



**National Council of Science Museums  
(Ministry of Culture, Govt. of India)  
Block-GN, Sector-V, Bidhan Nagar  
Kolkata - 700 091**

**Aptitude test for selection of Curator 'B'**

**Name of the Candidate .....**

**Form no. ....**

Date of Aptitude Test: 02/11/2018  
Time: 10:30 A.M.

Total Time: 3 Hours

**INSTRUCTIONS FOR THE CANDIDATES**

01. Please write your name and form number legibly in the spaces provided;
02. The test contains two sections; viz., **Section-'A'** and **Section-'B'**;
03. The duration of the test is 3 hours for both sections and maximum marks are 100;
04. Read the instructions provided with the questions carefully and answer;
05. In questions having multiple choice answers, please tick legibly on the test paper the answer of your choice;
06. In case you need to change your answer, strike out the wrong one legibly and put a tick in the answer of your choice;
07. If more than one answer is ticked, the answer shall be considered invalid and no marks will be awarded for the answer;
08. Carry out your rough work, if any, on the labeled sheet separately provided with this test paper;
09. No mobile phone will be allowed inside the examination hall;
10. There is no negative marking;
11. The complete question paper with labeled attached sheet should be handed over to the instructor before leaving the room;
12. Candidates will not be allowed to leave the examination hall before 2 hours;

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NATIONAL COUNCIL OF SCIENCE MUSEUMS

(Ministry of Culture, Government of India)

Marks: 30

Name of the Candidate:

Form No.:

SECTION - A

Question No. 1 to 30 and carry 1 mark each. Tick the correct answer or fill in the blanks with correct alternatives as may be needed in the question paper.

1. Though many \_\_\_\_\_ endlessly praised his work, Ramesh often wished for some honest criticism.  
a. sycophants      b. pedants      c. adversaries      d. benefactors
2. The appropriate meaning of the idiom "a dime a dozen" is:  
a. more than sufficient      b. something common  
c. the best one      d. not so common
3. The Mayor was so \_\_\_\_\_ by the long trial that, despite his eventual acquittal, he admitted his failing health and declined to run for reelection.  
a. distraught      b. exonerated      c. inspired      d. debilitated
4. Most fans dismissed the press release detailing the comedian's ill health as a hoax, as he had frequently \_\_\_\_\_ his audience by feigning a physical ailment as part of his stage routine.  
a. reconnoitered      b. hoodwinked      c. lambasted      d. vitiated
5. While the egg of any bird will suffice for the tradition of egg decorating, those with \_\_\_\_\_ shells are preferred, so as to prevent breaking when their contents are hollowed.  
a. Tenuous      b. permeable      c. pristine      d. resilient
6. The \_\_\_\_\_ group in the adjoining room made it difficult for students taking the mid-term examination to concentrate.  
a. obstreperous      b. quiescent      c. rapacious      d. enervated
7. Fill the sentence with correct alternative:  
He has \_\_\_\_\_ appreciation of good poetry.  
a. a little      b. the little      c. little      d. none of these

8. His house is \_\_\_\_\_ the river Ganges.

- a. beside                      b. besides                      c. over                      d. on

9. Based on the following statements and the conclusions, tick mark the correct answer.

Statements: Some towels are brushes. No brush is soap. All soaps are rats.

Conclusions:

- I. Some rats are brushes.  
II. No rat is brush.  
III. Some towels are soaps.

- a. None follows                      b. Only either I or II follows  
c. Only II follows                      d. Only II & III follows

10. The population of Uttar Pradesh is greater than \_\_\_\_\_ State of India.

- a. that of                      b. that of any                      c. that of any other                      d. any other

11. Who has the power to summon and dissolve the Lok Sabha in India?

- a. The Prime Minister of India                      b. The Speaker of the Lok Sabha  
c. The President of India                      d. The Chief Justice of India

12. As per the constitution of India, the number of nominated members by the President of India to the Rajya Sabha, which has the maximum strength of 250 is

- a. 16                      b. 12                      c. 18                      d. 14

13. An order from a superior court to a lower court or an administrative authority to perform a certain duty is termed as writ of \_\_\_\_\_.

- a. Mandamus                      b. Habeas Corpus                      c. Quo warranto                      d. Certiorari

14. Noble Prize in Physics 2018 was awarded for groundbreaking work in the field of \_\_\_\_\_

- a. Plasma Physics                      b. Laser Physics  
c. String Theory                      d. Thermal Physics

15. The Shanti Swarup Bhatnagar prize in the field of S & T in India awarded by CSIR for notable and outstanding research, applied or fundamental in various disciplines of science was first awarded in the year .....

- a. 1952                      b. 1958                      c. 1960                      d. 1951

16. 'Param-Ishan' supercomputing facility was launched by Union Govt. in which Indian Institute of Technology (IIT)?
- a. IIT Mumbai      b. IIT Indore      c. IIT Guwahati      d. IIT Delhi
17. Total number of states and union territories in India is respectively \_\_\_\_\_ & \_\_\_\_\_.
- a. 28 & 8      b. 29 & 8      c. 29 & 7      d. 30 & 6
18. The recent successful launch of PSLV by ISRO in Sept 2018 involving two earth observation satellites of M/s Surrey Satellite Technologies Limited (SSTL), United Kingdom was the \_\_\_\_\_ mission of ISRO.
- a. PSLV-C40      b. PSLV-C41      c. PSLV-C42      d. PSLV-C43
19. In the recently held Asian Games 2018 in China, India was ranked \_\_\_\_\_ in the medal's tally.
- a. 6      b. 8      c. 7      d. 9
20. The final book of the renowned physicist and bestselling author Stephen Hawking who died in 2018 is titled \_\_\_\_\_
- a. The Brief History of Time      b. The Grand Design  
c. Brief Answers to Big Questions      d. The Universe in a Nutshell
21. A certain jar contains 60 coloured glass marbles – 22 white, 18 green, 11 yellow, 5 red, and 4 purple. If a glass marble is to be chosen at random, what is the probability that the glass marble will be neither red nor purple?
- a. 0.09      b. 0.54      c. 0.85      d. 0.91
22. The integers  $x$  and  $y$  are greater than 1. If  $(4x)(7y)=756$ , what is the value of  $x + y$ ?
- a. 18      b. 12      c. 15      d. 21
23. 18 cups of water by mug A is required to fill a bucket whereas 16 cups of water is sufficient to fill the same bucket by mug B. What is the ratio between volumes of Mug A and Mug B?
- a. 16:9      b. 8:9      c. 9:8      d. 4:6
24. Rohan is taller than Anand but shorter than Seema. Krishnan is taller than Pushpa and shorter than Anand. Dhiraj is taller than Krishnan but shorter than Seema. Who among them is the tallest?
- a. Rohan      b. Anand      c. Dhiraj      d. Seema

25. The volume  $V$  of a right circular cylinder is  $V = \pi r^2 h$ , where  $r$  is the radius of the base and  $h$  is the height of the cylinder. If the volume of a right cylinder is  $45\pi$  and its height is 5, what is the circumference of its base?

- a. 9                      b.  $3\pi$                       c.  $6\pi$                       d.  $9\pi$

26. If in a coded language, FLAME is coded as 6121135, then 21215120 is the code for \_\_\_\_\_

- a. VOICE                      b. BALD                      c. BLOAT                      d. CASTLE

27. Of the students in a school, 20 percent are in the science club and 30 percent are in music group. If 25 percent of the students in the school are in the music club and NOT in the science club, what is the percentage of the students which are in science club and NOT in the music club?

- a. 25%                      b. 75%                      c. 60%                      d. 20%

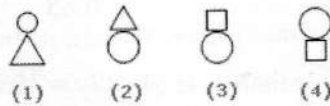
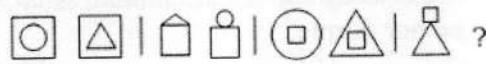
28. The next number in the sequence 3, 6, 9, 30, 117..... is

- a. 192                      b. 352                      c. 388                      d. 588

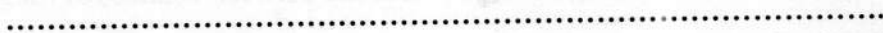
29. In an artificial language, *hapllesh* means cloudburst, *srenchoch* means pinball, and *resbosrench* means ninepin. Which word could mean "cloud nine"?

- a. leshsrench                      b. ochhapl                      c. haploch                      d. haplresbo

30. Fill up the missing sequence:



- a. 1                      b. 2                      c. 3                      d. 4



NATIONAL COUNCIL OF SCIENCE MUSEUMS

Aptitude Test for Curator 'B' (Physics)

NAME: \_\_\_\_\_

Form No. \_\_\_\_\_

**SECTION – B**

All questions are compulsory.

(Use attached sheets for rough works wherever necessary.)

Please tick the correct answer from the options given.

2 x 15 = 30 Marks

1. The two vectors  $\vec{P} = \hat{i}$  and  $\vec{Q} = (\hat{i} + \hat{j})/\sqrt{2}$ , where  $\hat{i}$  and  $\hat{j}$  are unit vectors, are
  - a) related by rotation
  - b) related by an inversion
  - c) related by reflection through x-y plane
  - d) not related
2. The solutions to the differential equation  $dy/dx = -x/(y+1)$  are a family of
  - a) circles with different radii
  - b) circles with different centres
  - c) straight lines with different slopes
  - d) straight lines with different intercepts on the y-axis
3. A body of mass 2 Kg is moving under the influence of a central force whose potential energy is given by  $U(r) = 2r^3$  Joules. If the body is moving in a circular orbit of radius 5 metres, its energy will be
  - a) 125 Joules
  - b) 250 Joules
  - c) 500 Joules
  - d) 625 Joules
4. A particle is moving in an inverse square field. If the total energy of the particle is positive, then the trajectory of the particle is
  - a) circular
  - b) elliptical
  - c) parabolic
  - d) hyperbolic
5. The path followed by a particle in sliding from one point to another in the absence of friction in the shortest time is a
  - a) sigmoid
  - b) catenary of revolution
  - c) cycloid
  - d) spheroid
6. If a physical system is invariant under rotation about a fixed axis, then the following is conserved.
  - a) total linear momentum
  - b) linear momentum along the axis of rotation
  - c) total angular momentum
  - d) angular momentum along the axis of rotation



15 Dec 20  
**All questions are compulsory.**  
**Each question carries 10 marks.**

**10 x 4 = 40 Marks**

1. In a certain experimental set-up, the following observations are made:

- A double convex lens is found to diverge a parallel beam of incident light,
- A double concave lens is found to converge a parallel beam of incident light.

Conceive of and provide a hand-drawn labelled sketch of the experimental set-up where such counter-intuitive observations are made possible. Also explain the scientific principle involved.

2. CO<sub>2</sub> currently constitutes (by volume) about 0.041% of Earth's atmosphere. Despite being such a negligible trace gas compared to other major constituents of the atmosphere like N<sub>2</sub> and O<sub>2</sub>, CO<sub>2</sub> plays a key role in the greenhouse effect and global warming.

- a) Explain the science as to why CO<sub>2</sub> is a major greenhouse gas while N<sub>2</sub> and O<sub>2</sub> are not.
- b) Why does CO<sub>2</sub> get most of the world's attention although there are other greenhouse gases like water vapour, methane, nitrous oxide etc.?

3. Name and briefly describe at least two ongoing global mega science projects and mention India's role in them.

4. Name any two Indian scientists of prominence (past or present) and describe the scientific works they are famous for.

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