{30}$ rad/s (4) 5 rad/s

13. A 2 kg stone at the end of a string 1 m long is whirled in a vertical circle at a constant speed. The speed of the stone is 4 m/sec. The tension in the string will be 52 N, when the stone is

- (1) Halfway down
(2) At the bottom of the circle
(3) At the top of the circle
(4) None of the above

14. A wheel is subjected to uniform angular acceleration about its axis. Initially its angular velocity is zero. In the first 2 sec, it rotates through an angle θ_1 . In the next 2 sec, it rotates through an additional angle θ_2 . The ratio of θ_2 / θ_1 is

- (1) 1 (2) 2
(3) 3 (4) 4

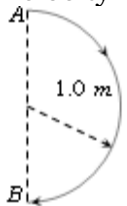
15. In a circus stuntman rides a motorbike in a circular track of radius R in the vertical plane. The minimum speed at highest point of track will be

- (1) $2gR$ (2) $\sqrt{2gR}$
(3) \sqrt{gR} (4) $\sqrt{3gR}$

16. If the length of the second's hand in a stop clock is 3 cm the angular velocity and linear velocity of the tip is

- (1) 0.2547 rad/sec., 0.314 m/sec
(2) 0.2047 rad/sec., 0.0314 m/sec
(3) 0.1047 rad/sec., 0.00314 m/sec
(4) 0.1472 rad/sec., 0.06314 m/sec

17. In 1.0 s, a particle goes from point A to point B, moving in a semicircle of radius 1.0 m (see figure). The magnitude of the average velocity is



- (1) Zero (2) 1.0 m/s
(3) 2.0 m/s (4) 3.14 m/s

18. A person with his hands in his pockets is skating on ice at the velocity of 10 m/s and describes a circle of radius 50 m. What is his inclination with vertical

- (1) $\tan^{-1}\left(\frac{1}{5}\right)$ (2) $\tan^{-1}(1)$
(3) $\tan^{-1}\left(\frac{3}{5}\right)$ (4) $\tan^{-1}\left(\frac{1}{10}\right)$

19. A bob of mass 10 kg is attached to wire 0.3 m long. Its breaking stress is 4.8×10^7 N/m². The area of cross section of the wire is 10^{-6} m². The maximum angular velocity with which it can be rotated in a horizontal circle

- (1) 1 rad/sec (2) 2 rad/sec
(3) 4 rad/sec (4) 8 rad/sec

20. A cyclist goes round a circular path of circumference 34.3 m in $\sqrt{22}$ sec. the angle made by him, with the vertical, will be
(1) 40° (2) 45°
(3) 48° (4) 42°

21. If a particle covers half the circle of radius R with constant speed then

- (1) Change in K.E. is zero
(2) Change in K.E. is mv^2
(3) Change in K.E. is $1/2 mv^2$
(4) Momentum change is mvr

22. A wheel completes 2000 revolutions to cover the 9.5 km. distance. then the diameter of the wheel is

- (1) 1.5 cm (2) 1.5 m
(3) 7.5 m (4) 7.5 cm

23. If a particle of mass m is moving in a horizontal circle of radius r with a centripetal force $(-k/r^2)$, the total energy is

- (1) $-\frac{k}{r}$ (2) $-\frac{k}{2r}$
(3) $-\frac{4k}{r}$ (4) $-\frac{2k}{r}$

24. Radius of the curved road on national highway is R . Width of the road is b . The outer edge of the road is raised by h with respect to inner edge so that a car with velocity v can pass safe over it. The value of h is

- (1) $\frac{v}{Rg}$ (2) $\frac{v^2 b}{Rg}$
(3) $\frac{v^2 b}{R}$ (4) $\frac{v^2 R}{g}$

25. A particle of mass m is executing uniform circular motion on a path of radius r . If p is the magnitude of its linear momentum. The radial force acting on the particle is

- (1) $\frac{rm}{p}$ (2) pmr
(3) $\frac{p^2}{rm}$ (4) $\frac{mp^2}{r}$

26. The length of second's hand in a watch is 1 cm. The change in velocity of its tip in 15 seconds is

- (1) $\frac{\pi\sqrt{2}}{30}$ cm/sec (2) $\frac{\pi}{30}$ cm/sec
(3) $\frac{\pi}{30\sqrt{2}}$ cm/sec (4) Zero

27. A car is moving on a circular path and takes a turn. If R_1 and R_2 be the reactions on the inner and outer wheels respectively, then

- (1) $R_1 \geq R_2$ (2) $R_1 > R_2$
(3) $R_1 < R_2$ (4) $R_1 = R_2$

28. Two bodies of mass 10 kg and 5 kg moving in concentric orbits of radii R and r such that their periods are the same. Then the ratio between their centripetal acceleration is

- (1) r/R (2) R/r
(3) r^2/R^2 (4) R^2/r^2

29. A particle P is moving in a circle of radius 'a' with a uniform speed v . C is the centre of the circle and AB is a diameter. When passing through B the angular velocity of P about A and C are in the ratio

- (1) 1 : 1 (2) 1 : 2
(3) 2 : 1 (4) 4 : 1

30. Two racing cars of masses m_1 and m_2 are moving in circles of radii r_1 and r_2 respectively. Their speeds are such that each makes a complete circle in the same duration of time t . The ratio of the angular speed of the first to the second car is

- (1) $r_1 : r_2$ (2) $m_1 : m_2$
(3) $m_1 r_1 : m_2 r_2$ (4) 1 : 1

CLASS NAME & YEAR

SAMPLE SOLUTIONS

CLASS NAME & LOGO

TOPIC NAME: Circular motion

Test No. : 000001

1. Ans: (4) $2\theta_2$

Sol: Angular acceleration = $\frac{d^2\theta}{dt^2} = 2\theta_2$

2. Ans: (2) $\sqrt{98}$ m/s

Sol: In this problem it is assumed that particle although moving in a vertical loop but its speed remain constant.

Tension at lowest point $T_{\max} = \frac{mv^2}{r} + mg$

Tension at highest point $T_{\min} = \frac{mv^2}{r} - mg$

$$\frac{T_{\max}}{T_{\min}} = \frac{\frac{mv^2}{r} + mg}{\frac{mv^2}{r} - mg} = \frac{5}{3}$$

by solving we get, $v = \sqrt{4gr} = \sqrt{4 \times 9.8 \times 2.5} = \sqrt{98}$ m/s

3. Ans: (3) 3 sec

Sol: Minimum angular velocity $\omega_{\min} = \sqrt{g/R}$

$$\therefore T_{\max} = \frac{2\pi}{\omega_{\min}} = 2\pi \sqrt{\frac{R}{g}} = 2\pi \sqrt{\frac{2}{10}} = 2\sqrt{2} \approx 3s$$

4. Ans: (3) $3t^2 \sqrt{\alpha^2 + \beta^2}$

Sol: $x = \alpha t^3$ and $y = \beta t^3$ (given)

$$v_x = \frac{dx}{dt} = 3\alpha t^2 \text{ and } v_y = \frac{dy}{dt} = 3\beta t^2$$

Resultant velocity = $v = \sqrt{v_x^2 + v_y^2} = 3t^2 \sqrt{\alpha^2 + \beta^2}$

5. Ans: (4) 90°

Sol: Tension at mean position,

$$mg + \frac{mv^2}{r} = 3mg$$

$$v = \sqrt{2gl} \quad \dots(i)$$

and if the body displaces by angle θ with the vertical then $v = \sqrt{2gl(1 - \cos\theta)}$... (ii)

Comparing (i) and (ii), $\cos\theta = 0 \Rightarrow \theta = 90^\circ$

6. Ans: (4) $m\{g + (\pi^2 n^2 r)/900\}$

Sol: $T = mg + m\omega^2 r = m\{g + 4\pi^2 n^2 r\}$

$$= m \left\{ g + \left(4\pi^2 \left(\frac{n}{60} \right)^2 r \right) \right\} = m \left\{ g + \left(\frac{\pi^2 n^2 r}{900} \right) \right\}$$

7. Ans: (2) Is independent of the mass of the stone

Sol: Is independent of the mass of the stone

8. Ans: (2) 20π rad/sec

Sol: Increment in angular velocity

$$\omega = 2\pi(n_2 - n_1)$$

$$\omega = 2\pi(1200 - 600) \frac{\text{rad}}{\text{min}} = \frac{2\pi \times 600}{60} \frac{\text{rad}}{\text{s}}$$

$$= 20\pi \frac{\text{rad}}{\text{s}}$$

9. Ans: (2) $\frac{mv^2}{r} + mg$

Sol: Tension = Centrifugal force + weight

$$= \frac{mv^2}{r} + mg$$

10. Ans: (3) 24 rad/sec

Sol: $\omega = \frac{d\theta}{dt} = \frac{d}{dt}(2t^3 + 0.5) = 6t^2$

at $t = 2$ s, $\omega = 6 \times (2)^2 = 24 \text{ rad/s}$

11. Ans: (4) 4 radians/sec

Sol: Max. tension that string can bear = 3.7 kgwt = 37N

Tension at lowest point of vertical loop = $mg + m\omega^2 r$

$$= 0.5 \times 10 + 0.5 \times \omega^2 \times 4 = 5 + 2\omega^2$$

$$37 = 5 + 2\omega^2 \Rightarrow \omega = 4 \text{ rad/s.}$$

12. Ans: (4) 5 rad/s

Sol: $T_{\max} = m\omega_{\max}^2 r + mg \Rightarrow \frac{T_{\max}}{m} = \omega^2 r + g$

$$\Rightarrow \frac{30}{0.5} - 10 = \omega_{\max}^2 r \Rightarrow$$

$$\omega_{\max} = \sqrt{\frac{50}{r}} = \sqrt{\frac{50}{2}} = 5 \text{ rad/s}$$

13. Ans: (2) At the bottom of the circle

Sol: $mg = 20\text{N}$ and $\frac{mv^2}{r} = \frac{2 \times (4)^2}{1} = 32\text{N}$

It is clear that 52 N tension will be at the bottom of the circle. Because we know that

$$T_{\text{Bottom}} = mg + \frac{mv^2}{r}$$

14. Ans: (3) 3

Sol: Using relation $\theta = \omega_0 t + \frac{1}{2} \alpha t^2$

$$\theta_1 = \frac{1}{2}(\alpha)(2)^2 = 2\alpha \quad \dots(i) \quad (\text{As } \omega_0 = 0, t = 2 \text{ sec})$$

Now using same equation for $t=4$ sec, $\omega_0 = 0$

$$\theta_1 + \theta_2 = \frac{1}{2} \alpha (4)^2 = 8\alpha \quad \dots(ii)$$

From (i) and (ii), $\theta_1 = 2\alpha$ and $\theta_2 = 6\alpha$ $\frac{\theta_2}{\theta_1} = 3$

15. Ans: (3) \sqrt{gR}

Sol: Minimum speed at the highest point of vertical circular path $v = \sqrt{gR}$

16. Ans: (3) 0.1047 rad/sec., 0.00314 m/sec

$$\text{Sol: } \omega = \frac{2\pi}{T} = \frac{2\pi}{60} = 0.1047 \text{ rad/s}$$

$$\text{and } v = \omega r = 0.1047 \times 3 \times 10^{-2} = 0.00314 \text{ m/s}$$

17. Ans: (3) 2.0 m/s

Sol: Average

$$\text{velocity} = \frac{\text{Total displacement}}{\text{time}} = \frac{2m}{1s} = 2 \text{ ms}^{-1}$$

18. Ans: (1) $\tan^{-1}\left(\frac{1}{5}\right)$

Sol: The inclination of person from vertical is given by,

$$\tan \theta = \frac{v^2}{rg} = \frac{(10)^2}{50 \times 10} = \frac{1}{5} \quad \theta = \tan^{-1}(1/5)$$

19. Ans: (3) 4 rad/sec

Sol: Centripetal force = breaking force

$$\Rightarrow m\omega^2 r = \text{breaking stress} \times \text{cross sectional area}$$

$$\Rightarrow m\omega^2 r = p \times A \Rightarrow$$

$$\omega = \sqrt{\frac{p \times A}{mr}} = \sqrt{\frac{4.8 \times 10^7 \times 10^{-6}}{10 \times 0.3}}$$

$$\omega = 4 \text{ rad/sec}$$

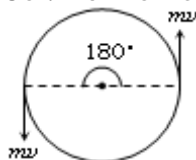
20. Ans: (2) 45°

$$\text{Sol: } 2\pi r = 34.3 \Rightarrow r = \frac{34.3}{2\pi} \text{ and } v = \frac{2\pi r}{T} = \frac{2\pi r}{\sqrt{22}}$$

$$\text{Angle of binding } \theta = \tan^{-1}\left(\frac{v^2}{rg}\right) = 45^\circ$$

21. Ans: (1) Change in K.E. is zero

Sol: As momentum is vector quantity



change in momentum

$$\Delta P = 2mv \sin(\theta/2) = 2mv \sin(90^\circ) = 2mv$$

But kinetic energy remains always constant so change in kinetic energy is zero.

22. Ans: (2) 1.5 m

Sol: Distance covered in 'n' revolution = $n 2\pi r = n\pi D$

$$\Rightarrow 2000\pi D = 9500 \quad [\text{As } n = 2000, \text{ distance} =$$

$$9500 \text{ m}] \Rightarrow D = \frac{9500}{2000 \times \pi} = 1.5 \text{ m}$$

23. Ans: (2) $-\frac{k}{2r}$

$$\text{Sol: } \frac{mv^2}{r} = \frac{k}{r^2} \Rightarrow mv^2 = \frac{k}{r} \quad \text{K.E.} = \frac{1}{2}mv^2 = \frac{k}{2r}$$

$$\text{P.E.} = \int F dr = \int \frac{k}{r^2} dr = -\frac{k}{r}$$

$$\text{Total energy} = \text{K.E.} + \text{P.E.} = \frac{k}{2r} - \frac{k}{r} = -\frac{k}{2r}$$

24. Ans: (2) $\frac{v^2 b}{Rg}$

Sol: We know that $\tan \theta = \frac{v^2}{Rg}$ and $\tan \theta = \frac{h}{b}$

$$\text{Hence } \frac{h}{b} = \frac{v^2}{Rg} \Rightarrow h = \frac{v^2 b}{Rg}$$

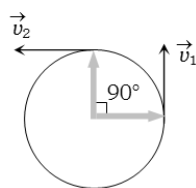
25. Ans: (3) $\frac{p^2}{rm}$

Sol: Radial force = $\frac{mv^2}{r} = \frac{m}{r} \left(\frac{p}{m}\right)^2 = \frac{p^2}{mr}$ [As $p = mv$]

26. Ans: (1) $\frac{\pi\sqrt{2}}{30}$ cm/sec

Sol: In 15 second's hand rotate through 90°.

Change in velocity $|\Delta v| = 2v \sin(\theta/2)$



$$= 2(v) \sin(90^\circ/2) = 2 \times 1 \times \frac{2\pi}{T} \times \frac{1}{\sqrt{2}}$$

$$= \frac{4\pi}{60\sqrt{2}} = \frac{\pi\sqrt{2}}{30} \text{ cm/sec} \quad [\text{As } T = 60 \text{ sec}]$$

27. Ans: (3) $R_1 < R_2$

Sol: Reaction on inner wheel

$$R_1 = \frac{1}{2}M \left[g - \frac{v^2 h}{ra} \right]$$

$$\text{Reaction on outer wheel } R_2 = \frac{1}{2}M \left[g + \frac{v^2 h}{ra} \right]$$

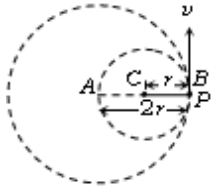
where, r = radius of circular path, $2a$ = distance between two wheels and h = height of centre of gravity of car.

28. Ans: (2) R/r

$$\text{Sol: } \frac{a_R}{a_r} = \frac{\omega_R^2 \times R}{\omega_r^2 \times r} = \frac{T_r^2}{T_R^2} \times \frac{R}{r} = \frac{R}{r} \quad [\text{As } T_r = T_R]$$

29. Ans: (2) 1 : 2

Sol: Angular velocity of particle P about point A ,



$$\omega_A = \frac{v}{r_{AB}} = \frac{v}{2r}$$

Angular velocity of particle P about point C ,

$$\omega_C = \frac{v}{r_{BC}} = \frac{v}{r}$$

$$\text{Ratio } \frac{\omega_A}{\omega_C} = \frac{v/2r}{v/r} = \frac{1}{2}$$

30. Ans: (4) 1 : 1

Sol: As time periods are equal therefore ratio of angular speeds will be same. $\omega = \frac{2\pi}{T}$

JEE-MAINS / MH-CET

NAME : _____	CODE : _____																						
ROLL NUMBER	CENTRE NO.	TEST BOOKLET NO.	EXAM NAME																				
<table border="1" style="width: 100%; height: 20px;"> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>									<table border="1" style="width: 100%; height: 20px;"> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>					<table border="1" style="width: 100%; height: 20px;"> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>									JEE-MAINS
INSTRUCTIONS																							
CORRECT METHOD <input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4																							
WRONG METHOD <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>																							

<table border="1" style="width: 100%; height: 100%;"> <tr><td>001</td><td>SAMPLE SAMPLE</td></tr> <tr><td>002</td><td>SAMPLE SAMPLE</td></tr> <tr><td>003</td><td>SAMPLE SAMPLE</td></tr> <tr><td>004</td><td>SAMPLE SAMPLE</td></tr> <tr><td>005</td><td>SAMPLE SAMPLE</td></tr> <tr><td>006</td><td>SAMPLE SAMPLE</td></tr> <tr><td>007</td><td>SAMPLE SAMPLE</td></tr> <tr><td>008</td><td>SAMPLE SAMPLE</td></tr> <tr><td>009</td><td>SAMPLE SAMPLE</td></tr> <tr><td>010</td><td>SAMPLE SAMPLE</td></tr> <tr><td>011</td><td>SAMPLE SAMPLE</td></tr> <tr><td>012</td><td>SAMPLE SAMPLE</td></tr> <tr><td>013</td><td>SAMPLE SAMPLE</td></tr> <tr><td>014</td><td>SAMPLE SAMPLE</td></tr> <tr><td>015</td><td>SAMPLE SAMPLE</td></tr> <tr><td>016</td><td>SAMPLE SAMPLE</td></tr> <tr><td>017</td><td>SAMPLE SAMPLE</td></tr> <tr><td>018</td><td>SAMPLE SAMPLE</td></tr> <tr><td>019</td><td>SAMPLE SAMPLE</td></tr> <tr><td>020</td><td>SAMPLE SAMPLE</td></tr> <tr><td>021</td><td>SAMPLE SAMPLE</td></tr> <tr><td>022</td><td>SAMPLE SAMPLE</td></tr> <tr><td>023</td><td>SAMPLE SAMPLE</td></tr> <tr><td>024</td><td>SAMPLE SAMPLE</td></tr> <tr><td>025</td><td>SAMPLE SAMPLE</td></tr> <tr><td>026</td><td>SAMPLE SAMPLE</td></tr> <tr><td>027</td><td>SAMPLE SAMPLE</td></tr> <tr><td>028</td><td>SAMPLE SAMPLE</td></tr> <tr><td>029</td><td>SAMPLE SAMPLE</td></tr> <tr><td>030</td><td>SAMPLE SAMPLE</td></tr> </table>	001	SAMPLE SAMPLE	002	SAMPLE SAMPLE	003	SAMPLE SAMPLE	004	SAMPLE SAMPLE	005	SAMPLE SAMPLE	006	SAMPLE SAMPLE	007	SAMPLE SAMPLE	008	SAMPLE SAMPLE	009	SAMPLE SAMPLE	010	SAMPLE SAMPLE	011	SAMPLE SAMPLE	012	SAMPLE SAMPLE	013	SAMPLE SAMPLE	014	SAMPLE SAMPLE	015	SAMPLE SAMPLE	016	SAMPLE SAMPLE	017	SAMPLE SAMPLE	018	SAMPLE SAMPLE	019	SAMPLE SAMPLE	020	SAMPLE SAMPLE	021	SAMPLE SAMPLE	022	SAMPLE SAMPLE	023	SAMPLE SAMPLE	024	SAMPLE SAMPLE	025	SAMPLE SAMPLE	026	SAMPLE SAMPLE	027	SAMPLE SAMPLE	028	SAMPLE SAMPLE	029	SAMPLE SAMPLE	030	SAMPLE SAMPLE	<table border="1" style="width: 100%; height: 100%;"> <tr><td>031</td><td>SAMPLE SAMPLE</td></tr> <tr><td>032</td><td>SAMPLE SAMPLE</td></tr> <tr><td>033</td><td>SAMPLE SAMPLE</td></tr> <tr><td>034</td><td>SAMPLE SAMPLE</td></tr> <tr><td>035</td><td>SAMPLE SAMPLE</td></tr> <tr><td>036</td><td>SAMPLE SAMPLE</td></tr> <tr><td>037</td><td>SAMPLE SAMPLE</td></tr> <tr><td>038</td><td>SAMPLE SAMPLE</td></tr> <tr><td>039</td><td>SAMPLE SAMPLE</td></tr> <tr><td>040</td><td>SAMPLE SAMPLE</td></tr> <tr><td>041</td><td>SAMPLE SAMPLE</td></tr> <tr><td>042</td><td>SAMPLE SAMPLE</td></tr> <tr><td>043</td><td>SAMPLE SAMPLE</td></tr> <tr><td>044</td><td>SAMPLE SAMPLE</td></tr> <tr><td>045</td><td>SAMPLE SAMPLE</td></tr> <tr><td>046</td><td>SAMPLE SAMPLE</td></tr> <tr><td>047</td><td>SAMPLE SAMPLE</td></tr> <tr><td>048</td><td>SAMPLE SAMPLE</td></tr> <tr><td>049</td><td>SAMPLE SAMPLE</td></tr> <tr><td>050</td><td>SAMPLE SAMPLE</td></tr> <tr><td>051</td><td>SAMPLE SAMPLE</td></tr> <tr><td>052</td><td>SAMPLE SAMPLE</td></tr> <tr><td>053</td><td>SAMPLE SAMPLE</td></tr> <tr><td>054</td><td>SAMPLE SAMPLE</td></tr> <tr><td>055</td><td>SAMPLE SAMPLE</td></tr> <tr><td>056</td><td>SAMPLE SAMPLE</td></tr> <tr><td>057</td><td>SAMPLE SAMPLE</td></tr> <tr><td>058</td><td>SAMPLE SAMPLE</td></tr> <tr><td>059</td><td>SAMPLE SAMPLE</td></tr> <tr><td>060</td><td>SAMPLE SAMPLE</td></tr> </table>	031	SAMPLE SAMPLE	032	SAMPLE SAMPLE	033	SAMPLE SAMPLE	034	SAMPLE SAMPLE	035	SAMPLE SAMPLE	036	SAMPLE SAMPLE	037	SAMPLE SAMPLE	038	SAMPLE SAMPLE	039	SAMPLE SAMPLE	040	SAMPLE SAMPLE	041	SAMPLE SAMPLE	042	SAMPLE SAMPLE	043	SAMPLE SAMPLE	044	SAMPLE SAMPLE	045	SAMPLE SAMPLE	046	SAMPLE SAMPLE	047	SAMPLE SAMPLE	048	SAMPLE SAMPLE	049	SAMPLE SAMPLE	050	SAMPLE SAMPLE	051	SAMPLE SAMPLE	052	SAMPLE SAMPLE	053	SAMPLE SAMPLE	054	SAMPLE SAMPLE	055	SAMPLE SAMPLE	056	SAMPLE SAMPLE	057	SAMPLE SAMPLE	058	SAMPLE SAMPLE	059	SAMPLE SAMPLE	060	SAMPLE SAMPLE	<table border="1" style="width: 100%; height: 100%;"> <tr><td>061</td><td>SAMPLE SAMPLE</td></tr> <tr><td>062</td><td>SAMPLE SAMPLE</td></tr> <tr><td>063</td><td>SAMPLE SAMPLE</td></tr> <tr><td>064</td><td>SAMPLE SAMPLE</td></tr> <tr><td>065</td><td>SAMPLE SAMPLE</td></tr> <tr><td>066</td><td>SAMPLE SAMPLE</td></tr> <tr><td>067</td><td>SAMPLE SAMPLE</td></tr> <tr><td>068</td><td>SAMPLE SAMPLE</td></tr> <tr><td>069</td><td>SAMPLE SAMPLE</td></tr> <tr><td>070</td><td>SAMPLE SAMPLE</td></tr> <tr><td>071</td><td>SAMPLE SAMPLE</td></tr> <tr><td>072</td><td>SAMPLE SAMPLE</td></tr> <tr><td>073</td><td>SAMPLE SAMPLE</td></tr> <tr><td>074</td><td>SAMPLE SAMPLE</td></tr> <tr><td>075</td><td>SAMPLE SAMPLE</td></tr> <tr><td>076</td><td>SAMPLE SAMPLE</td></tr> <tr><td>077</td><td>SAMPLE SAMPLE</td></tr> <tr><td>078</td><td>SAMPLE SAMPLE</td></tr> <tr><td>079</td><td>SAMPLE SAMPLE</td></tr> <tr><td>080</td><td>SAMPLE SAMPLE</td></tr> <tr><td>081</td><td>SAMPLE SAMPLE</td></tr> <tr><td>082</td><td>SAMPLE SAMPLE</td></tr> <tr><td>083</td><td>SAMPLE SAMPLE</td></tr> <tr><td>084</td><td>SAMPLE SAMPLE</td></tr> <tr><td>085</td><td>SAMPLE SAMPLE</td></tr> <tr><td>086</td><td>SAMPLE SAMPLE</td></tr> <tr><td>087</td><td>SAMPLE SAMPLE</td></tr> <tr><td>088</td><td>SAMPLE SAMPLE</td></tr> <tr><td>089</td><td>SAMPLE SAMPLE</td></tr> <tr><td>090</td><td>SAMPLE SAMPLE</td></tr> </table>	061	SAMPLE SAMPLE	062	SAMPLE SAMPLE	063	SAMPLE SAMPLE	064	SAMPLE SAMPLE	065	SAMPLE SAMPLE	066	SAMPLE SAMPLE	067	SAMPLE SAMPLE	068	SAMPLE SAMPLE	069	SAMPLE SAMPLE	070	SAMPLE SAMPLE	071	SAMPLE SAMPLE	072	SAMPLE SAMPLE	073	SAMPLE SAMPLE	074	SAMPLE SAMPLE	075	SAMPLE SAMPLE	076	SAMPLE SAMPLE	077	SAMPLE SAMPLE	078	SAMPLE SAMPLE	079	SAMPLE SAMPLE	080	SAMPLE SAMPLE	081	SAMPLE SAMPLE	082	SAMPLE SAMPLE	083	SAMPLE SAMPLE	084	SAMPLE SAMPLE	085	SAMPLE SAMPLE	086	SAMPLE SAMPLE	087	SAMPLE SAMPLE	088	SAMPLE SAMPLE	089	SAMPLE SAMPLE	090	SAMPLE SAMPLE
001	SAMPLE SAMPLE																																																																																																																																																																																					
002	SAMPLE SAMPLE																																																																																																																																																																																					
003	SAMPLE SAMPLE																																																																																																																																																																																					
004	SAMPLE SAMPLE																																																																																																																																																																																					
005	SAMPLE SAMPLE																																																																																																																																																																																					
006	SAMPLE SAMPLE																																																																																																																																																																																					
007	SAMPLE SAMPLE																																																																																																																																																																																					
008	SAMPLE SAMPLE																																																																																																																																																																																					
009	SAMPLE SAMPLE																																																																																																																																																																																					
010	SAMPLE SAMPLE																																																																																																																																																																																					
011	SAMPLE SAMPLE																																																																																																																																																																																					
012	SAMPLE SAMPLE																																																																																																																																																																																					
013	SAMPLE SAMPLE																																																																																																																																																																																					
014	SAMPLE SAMPLE																																																																																																																																																																																					
015	SAMPLE SAMPLE																																																																																																																																																																																					
016	SAMPLE SAMPLE																																																																																																																																																																																					
017	SAMPLE SAMPLE																																																																																																																																																																																					
018	SAMPLE SAMPLE																																																																																																																																																																																					
019	SAMPLE SAMPLE																																																																																																																																																																																					
020	SAMPLE SAMPLE																																																																																																																																																																																					
021	SAMPLE SAMPLE																																																																																																																																																																																					
022	SAMPLE SAMPLE																																																																																																																																																																																					
023	SAMPLE SAMPLE																																																																																																																																																																																					
024	SAMPLE SAMPLE																																																																																																																																																																																					
025	SAMPLE SAMPLE																																																																																																																																																																																					
026	SAMPLE SAMPLE																																																																																																																																																																																					
027	SAMPLE SAMPLE																																																																																																																																																																																					
028	SAMPLE SAMPLE																																																																																																																																																																																					
029	SAMPLE SAMPLE																																																																																																																																																																																					
030	SAMPLE SAMPLE																																																																																																																																																																																					
031	SAMPLE SAMPLE																																																																																																																																																																																					
032	SAMPLE SAMPLE																																																																																																																																																																																					
033	SAMPLE SAMPLE																																																																																																																																																																																					
034	SAMPLE SAMPLE																																																																																																																																																																																					
035	SAMPLE SAMPLE																																																																																																																																																																																					
036	SAMPLE SAMPLE																																																																																																																																																																																					
037	SAMPLE SAMPLE																																																																																																																																																																																					
038	SAMPLE SAMPLE																																																																																																																																																																																					
039	SAMPLE SAMPLE																																																																																																																																																																																					
040	SAMPLE SAMPLE																																																																																																																																																																																					
041	SAMPLE SAMPLE																																																																																																																																																																																					
042	SAMPLE SAMPLE																																																																																																																																																																																					
043	SAMPLE SAMPLE																																																																																																																																																																																					
044	SAMPLE SAMPLE																																																																																																																																																																																					
045	SAMPLE SAMPLE																																																																																																																																																																																					
046	SAMPLE SAMPLE																																																																																																																																																																																					
047	SAMPLE SAMPLE																																																																																																																																																																																					
048	SAMPLE SAMPLE																																																																																																																																																																																					
049	SAMPLE SAMPLE																																																																																																																																																																																					
050	SAMPLE SAMPLE																																																																																																																																																																																					
051	SAMPLE SAMPLE																																																																																																																																																																																					
052	SAMPLE SAMPLE																																																																																																																																																																																					
053	SAMPLE SAMPLE																																																																																																																																																																																					
054	SAMPLE SAMPLE																																																																																																																																																																																					
055	SAMPLE SAMPLE																																																																																																																																																																																					
056	SAMPLE SAMPLE																																																																																																																																																																																					
057	SAMPLE SAMPLE																																																																																																																																																																																					
058	SAMPLE SAMPLE																																																																																																																																																																																					
059	SAMPLE SAMPLE																																																																																																																																																																																					
060	SAMPLE SAMPLE																																																																																																																																																																																					
061	SAMPLE SAMPLE																																																																																																																																																																																					
062	SAMPLE SAMPLE																																																																																																																																																																																					
063	SAMPLE SAMPLE																																																																																																																																																																																					
064	SAMPLE SAMPLE																																																																																																																																																																																					
065	SAMPLE SAMPLE																																																																																																																																																																																					
066	SAMPLE SAMPLE																																																																																																																																																																																					
067	SAMPLE SAMPLE																																																																																																																																																																																					
068	SAMPLE SAMPLE																																																																																																																																																																																					
069	SAMPLE SAMPLE																																																																																																																																																																																					
070	SAMPLE SAMPLE																																																																																																																																																																																					
071	SAMPLE SAMPLE																																																																																																																																																																																					
072	SAMPLE SAMPLE																																																																																																																																																																																					
073	SAMPLE SAMPLE																																																																																																																																																																																					
074	SAMPLE SAMPLE																																																																																																																																																																																					
075	SAMPLE SAMPLE																																																																																																																																																																																					
076	SAMPLE SAMPLE																																																																																																																																																																																					
077	SAMPLE SAMPLE																																																																																																																																																																																					
078	SAMPLE SAMPLE																																																																																																																																																																																					
079	SAMPLE SAMPLE																																																																																																																																																																																					
080	SAMPLE SAMPLE																																																																																																																																																																																					
081	SAMPLE SAMPLE																																																																																																																																																																																					
082	SAMPLE SAMPLE																																																																																																																																																																																					
083	SAMPLE SAMPLE																																																																																																																																																																																					
084	SAMPLE SAMPLE																																																																																																																																																																																					
085	SAMPLE SAMPLE																																																																																																																																																																																					
086	SAMPLE SAMPLE																																																																																																																																																																																					
087	SAMPLE SAMPLE																																																																																																																																																																																					
088	SAMPLE SAMPLE																																																																																																																																																																																					
089	SAMPLE SAMPLE																																																																																																																																																																																					
090	SAMPLE SAMPLE																																																																																																																																																																																					

SIGNATURE OF CANDIDATE	Before submitting the Answer Sheet, Candidate / Invigilator should check that Roll No., Centre No. & Test Booklet No. Have been filled in and marked correctly.	SIGNATURE OF INVIGILATOR
------------------------	--	--------------------------

XI-STD TEST SERIES SCHEDULE

XI-PHYSICS (JEE-MAINS & MH-CET)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	411101	Measurement	30	120
2	411102	Scalars and Vectors	30	120
3	411103	Projectile motion	30	120
4	411104	Force	30	120
5	411105	Friction in solids and liquids	30	120
6	411106	Sound Waves	30	120
7	411107	Thermal properties of matter	30	120
8	411108	Refraction of Light	30	120
9	411109	Ray optics	30	120
10	411110	Electrostatics	30	120
11	411111	Current electricity	30	120
12	411112	Magnetic effect of electric current	30	120
13	411113	Magnetism	30	120
14	411114	Electromagnetic waves	30	120

XI-CHEMISTRY (JEE-MAINS & MH-CET)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	411201	Some Basic Concepts of Chemistry	30	120
2	411202	States of matter : Gases and liquids	30	120
3	411203	Structure of atom	30	120
4	411204	Periodic table	30	120
5	411205	Redox reaction	30	120
6	411206	Chemical equilibrium	30	120
7	411207	Surface chemistry	30	120
8	411208	Nature of chemical bond	30	120
9	411209	Hydrogen	30	120
10	411210	s-Block elements (group 1 & 2)	30	120
11	411211	p-Block elements (group 13 & 14)	30	120
12	411212	Basic principles and techniques in organic chemistry	30	120
13	411213	Alkanes	30	120
14	411214	Alkenes	30	120
15	411215	Alkynes	30	120
16	411216	Aromatic compounds	30	120
17	411217	Environmental chemistry	30	120

XI-BIOLOGY (MH-CET)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	411301	Diversity in organisms	60	240
2	411302	Kingdom Plantae	60	240
3	411303	Biochemistry of cell	60	240
4	411304	Cell Division	60	240
5	411305	Morphology of Plants	60	240
6	411306	Pant Water Relations and Mineral Nutrition	60	240
7	411307	Plant Growth and Development	60	240
8	411308	Kingdom Animalia	60	240
9	411309	Organization of Cell	60	240
10	411310	Study of Animal Tissues	60	240
11	411311	Study of Animal Type	60	240
12	411312	Human Nutrition	60	240
13	411313	Human Respiration	60	240
14	411314	Human skeleton and Locomotion	60	240

XI-MATHEMATICS (JEE-MAINS)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	411401	Angle & Measurement	30	120
2	411402	Trigonometric function	30	120
3	411403	Trigonometric functions of compound angles &	30	120
4	411404	Locus	30	120
5	411405	Straight Line	30	120
6	411406	Circle and Conics	30	120
7	411407	Vectors & Linear Inequations	30	120
8	411408	Determinants	30	120
9	411409	Matrices	30	120
10	411410	Sets, Relations and Functions	30	120
11	411411	Logarithms	30	120
12	411412	Complex Numbers	30	120
13	411413	Sequences & Series	30	120
14	411414	Permutations & combinations	30	120
15	411415	Mathematical Induction and Binomial Theorem	30	120
16	411416	Limits	30	120
17	411417	Differentiation	30	120
18	411418	Integration	30	120
19	411419	Statistics	30	120
20	411420	Probability	30	120

We will provide all above tests with your BRANDING (CLASS NAME).

XII-STD TEST SERIES SCHEDULE

XII-PHYSICS (JEE-MAINS & MH-CET)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	412101	Circular motion	30	120
2	412102	Gravitation	30	120
3	412103	Rotational motion	30	120
4	412104	Oscillations	30	120
5	412105	Elasticity	30	120
6	412106	Surface tension	30	120
7	412107	Wave motion	30	120
8	412108	Stationary waves	30	120
9	412109	Kinetic theory of gases	30	120
10	412110	Wave theory of light	30	120
11	412111	Interference and diffraction	30	120
12	412112	Electrostatics	30	120
13	412113	Current electricity	30	120
14	412114	Magnetic effects of electric current	30	120
15	412115	Magnetism	30	120
16	412116	Electromagnetic inductions	30	120
17	412117	Electrons and photons	30	120
18	412118	Atoms, Molecules and Nuclei	30	120
19	412119	Semiconductors	30	120
20	412120	Communication systems	30	120

XII-CHEMISTRY (JEE-MAINS & MH-CET)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	412201	Solid State	30	120
2	412202	Solutions and colligative properties	30	120
3	412203	Chemical thermodynamics and energetic	30	120
4	412204	Electrochemistry	30	120
5	412205	Chemical kinetics	30	120
6	412206	General principles and processes of isolation of elements	30	120
7	412207	p-Block elements (Group - 15, 16, 17, 18)	30	120
8	412208	d and f Block Elements	30	120
9	412209	Coordination compounds	30	120
10	412210	Halogen derivatives of alkanes	30	120
11	412211	Alcohols, phenols and ethers	30	120
12	412212	Aldehydes, ketones and carboxylic acids	30	120
13	412213	Organic compounds containing nitrogen	30	120
14	412214	Biomolecules	30	120
15	412215	Polymers	30	120
16	412216	Chemistry in everyday life	30	120

XII-BIOLOGY (MH-CET)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	412301	Genetic Basis of Inheritance	60	240
2	412302	Gene: its nature, expression and regulation	60	240
3	412303	Biotechnology: Process and Application	60	240
4	412304	Enhancement in Food Production	60	240
5	412305	Microbes in Human Welfare	60	240
6	412306	Photosynthesis	60	240
7	412307	Respiration	60	240
8	412308	Reproduction in Plants	60	240
9	412309	Organisms and Environment	60	240
10	412310	Origin and the Evolution of Life	60	240
11	412311	Chromosomal Basis of Inheritance	60	240
12	412312	Genetic Engineering and Genomics	60	240
13	412313	Human Health and Diseases	60	240
14	412314	Animal Husbandry	60	240
15	412315	Circulation	60	240
16	412316	Excretion and osmoregulation	60	240
17	412317	Control and Co-ordination	60	240
18	412318	Human Reproduction	60	240
19	412319	Organisms and Environment	60	240

XII-MATHEMATICS (JEE-MAINS)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	412401	Mathematical Logic	30	120
2	412402	Matrices	30	120
3	412403	Trigonometric functions	30	120
4	412404	Pair of straight lines	30	120
5	412405	Circle	30	120
6	412406	Conics	30	120
7	412407	Vectors	30	120
8	412408	Three dimensional geometry	30	120
9	412409	Line	30	120
10	412410	Plane	30	120
11	412411	Linear programming problems	30	120
12	412412	Continuity	30	120
13	412413	Differentiation	30	120
14	412414	Applications of derivative	30	120
15	412415	Integration	30	120
16	412416	Applications of definite integral	30	120
17	412417	Differential equation	30	120
18	412418	Statistics	30	120
19	412419	Probability distribution	30	120
20	412420	Bernoulli trials and Binomial distribution	30	120

We will provide all above tests with your BRANDING (CLASS NAME).

JEE-MAINS TEST SERIES SCHEDULE

Test No.	Test Name	Chapter Wise Test	Q. No.	Marks
412001	Physics	Physics and Measurement	01 to 30	120
	Chemistry	Some Basic Concepts, States of matter (Gaseous, Liquid, Solid), Atomic Structure	31 to 60	120
	Maths	Sets, Relations and Functions	61 to 90	120
412002	Chemistry	Chemical Bonding and Molecular Structure	01 to 30	120
	Maths	Complex Numbers, Quadratic Equations	31 to 60	120
	Physics	Kinematics	61 to 90	120
412003	Maths	Matrices and Determinants	01 to 30	120
	Physics	Laws of Motion, Impulse And Momentum	31 to 60	120
	Chemistry	Energetics and Chemical Thermodynamics	61 to 90	120
412004	Physics	Work, Energy and Power	01 to 30	120
	Chemistry	Solutions	31 to 60	120
	Maths	Permutations and Combinations	61 to 90	120
412005	Chemistry	Chemical Equilibrium, Ionic Equilibrium	01 to 30	120
	Maths	Mathematical Induction and Its Application	31 to 60	120
	Physics	Rotational Motion	61 to 90	120
412006	Maths	Binomial Theorem and Its Application	01 to 30	120
	Physics	Gravitation	31 to 60	120
	Chemistry	Redox Reactions, Electrochemistry	61 to 90	120
412007	Physics	Real Solids & Liquids, Surface Tension	01 to 30	120
	Chemistry	Chemical Kinetics	31 to 60	120
	Maths	Sequence and Series	61 to 90	120
412008	Chemistry	Surface Chemistry	01 to 30	120
	Maths	Limit, Continuity & Differentiability	31 to 60	120
	Physics	Heat and Thermodynamics	61 to 90	120
412009	Maths	Derivatives, Application of Derivatives	01 to 30	120
	Physics	Kinetic Theory of gases	31 to 60	120
	Chemistry	Classification of elements, Periodicity in Properties, Basic Principles of Extractive Metallurgy	61 to 90	120
412010	Physics	Waves, Oscillations, Simple Harmonic Motion	01 to 30	120
	Chemistry	Hydrogen And Its Compounds	31 to 60	120
	Maths	Integral Calculus (Definite, Indefinite, Area Under Simple Curves)	61 to 90	120
412011	Chemistry	s-Block elements (Elements Of Group 1 and 2 and their compounds)	01 to 30	120
	Maths	Differential Equations	31 to 60	120
	Physics	Electrostatics	61 to 90	120
412012	Maths	Rectangular Co-ordinates - The Straight and Pair of Straight Lines	01 to 30	120
	Physics	Current electricity	31 to 60	120
	Chemistry	p-Block Elements (Elements Of Group 13, 14, 15, 16, 17, 18 and their compounds)	61 to 90	120

412013	Physics	Magnetostatics (Magnetism & Magnetic Effects of Current)	01 to 30	120
	Chemistry	d And f Block Elements And Their Compounds	31 to 60	120
	Maths	Circles and System of Circles	61 to 90	120
412014	Chemistry	Co-ordination Compounds And Organometallics	01 to 30	120
	Maths	Conic Section - 1) Parabola 2) Hyperbola 3) Ellipse	31 to 60	120
	Physics	Electromagnetic Induction, Alternating Currents	61 to 90	120
412015	Maths	Three Dimensional Geometry	01 to 30	120
	Physics	Electromagnetic Waves	31 to 60	120
	Chemistry	Environmental Chemistry	61 to 90	120
412016	Physics	Optics	01 to 30	120
	Chemistry	Purification and Characterisation of Organic Compounds, General Organic Chemistry Principles, Hydrocarbons	31 to 60	120
	Maths	Vectors	61 to 90	120
412017	Chemistry	Organic Compounds Containing Halogens, Alkyl And Arylhalides	01 to 30	120
	Maths	Statistics and Probability	31 to 60	120
	Physics	Dual Nature of Matter and Radiation	61 to 90	120
412018	Maths	Trigonometry	01 to 30	120
	Physics	Atoms and Nuclei, Modern Physics	31 to 60	120
	Chemistry	Alcohols, Phenols and Ethers, Aldehydes and Ketones, Carboxylic Acids and their derivatives	61 to 90	120
412019	Physics	Electronic Devices	01 to 30	120
	Chemistry	Amines, Diazonium salts	31 to 60	120
	Maths	Inverse Trigonometric Functions, Heights and Distances	61 to 90	120
412020	Chemistry	Polymers, Biomolecules, Chemistry in every day life, Principles related to practical chemistry	01 to 30	120
	Maths	Mathematical Reasoning	31 to 60	120
	Physics	Communication Systems, Experimental Skills	61 to 90	120

JEE-MAINS Full Portion Test Schedule

412021	PCM	Full Length Test Series- 1	01 to 90	360
412022	PCM	Full Length Test Series- 2	01 to 90	360
412023	PCM	Full Length Test Series- 3	01 to 90	360
412024	PCM	Full Length Test Series- 4	01 to 90	360
412025	PCM	Full Length Test Series- 5	01 to 90	360
412026	PCM	Full Length Test Series- 6	01 to 90	360
412027	PCM	Full Length Test Series- 7	01 to 90	360
412028	PCM	Full Length Test Series- 8	01 to 90	360
412029	PCM	Full Length Test Series- 9	01 to 90	360
412030	PCM	Full Length Test Series- 10	01 to 90	360

We will provide all above tests with your BRANDING (CLASS NAME).

AIPMT TEST SERIES SCHEDULE

PHYSICS (AIPMT)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	413101	Physical World & Measurement	45	180
2	413102	Kinematics	45	180
3	413103	Laws of Motion	45	180
4	413104	Syllabus of Test No. 1 to 3	45	180
5	413105	Work, Energy and Power	45	180
6	413106	Motion of Sys. of Particles & Rigid Body & Gravitation	45	180
7	413107	Properties of Bulk Matter	45	180
8	413108	Syllabus of Test No. 5 to 7	45	180
9	413109	Thermodynamics, Kinetic Theory & Perfect Gas	45	180
10	413110	Oscillation and Waves	45	180
11	413111	Electrostatics	45	180
12	413112	Syllabus of Test No. 9 to 11	45	180
13	413113	Current Electricity	45	180
14	413114	Magnetic Effects of Current & Magnetism	45	180
15	413115	Electromagnetic Induction, Waves & Alternating Current	45	180
16	413116	Syllabus of Test No. 13 to 15	45	180
17	413117	Optics	45	180
18	413118	Dual Nature of Matter & Radiation, Atoms and Nuclei	45	180
19	413119	Electronic Devices	45	180
20	413120	Syllabus of Test No. 17 to 19	45	180
21	413121	Syllabus of Test No. 1 to 03	45	180
22	413122	Syllabus of Test No. 1 to 07	45	180
23	413123	Syllabus of Test No. 1 to 11	45	180
24	413124	Syllabus of Test No. 1 to 15	45	180
25	413125	Syllabus of Test No. 1 to 20	45	180

CHEMISTRY (AIPMT)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	413201	Some Basic Concepts of Chemistry & Structure of Atom	45	180
2	413202	Classification of Elements and Periodicity in Properties & Chemical Bonding and Molecular Structure	45	180
3	413203	Organic Chemistry – Some Basic Principles and Techniques & Hydrocarbons	45	180
4	413204	Syllabus of Test No. 1 to 3	45	180
5	413205	States of Matter: Gases and Liquids & Thermodynamics	45	180
6	413206	Equilibrium & Redox Reactions	45	180
7	413207	Solid State & Solutions	45	180
8	413208	Syllabus of Test No. 5 to 7	45	180
9	413209	Haloalkanes and Haloarenes and Alcohols, Phenols and Ethers	45	180
10	413210	Aldehydes, Ketones and Carboxylic Acids	45	180
11	413211	Electrochemistry	45	180
12	413212	Syllabus of Test No. 9 to 11	45	180
13	413213	Chemical Kinetics & Surface Chemistry	45	180
14	413214	Organic Compounds Containing Nitrogen, Biomolecules, Polymers & Chemistry in Everyday Life	45	180
15	413215	Hydrogen & General Principles & Processes of Isolation of Elements	45	180

16	413216	Syllabus of Test No. 13 to 15	45	180
17	413217	s – Block Element & d and f Block Elements	45	180
18	413218	p – Block Elements (11th + 12th)	45	180
19	413219	Coordination Compounds and Environmental Chemistry	45	180
20	413220	Syllabus of Test No. 17 to 19	45	180
21	413221	Syllabus of Test No. 1 to 03	45	180
22	413222	Syllabus of Test No. 1 to 07	45	180
23	413223	Syllabus of Test No. 1 to 11	45	180
24	413224	Syllabus of Test No. 1 to 15	45	180
25	413225	Syllabus of Test No. 1 to 20	45	180

BIOLOGY (AIPMT)

Sr. No.	Test No.	Chapter Name	Test Ques.	Marks
1	413301	Diversity in Living World	45	180
2	413302	Structural Organisation in Animals and Plants	45	180
3	413303	Cell Structure and Function	45	180
4	413304	Syllabus of Test No. 1 to 3	45	180
5	413305	Plant Physiology (Transport in Plants, Mineral Nutrition, Plant Growth & Development)	45	180
6	413306	Plant Physiology (Photosynthesis, Respiration)	45	180
7	413307	Human Physiology (Digestion & Absorption, Breathing & Respiration, Body Fluids & Circulation)	45	180
8	413308	Syllabus of Test No. 5 to 7	45	180
9	413309	Human Physiology (Excretory Products & their Elimination, Locomotion & Movement, Neural Control & Coordination, Chemical Coordination & Regulation)	45	180
10	413310	Reproduction (Reproduction in Organisms, Sexual Reproduction in Flowering Plants)	45	180
11	413311	Reproduction (Human Reproduction, Reproductive Health)	45	180
12	413312	Syllabus of Test No. 9 to 11	45	180
13	413313	Genetics & Evolution (Heredity & Variation, Molecular Basis of Inheritance)	45	180
14	413314	Genetics & Evolution (Evolution) & Biology & Human Welfare (Health & Disease)	45	180
15	413315	Biology & Human Welfare (Improvement in Food Production, Microbes in Human welfare)	45	180
16	413316	Syllabus of Test No. 13 to 15	45	180
17	413317	Biotechnology & its Applications	45	180
18	413318	Ecology & Environment (Ecosystem, Biodiversity & Conservation)	45	180
19	413319	Ecology & Environment (Organisms & Environment, Environmental Issues)	45	180
20	413320	Syllabus of Test No. 17 to 19	45	180
21	413321	Syllabus of Test No. 1 to 03	45	180
22	413322	Syllabus of Test No. 1 to 07	45	180
23	413323	Syllabus of Test No. 1 to 11	45	180
24	413324	Syllabus of Test No. 1 to 15	45	180
25	413325	Syllabus of Test No. 1 to 20	45	180

AIPMT Full Portion Test (PCB)

26-30	26 to 30	5-Full portion Test (413326-413330)	180	720
-------	----------	---------------------------------------	-----	-----

We will provide all tests with your Branding (Class Name and Logo).

ONLINE EXAMINATIONS

In today's cyber age, all major competitive examinations are conducted online. To give the students practice of online Examinations and understand the different rules and regulations of various online examinations, we have started online examination service. The educational institutes can conduct these examinations under the **CLASS NAME**.

SALIENT FEATURES

- **Test pattern - Chapter wise, Group wise, Full Portion and Special Tests**
- **The teachers can generate the online test as per their requirement for the students.**
- **The tests can be given Anytime, Anywhere (Coaching Centre, Home, Cyber Café, Laptop, Tab etc.).**
- **Unlimited number of practice tests**
- **Huge question banks with Hints and Solutions prepared by the experts**
- **Institute Administrator can view the result / ranking of each student.**
- **The administrator or students can print reports at their end.**
- **Student can analyze their individual performance in Multiple Formats with rankings at Different levels instantly.**



**FOR DEMO TESTS
LOG ON**

www.testkatta.com

OTHER SOFTWARE AND SERVICES

Lsoft Technologies provides software and services to educational institutes, colleges, schools, coaching centers from last 12 years. **LSOFT** has provided customized study material, test series, daily practice tests, online test series etc. to hundreds of educational institutes.

The SOFTWARE and SERVICES, we provide to educational institutes are

- **ONLINE DYNAMIC PAPER SETTER (ODPS)**
- **CLASS MANAGEMENT SYSTEM (CMS)**
- **OMR ANSWER SHEET CHECKER (OMR)**
- **SMS MANAGEMENT SYSTEM (SMS)**
- **ONLINE TEST SERIES WITH YOUR BRAND NAME**

The STUDY MATERIAL, we provide to educational institutes are

- **Printed study package (Books and Notes) for XI, XII, Engineering and Medical Entrance Examinations...**
- **Study package and Test Series for CRASH COURSE of JEE-MAINS, NEET/MH-CET**
- **Daily practice problem sheets**
- **Test series for N.T.S.E., JEE (MAINS & ADVANCED), MH-CET/NEET ...**
- **Study Package for VIII Foundation, IX Foundation and X Foundation (IIT)**

All packages also available with your **Institute's Name and Logo**, so that you get personalised packages without any worries and that too at very affordable price. Apart from saving money, it also saves your time, so that you can concentrate more on core teaching activities.

OMR SOFTWARE AND SERVICES (For JEE-MAINS, MH-CET/NEET, MPSC, CA-CPT etc)

In today's competitive world, accuracy and quality is most important factor, but manual process of checking OMR Answer sheet do not generate the accurate result. Lsoft Technologies has come up with the concept of computerized checking of OMR Answer Sheet that generates the accurate result same as OMR machines used in the final exams. Lsoft OMR Software and Answer sheet checking services are designed to help speed up the OMR answer sheet checking process and generate the accurate and quality result. Lsoft Technologies are offering OMR services so that students' confidence level, accuracy, time management skill and the ability of self analysis will improve. We are rendering OMR services to many Government and Private Organizations also.

We will provide all STUDY MATERIAL and TEST SERIES with your branding.

For details

Contact : Sarang: 8421808284, Mahesh : 9370949449 Email: info@Lsoft.co