



NITP

SAMPLE PAPER

for 2 Years [Engg./Medical]

Time: 3 Hours

Maximum Marks: 360

*Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.
You are not allowed to leave the Examination Hall before the end of the test.*

INSTRUCTIONS

1. The question paper consists of **4 parts (Mental Ability, Physics, Chemistry and Maths/Biology)**.
2. The test is of **3 hours** duration and consists of **120 questions**. Each question has 4 / 5 choices (A), (B), (C), (D) and (E), out of which **ONLY ONE** is correct.
3. Each question carries **3 marks**. For each correct response the candidate will get **3 marks**. For each incorrect response, **one mark** will be deducted.
4. Use **HB+ pencil** only for writing particles on the page / marking responses.
5. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
6. **On completion of the test, the candidate must handover the Test Booklet & Answer Sheet to the invigilator in the Room/Hall.**
7. Use of Electronic /Manual Calculator is prohibited.

Name of the Candidate (in Capitals): _____

Father / Guardian Name (in Capitals): _____

Present Address: _____

Ph. No. (Guardian): _____

Ph. No. (Student): _____

Candidate's Signature: _____

Invigilator's Signature _____

Admission for : Ranchi Centre Patna Centre
(✓ relevant)

SECTION – I [MENTAL ABILITY]

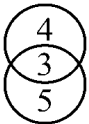
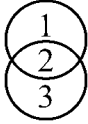
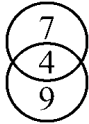
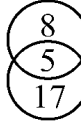
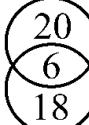
Directions — In questions 1-5 each has five terms. Four terms are alike in some way while one term is different from the others. Find out the term, different from the others.

1. (a) A B D F (b) C E G I (c) S T V X (d) M N P R
(e) G H J L.

2. (a) B G L Q (b) F K P U (c) E J O S (d) D I N S
(e) C H M R.

3. (a) $\frac{AB}{5}$ (b) $\frac{CD}{25}$ (c) $\frac{BC}{13}$ (d) $\frac{DB}{19}$
(e) $\frac{EB}{29}$

4. (a) 13791 (b) 13678 (c) 13339 (d) 13564
(e) 13452.

5. (a)  (b)  (c)  (d) 
(e) 

SECTION – II [PHYSICS]

6. A 20 N metal block is suspended by a spring balance. A beaker containing some water is placed on a weighing machine which reads 40 N. The spring balance is now lowered so that the block gets immersed in the water. The spring balance now reads 16 N. The reading of weighing machine will be:
(a) 36 N (b) 60 N (c) 44 N (d) 56 N
7. If the momentum of a body is increased by 50%, it's Kinetic Energy will be increased by:
(a) 50% (b) 100% (c) 125% (d) 150%
8. The distances moved by a particle in simple harmonic motion in one time period is:
(a) A (b) 2A (c) 4A (d) 0

9. The distances traveled by a body falling from rest in the first second and third seconds are in the ratio:
(a) 1 : 2 : 3 (b) 1 : 3 : 5 (c) 1 : 4 : 9 (d) None of these.
10. A tuning fork sends sound waves in air. If the temperature of air increases which of the following parameters will change?
(a) Amplitude (b) Frequency (c) Wave length (d) Time-period

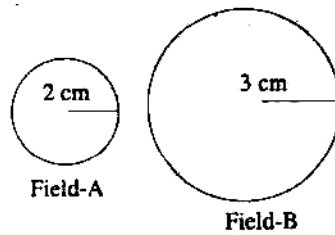
SECTION – III [CHEMISTRY]

11. Rutherford's scattering experiment is related to :
(a) Atom (b) Electron (c) Nucleus (d) Neutron.
12. The number of unpaired electrons in Cr^{+3} are:
(a) 1 (b) 3 (c) 4 (d) 6
13. The element of atomic number 22 belongs to which period of Periodic table:
(a) II (b) IV (c) VI (d) VIII.
14. Binding energy of 2He^4 is 28.57 MeV. It's Binding energy per nucleon is:
(a) 19.28 MeV (b) 7.14 MeV (c) 4.74 MeV (d) 57.14 MeV.
15. The mass of Neutron is of the order:
(a) 10^{-23} Kg (b) 10^{-24} Kg (c) 10^{-26} Kg (d) 10^{-27} Kg.

SECTION – IV [MATHS]

16. The sum of the integers from 1 to 100 that are divisible by 2 or 5 is—
(a) 2550 (b) 3050 (c) 3550 (d) 3600
17. If θ is in the first quadrant and $\cos \theta = \frac{3}{5}$, then the value of $\frac{5 \tan \theta - 4 \operatorname{cosec} \theta}{5 \sec \theta - 4 \cot \theta}$ will be:
(a) $\frac{5}{16}$ (b) $\frac{5}{34}$ (c) $-\frac{5}{13}$ (d) $-\frac{5}{16}$
18. If one root of the equation $x^2 - 4x + k = 0$ is 6, then the value of k will be:
(a) 12 (b) 2 (c) -2 (d) -12.
19. If $2 \sin^2 \theta + \cos^2 45^\circ = \tan 45^\circ$ and $0 \leq \theta \leq 90^\circ$, then $\tan \theta$ equals—
(a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) ∞ .

20. The following circular diagrams represents the yield of gram—



If the yield in field –A is 400 kg, then the yield in field-B will be—

- (a) 600 kg (b) 800 kg (c) 900 kg (d) 1200 kg.

SECTION – V [BIOLOGY]

21. The common phase between aerobic and anaerobic respiration is called:
- (a) Glycolysis (b) Kreb’s cycle
(c) Tricarboxylic acid cycle (d) None of these.
22. The ultimate cause for the movement of water against gravity in a tree is:
- (a) osmosis (b) transpiration (c) imbibition (d) photosynthesis.
23. Reflex action is controlled by:
- (a) receptor—brain—muscles (b) muscles—spinal cord—receptor
(c) receptor—spinal cord—muscles (d) muscle—brain—receptor.
24. The process in which water is split during photosynthesis and is essential for photosynthesis:
- (a) Hydrolysis (b) Plasmolysis (c) Photolysis (d) None of these.
25. In roses, the most common method used to produce new plants is:
- (a) layering (b) tissue culture (c) cutting (d) none of the above.