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EXAMINATION (PHASE-I)

RPSOLYMPIAD-2022

CLASS-9th

M.M. 70   Class -9th   Time: 70 minutes

English (10)

1. I _____ this book since morning.
   a) have been reading
   b) has been reading
   c) shall be reading
   d) am reading

2. Ashu said to his friend, "Are you willing to share your books with me?"(Change into indirect speech)
   a) Ashu asked his friend if he has been willing to share his books with him.
   b) Ashu asked his friend that he was willing to share his books with him.
   c) Ashu asked his friend if he was willing to share his books with him.
   d) Ashu asked his friend if he is willing to share his books with him.

3. Priya says, "The Earth is round."(Change into indirect speech)
   a) Priya says that the Earth is round.
   b) Priya said that the Earth is round.
   c) Priya said that the Earth was round.
   d) Priya says that the Earth has been round.

4. Who had taken my pencil? (Change into passive voice)
   a) By whom had my pencil been taken?
   b) The pencil is taken by whom?
   c) By whom has the pencil been taken.
   d) By whom has the pencil been taken?

5. Smoking is injurious to health. (Identify the underline verb)
   a) Gerund
   b) Participle
   c) Clause
   d) Conditional

6. He fled ……………….. he was afraid. (Fill in the blank with appropriate conjunction)
   a) on
   b) because
   c) if
   d) unless

7. You will not win …………you keep patience.
   a) lest
   b) unless
   c) if
   d) as

8. Bag and baggage means….

   a) All the clothing
   b) leave
   c) Without any clothing
   d) With all one's belongings

9. During peak hours, it _____ take more than two hours.

   a) should
   b) need
   c) shall
   d) will

10: The whole family _____ for the ceremony.

   a) has been invited
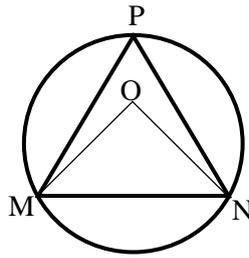   b) have been invited
   c) invites
   d) invited

Mathematics (20)

11. If $y = 3^{1/3} + 3$, then $y^3 - 9y^2 + 27y =$ _____

    (a) 27 (b) -27 (c) -30 (d) 30

12. $\sqrt{3^2 \sqrt{9^2 \sqrt{(81)^2 \sqrt{16^{16}}}}} =$ _____

    (a) 6×2^4 (b) $3^3 \times 2$ (c) $6^3 \times 2^3$ (d) $6^3 \times 2$

13. $\sqrt[6]{[15 - 2\sqrt{56}]^3}\ (\sqrt{7} + 2\sqrt{2}) =$ _____

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

14. The square root of $x^{m^2-n^2} . x^{n^2+2mn} . x^{n^2}$ is :

    (a) x^{m+n} (b) $x^{(m+n)^2}$ (c) $x^{m+n}/2$ (d) $x^{\frac{1}{2}(m+n)^2}$

15. The polynomial $6y^4 - 19y^3 - 23y^2 + 10y + 8$ on factorization gives:

    (a) $(y + 1)(y - 4)(3y + 2)(2y + 1)$
    (b) $(y + 1)(y - 4)(3y - 2)(2y - 1)$
    (c) $(y + 1)(y - 4)(3y - 2)(2y + 1)$
    (d) $(y + 1)(y - 4)(3y + 2)(2y - 1)$

16.   The HCF of the polynomials $x^4 + 6x^2 + 25, x^3 - 3x^2 + 7x - 5$ and $x^2 + 5 - 2x$ is :

(a) $x^2 - 2x - 5$ (b) $x^2 - 2x + 5$ (c) $x - 1$ (d) $3x + 2$

17.   If $(a + b, a - b)$ is the solution of the equations $3x + 2y = 20$ and $4x - 5y = 42$ then

find the value of b.

(a) 8   (b) -2   (c) -4   (d) 5

18.   The fair of 3 full tickets and 2 half tickets is 204 and the fair of 2 full tickets and 3 half tickets

is 186. Find the sum of fair of full ticket and a half ticket.

(a) 94   (b) 78   (c) 86   (d) 68

19.   The median of the series 8, 12, 15, 7, x, 19 and 22 lies in the interval.

(a) [12,15]   (b) [7,15]   (c) [15,17]   (d) [9,12]

20.   If $p < q < 2p$, the median and mean of p, q and $2p$ are 36 and 31resp. then find the mean of p

and q.

(a) 21.5   (b) 23   (c) 27.5   (d) 24

21.   A number was chosen at random from the first 300 three digits natural numbers. Find the
probability of it ending with a zero.
(a) $\frac{1}{15}$ (b) $\frac{1}{25}$ (c) $\frac{1}{10}$ (d) $\frac{1}{20}$

22.   A month is selected at random in a year. Find the probability that it is either January or June.
(a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{1}{6}$ (d) $\frac{1}{20}$

23.   If (2,0) and (-2,0) are the two vertices of an equilateral triangle, then the third vertex can be
_____

(a) (0,0)   (b) (2,-2)   (c) $(0,2\sqrt{3})$ (d) $(\sqrt{3}, \sqrt{3})$

24.   A cyclic polygon has n sides such that each of its interior angle measures 144º. What is the
measure of an angle subtended by each of its side at the geometrical centre of the polygon?
(a) 144°   (b) 36°   (c)30°   (d) 54°

25.   Fifteen identical spheres are made by melting a solid cylinder of 10cm radius and 5.4cm height.
Find the diameter of each sphere.
(a) 6cm   (b) 3cm   (c) 2cm   (d) 4cm

26.   A large sphere of radius 3.5cm is carved from a cubical solid. Find the difference between their
surface areas.
(a) $224 cm^2$ (b) $140 cm^2$ (c) $176 cm^2$ (d) $80.5 cm^2$
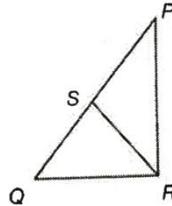
27. In the following figure, O is the centre of the circle. If $\llcorner MPN = 55^o$, then find the value of $\llcorner MON + \llcorner OMN + \frac{1}{2}\llcorner MNO$.

    (a) 145°

    (b) $162\frac{1}{2}^o$

    (c) $158\frac{1}{2}^o$

    (d) 180°

28. In the following figure, Δ PQR is right-angled at R and S is the mid-point of hypotenuse PQ. If RS=25cm and PR=48cm, the find QR.

    (a) 7cm

    (b) 25cm

    (c) 14cm

    (d) Cannot determined

29. A circle of radius 2cm is inscribed in an equilateral triangle. Find the area of the triangle in cm^2.

    (a) $12\sqrt{3}$ (b) $4\sqrt{3}$ (c) $6\sqrt{3}$ (d) $24\sqrt{3}$

30. The side of a square is equal to the diagonal of a cube. The square has an area of $1728m^2$. Calculate the side of the cube.

    (a) 12m   (b) 24m   (c) 27m   (d) 36m

Social Science (10)

31. Which of the following statements regarding the position and role of women during the French Revolution are correct?

    (i) Olympe de Gouges was a supporter of 'The Declaration of Rights of Man and Citizen".

    (ii) Women were disappointed that the constitution of 1791 reduced them to passive citizens.

    (iii) The Revolutionary Government made education compulsory for girls, marriage was made into a contract and divorce was made legal.

    (iv) The Revolutionary Government finally recognized women's struggle for equal political rights and gave them the right to vote.

    (a) i and ii   (b) i and iv

    (c) ii and iii   (d) iii and iv

32. In the Russian Civil War the Bolsheviks and socialist revolutionaries were represented by which of the following colours?
    (a) Whites and Reds   (b) Green and Whites
    (c) Reds and Greens   (d) Blacks and Greens

33.   Match List-I with List II correctly and choose the correct code from the following:

	List I		List II
(A)	Indus	(i)	Amravati
(B)	Godavari	(ii)	Bhima
(C)	Krishna	(iii)	Pranhita
(D)	Kaveri	(iv)	Nubra

Codes:

	A	B	C	D
(a)	i	ii	iii	iv
(b)	iii	i	ii	iv
(c)	ii	i	iv	iii
(d)	iv	iii	ii	i

34.   At which altitude can one find coniferous trees?
(a) Between 1000 and 2000 metres   (b) Between 1500 and 3000 metres
(c) Between 2000 and 3000 metres   (d) Between 1000 and 1500 metres

35.   During the South-West monsoon season, India receives the maximum amount of rainfall. However, it varies from place to place. Choose the correct sequence of regions arranged in descending order of rainfall received from South-West   Monsoon.

(a) Khasi hills, Western Ghats, Bengal Delta

(b) Western Ghats, Khasi Hills, Bengal Delta

(c) Bengal Delta, Khasi Hills, Western Ghats

(d) Bengal Delta, Western Ghats, Khasi Hills

36.   Who has prepared the New Education Policy, 2020?

(a) Kothari Commission   (b) C. Kasturi Ranjan Committee

(c) Sarkaria Commission   (d) Indian Planning Commission

37.   Consider the following pair:

	Schemes	Coverage target group
(i)	RPDS	Backward blocks
(ii)	AAY	Universal
(iii)	APS	Indigent senior citizens
(iv)	NFSA	Priority households

Which of the following pairs are correctly matched?

(a) i only   (b) i and ii only

(c) i, ii and iv only   (d) i, ii, iii and iv

38.   Who among the following decides whether a particular bill is Money Bill or not?

(a) President   (b) Speaker of Lok Sabha

(c) Chairman of Rajya Sabha   (d) Finance Minister

39. Match List-I with List-II correctly and choose the correct code from the following:

	List-I		List-II
(A)	Habeas Corpus	(i)	To Command
(B)	Mandamus	(ii)	By what warrant
(C)	Certiorari	(iii)	You should have the body
(D)	Quo Warranto	(iv)	To inform

Code:

(a) i-B, ii-D, iii-A, iv-C   (b) i-B, ii-A, iii-D, iv-C

(c) i-C, ii-D, iii-A, iv-B   (d) i-C, ii-A, iii-D, iv-B

40. The Indian Constitution has borrowed from:

(i) Ideas from French Revolution

(ii) The British Constitution

(iii) The Bill of Rights of US

(iv) Israeli Constitution

(a) i,ii,iv   (b) i,ii,iii

(c) ii,iii,iv   (d) i,ii,iii,iv

Aptitude (Reasoning) (10)

"RPS BEST IN HARYANA" is written as "11-6,27-5,20-11,21+24"
"MAXIMUM SELECTION EVERY FIELD" is written as "23x21,24x0,10+11,16+12"
"SPECIAL COACHING STAGE TWO" is written as "10+13,26+18,10x20,9-10"

41. What is the code for "LOCKDOWN"
    A) 17+11   B) 27x18   C) 19-11   D)11+17

42. What is the code for "LOCK"
    A) 17-14   B) 14x2   C) 6x16   D) 20x2

43. COMPLETE THE SERIES
    15, 79, 322, 578, 703, ?
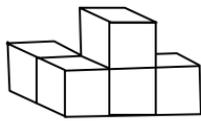   A) 751   B) 739   C) 855   D) 860

44.

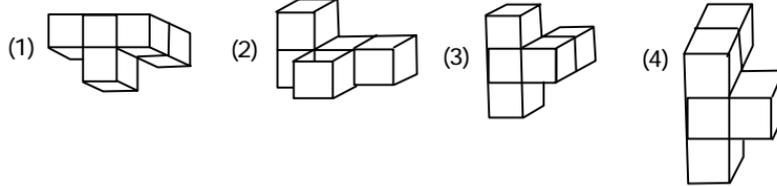| 4	5	39
7	21	98
8	22	?

A) 16   B) 22   C) 19   D) 28

45. The solid so formed by joining unit cubes is rotated to obtain different positions, which of these cannot be the shape after it has turned?
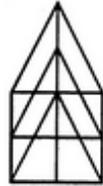
Question Figure :   **Answer Figures :**
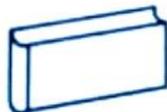

46. Count the number of parallelogram in the given figure.
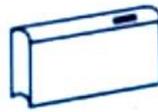

    A) 15   B) 19   C)17   D) 18

47. Statements:
    No Spiderman is Superman.
    No Superman is Batman.
    Some Spiderman are Batman.
    Conclusions:
    I. No Batman is Spiderman.
    II. No Batman is Superman.
    III. Some Supermen are Spiderman.
    IV. All Batmen are Spiderman.
    A) None follows   B) Only II follows
    C) Only II and III follow   D) Only I and III follow

48. There are deer and peacocks in a zoo. By counting heads, they are 80. The number of their legs is 200. How many peacocks are there?
    A) 20   B) 30   C) 50   D) 60

49. The figure given on the left hand side in each of the following questions is folded to form a box. Choose from the alternatives (a), (b), (c) and (d) the boxes that is similar to the box formed
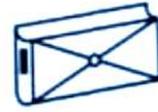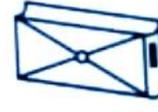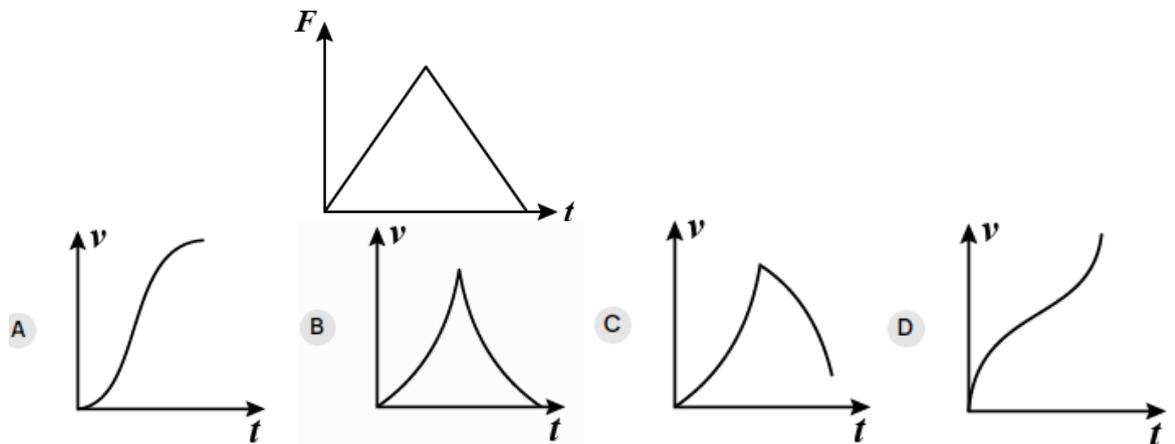

    A) (a) only   B) (b) only   C) (c) only   D) (d) only

50. A watch gains 5 seconds in 3 minutes and was set right at 8 AM. What time will it show at 10 PM on the same day ?
    A) 10 : 27 : 41 AM   B) 8 : 51 : 04 AM   C) 9 : 45 : 15 PM   D) 10 : 23 : 20 PM
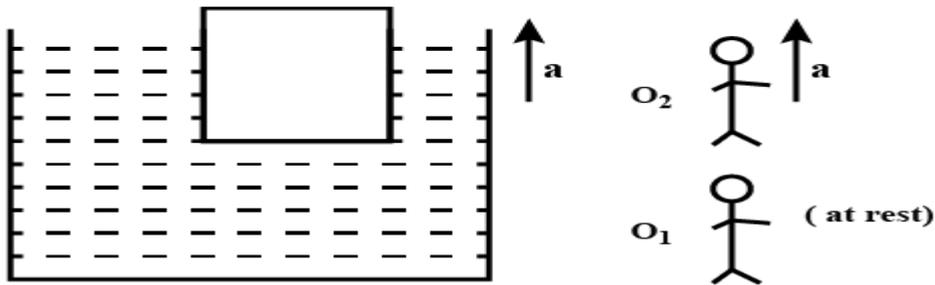
Science (20)
Physics (7)

51. The force acting on a particle moving along a straight line varies with time as shown in the diagram. Force is parallel to velocity. Which of the following graphs is best representative of its speed and time graphs:
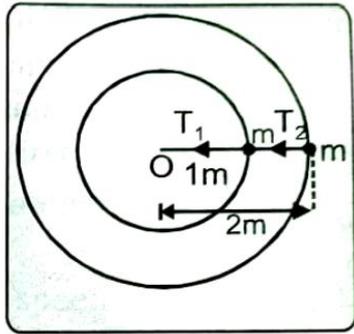

52. A scooter starting from rest moves with a constant acceleration for a time Δt_1, then with a constant velocity for the next Δt_2 and finally with a constant deceleration for the next Δt_3 to come to rest. A 500 N man sitting on the scooter behind the driver manages to stay at rest with respect to the scooter without touching any other part. The force exerted by the seat on the man is :

    a) 500 N throughout the journey   b) Less than 500 N throughout the journey

    c) More than 500 N throughout the journey   d) >500 N for time Δt_1 and Δt_3 and 500 N for Δt_2

53. A block of 1 kg is kept on an inclined rough surface in an elevator which moving up with constant velocity of 5 m/s. Take angle of inclination 37° with horizontal and acceleration due to gravity = 10 m/s². In 10 seconds work done (in ground frame) by normal reaction (no sliding on incline surface) will be

    a) 320 J   b) 500 J   c) 700 J   d) none of these

54. A particle of mass m is placed inside a spherical shell, away from its centre. The mass of the shell is M.

    a) The particle will move towards the centre.
    b) The particle will move away from the centre, towards the nearest wall.
    c) The particle will move towards the centre if $m < M$ and away from the centre if $m > M$
    d) The particle will remain stationary

55. A block is partially immersed in a liquid and the vessel is accelerating upwards with an acceleration "a". the block is observed by two observers O_1 and O_2, one at rest and the other accelerating with an acceleration "a" upward. The total buoyant force on the block is :

   a) same for O_1 and O_2
   b) greater for O_1 than O_2
   c) greater for O_2 than O_1
   d) data is not sufficient

56. Two balls of equal masses are attached to a string at distance 1m and 2m from one end as shown in figure. The string is then moved in a horizontal circle with constant speed.

   Find the ratio of the tension T_1 and T=2.

   a) $\frac{1}{2}$
   b) $\frac{1}{4}$
   c) $\frac{3}{2}$
   d) $\frac{3}{4}$

57. An ice cube of edge length 'a' is kept in a right cylindrical vessel of diameter 'b'. Find the edge length of ice cube when it just breaks off the surface, assuming melting of the ice cube is uniform in all direction.

   a) $a_1 = \frac{4a^3}{\pi b^2}$
   b) $a_1 = \frac{3a^3}{\pi b^2}$
   c) $a_1 = \frac{2a^3}{\pi b^2}$
   $a_1 = \frac{a^3}{\pi b^2}$

Chemistry (7)

58. Which of the following contains same number of carbon atoms as are in 6.0g carbon (C-12)

   a) 6.0g ethane   b) 8.0g methane   c) 21.0g propane   d) 28.0g CO

59. The sulphate of metal M contains 9.87% of M. This sulphate is isomorphous with $ZnSO_4.7H_2O$. The atomic weight of M is :-

   a) 40.3   b) 36.3   c) 24.3   d) 11.3

60. Consider the ground state of Cr atom (Z = 24). The number of electrons with azimuthal quantum numbers $l = 1$ and 2 are respectively

    a) 12 and 4   b) 12 and 5   c) 16 and 4   d) 16 and 5

61. The volume of 2.8g of carbon monoxide at 27° C and 0.0821 atm. is :-

    (R=0.0821L.atm.mol^{-1} K^{-1})

    a) 30L   b) 3L   c) 0.3L   d) 1.5L

62. Sodium tungstate has formula Na_2WO_4. Lead phosphate has formula $Pb_3(PO_4)_2$. Formula for Lead tungstate should be :-

    a) $PbWO_4$ b) $Pb_2(WO_4)_3$ c) $Pb_3(WO_4)_2$ d) $Pb_3(WO_4)_4$

63. For the reaction A + 2B → C,

    5 mole of A and 8 mole of B will produce

    a) 5 mole of C   b) 4 mole of C   c) 8 mole of C   d) 13 mole of C

64. Atom's $_6C^{13}$ and $_8O^{17}$ are related to each other as:-

    a) Isotone's   b) Isoelectronic   c) Isodiapher's   d) Isoster's

Biology (6)

65. Penicillium chrysogenum is a mould from which _____ is obtained.

    a) penicillin   b) ampicillin   c) streptomycin   d) All of these

66. Identify the phylum/phyla in which some animals show parasitism.

    a) Nematoda   b) Platyhelminths   c) Annelida   d) All of these

67. Pteridophytes differ from bryophytes in possessing:

    a) spores   b) archegonia   c) vascular tissue   d) alternation of generation

68. Glial cells in nervous tissue help in

    (i) Support   (ii) Conducting impulse   (iii) Nourishment   (iv) Multiplication

    a) (i), (ii)   b) (ii), (iii)   c) (i), (iii)   d) (ii), (iv)

69. Synthesis of ATP in mitochondria takes place in/out _____.

    a) matrix   b) cristae   c) outer membrane   d) between membrane

70. A parasite named _____ remains in the large intestine of the infected person and is responsible for blood stool sometimes.

    a) Entamoeba histolytica   b) Trypanosoma brucei   c) Ascaris lumbricoides   d) HBV