MACRO VISION ACADEMY, BURHANPUR
Entrance Test - 2015 -16

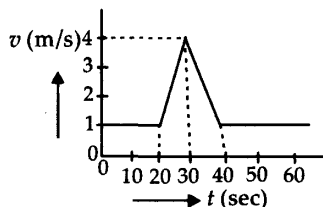**Class: XI**   **ET2015/M2**   **Time: 1:30.hr.**   **M.M.: 60**

> ❉ **Each question carries 1 marks.**   ❉ **No Negative marking.**
> ❉ **After submission of your OMR sheet, be at your own place for your result.**

PHYSICS

1. Velocity-time (v–t) graph for a moving object is shown in the figure. Total displacement of the object during the time interval when there is non-zero acceleration and retardation is

   (a) 60 m   (b) 40 in   (c) 50 m   (d) 30 m

2. A body of mass 5 kg undergoes a change in speed from 20 m/s to 0.20 m/s. The momentum
   (a) increases by 99 kg m/s   (b) decreases by 99 kg m/s
   (c) increases by 101 kg m/s   (d) decreases by 101 kg m/s

3. A stone is dropped from the top of a tower. Its velocity after it has fallen 20 m is
   (a) -10 m s^{-1} (b) 10 m s^{-1} (c) -20 m s^{-1} (d) 20 m s^{-1}

4. The power of a pump which takes 10 s to lift 100 kg of water tank situated at a height of 20 m is
   (a) 2×10^4 W   (b) 2×10^3 W   (c) 200 W   (d) 1 kW

5. At what distance from a concave mirror of focal length 10 cm must an object be placed in order that an image double its size may be obtained?
   (a) Either 5 cm or 15 cm   (b) At 10 cm
   (c) 5 cm   (d) 15 cm only

6. An object is placed 18 cm away from a concave mirror whose focal length is 10 cm. Then the size of area of the image if the object be 4 mm broad and 12 mm long is
   (a) 0.75 cm^2 (b) 2 cm^2 (c) 1.5 cm^2 (d) 0.5 cm^2

7. Two conductors of resistance 2R and R are connected in series in a battery circuit. The ratio of heat developed in them is
   (a) 2:1   (b) 1:2   (c) 1:3   (d) 1:4

8. A wire of resistance r is cut into n equal parts. These parts are then connected in parallel. The required resistance of the combination will be
   (a) $n^2 r$ (b) nr (c) $\dfrac{r}{n}$ (d) $\dfrac{r}{n^2}$

9. A 0.4 m wire, stretched horizontally, carries an electric current of 15 A from east to west, in a magnetic field whose magnetic field intensity is 0.1 N/Am, directed vertically downwards. What is the magnitude of the magnetic deflecting force on the wire?
   (a) 0.6N   (b) 0.7N   (c) 0.8 N   (d) 0.9 N

10. The device which harnesses solar energy directly is
    (a) Solar cell   (b) Biogas plant   (c) Coal gas plant   (d) Natural gas plant
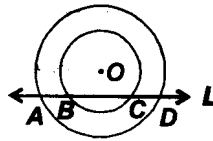
CHEMISTRY

11. When 4d orbital is complete, the entering electron goes into?
    (a) 5f   (b) 5s   (c) 5p   (d) 5d

12. Which of the following is not a property of particles of a matter?

(a) The particle of matter are extremely small
(b) The particle of matter have spaces between them
(c) The particle of matter are in stationary state
(d) The particle of matter attract each other.

13. The particle size of solute in true solution is of the order of :
    (a) Less than 10^{-6}m
    (b) Less than 10^{-7}m
    (c) Less than 10^{-8}m
    (d) Less than 10^{-9} m

14. Which of the following is not a decomposition reaction.
    (a) $CaCO_3 \rightarrow CaO + CO_2$
    (b) $H_2 + Cl_2 \rightarrow 2HCl$
    (c) $H_2CO_3 \rightarrow H_2O + CO_2$
    (d) $2KClO_3 \rightarrow 2KCl + 3 O_2$

15. The drying of milk of lime (white washing) is due to the action of _____.
    (a) Oxygen in air   (b) nitrogen in air   (c) CO_2 in air (d) hydrogen in air

16. Which of the following represents alkynes?
    (a) $-C-C-$ (b) $-C=C-$ (c) $-C \equiv C-$ (d) None of these

17. Which of the following represents ketones ?
    (a) $-\overset{|}{C}=O$ (b) $-OH$ (c) $-CHO$ (d) $-COOH$

18. Which of the following is a Dobereiner's triad?
    (a) Ne, Ca, Na   (b) H_2, N_2, O_2 (c) Li, Na, K   (d) Na, Br, Ar

19. The H – O – H bend angle in H_2O molecule is about –
    (a) 105°   (b) 102°   (c) 180°   (d) 90°

20. What happens when dilute sulphuric acid is poured on silver plate?
    (a) Silver sulphate is formed
    (b) SO_2 gas is evolved
    (c) No reaction takes place
    (d) Hydrogen gas is evolved
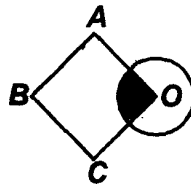
MATHEMATICS

21. The rationalising factor of $\sqrt[5]{a^2b^3c^4}$ is
    (a) $\sqrt[5]{a^3b^2c}$ (b) $\sqrt[4]{a^3b^2c}$ (c) $\sqrt[3]{a^3b^2c}$ (d) $\sqrt{a^3b^2c}$

22. If a and b are the roots of the quadratic equation $x^2+px+12=0$ with the condition $a - b = 1$ then the value of 'p' is _____.
    (a) 1   (b) 7   (c) –7   (d) 7 or –7

23. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - (\sqrt{5}-1)x - (\sqrt{5}+1)$, then the value of $\dfrac{1}{\alpha^2} + \dfrac{1}{\beta^2}$ is _____
    (a) $3+\sqrt{5}$ (b) $3-\sqrt{5}$ (c) $\sqrt{5}-3$ (d) $-3-\sqrt{5}$

24. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream. If x represents the speed of the boat in still water in km/hr and y represents the speed of the stream in km/hr, then _____.
    (a) x + y=11, x-y = 5
    (b) x + y=5, x–y = 11
    (c) x + y = 6, x–y = 10
    (d) x + y = 10, x – y = 6

25. The solution of $\sqrt{5x-1}+\sqrt{x-1}=2$ is _____
    (a) x = 2, x = 1   (b) x = 2   (c) x = 1   (d) x = 3

26. If the nth term of an A.P. is $3n+5$, then sum of the 'n' terms is _____.
    (a) $\dfrac{3n^2+13n}{2}$ (b) $\dfrac{3n^2-13n}{2}$ (c) $\dfrac{n^2+13n}{2}$ (d) $\dfrac{13n^2+3n}{2}$

27. Between the numbers 2 and 20, 8 means are inserted, then their sum is _____.
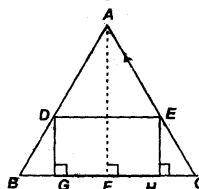   (a) 88   (b) 44   (c) 176   (d) 60

2

28. The coordinates of the centre of a circle passing through (1, 2), (3, –4) and (5, –6) is .
    (a) (2,11)   (b) (11,2)   (c) (11, –2)   (d) (–2,11)

29. In the figure, the circles are concentric with centre O. A line L intersects with them at A, B, C and D. Then $\dfrac{AB}{CD} = $ _____

    (a) 1:2   (b) 2:1   (c) Either (A) or (B)   (d) 1:1

30. If $\tan\theta = \dfrac{a}{b}$, find the value $\dfrac{a\sin\theta - b\cos\theta}{a\sin\theta + b\cos\theta}$

    (a) $\dfrac{a^2 - b^2}{a^2 + b^2}$ (b) $\dfrac{b^2 - a^2}{b^2 + a^2}$ (c) $\dfrac{a^2 + b^2}{a^2 - b^2}$ (d) None of these

31. O is the centre of a circle of diameter 4 cm and OABC is a square, if the shaded area is $\dfrac{1}{3}$ area of the square, then the side of the square is _____.

    (a) $\pi\sqrt{3}$ cm   (b) $\sqrt{3\pi}$ cm   (c) $3\sqrt{\pi}$ cm   (d) 3π cm

32. A sphere of radius 6 cm is dropped into a cylindrical vessel, partiy filled with water. The radius of the vessels is 8 cm. IF the sphere is submerged completely, then the surface of the water rises by _____.
    (a) 4.5 cm   (b) 3 cm   (c) 4 cm   (d) 2 cm

33. The average age of 5 teachers is 28 years. If one teacher is excluded the mean gets reduced by 2 years. The age of the excluded teacher is _____
    (a) 26 years   (b) 33 years   (c) 36 years   (d) 35 years

34. The probability for a leap year to have 52 Mondays and 53 Sundays is _____
    (a) $\dfrac{1}{366}$ (b) $\dfrac{1}{52}$ (c) $\dfrac{2}{7}$ (d) $\dfrac{1}{7}$

35. The tops of two poles of height 20 m and 14 m are connected by a wire. If the wire makes an angle of 30° with horizontal, then the length of the wire is _____.
    (a) 12m   (b) 10 m   (c) 8m   (d) 6m

36. There are two positive numbers such that sum of twice the first and thrice the second is 39, while the sum of thrice the first and twice the second is 36. The larger of the two is ____
    (a) 6   (b) 8   (c) 9   (d) 10

37. In the given figure, ABC is a triangle and GHED is a rectangle. BC = 12 cm, HE = 6 cm, FC = BF and altitude AF is 24 cm. The area of the rectangle is _____

    (a) 56 cm²   (b) 54cm²   (c) 60 cm²   (d) 72cm²

38. If one zero of the polynomial $5z^2 + 13z - p$ is reciprocal of the other, then p is

3

(a) 4   (b) –5   (c) 1   (d) – 8

39. If a piece of wire 25 cm long is bent into an arc of a circle subtending an angle of 75^0 at the centre, then the radius of the circle (in cm) is:

(a) $\dfrac{\pi}{120}$ (b) $\dfrac{60}{\pi}$ (c) 60π (d) None of these

40. If $\sin\theta$ and $\cos\theta$ are the roots of the equation $ax^2-bx+c=0$, then a, b, c satisfy the relation ____
(a) $b^2- a^2=2ac$ (b) $a^2-b^2=2ac$ (c) $a^2+b^2=c^2$ (d) $a^2+b^2=2ac$

ENGLISH

Read the following passages carefully and choose the option that you consider the most appropriate to complete the statements given below.

It has been said that drinking as much as 2.5 litres of water a day is necessary to keep both the body and the mind in great shape. However, a recent report now states that one does not need to drink such a large amount of water in order to be healthy. Other fluids are just as beneficial as water. So how much should we drink ? Although two and a half litres of fluid per day is what an adult needs to keep their metabolism working properly, it's not usually necessary to drink this much. This is because much of our daily fluid needs are met by the water found in food. Dieticians recommend drinking around one and a half litres of liquid per day.

However, tea and coffee cannot be considered as substitute since caffeine is not thought to be beneficial, because of its diuretic effects. Feeling thirsty may be a sign that you are already dehydrated, so it's preferable not to get to that point. It's best to get into a routine of having a drink at regular intervals. Have a drink with every meal and between meals. Other signs of dehydration include dry mouth, headaches and lack of energy. If you pinch the skin on the back of your hand and it doesn't sink back into place straight-away, you're very dehydrated and need to drink plenty of water.

41. According to a recent report, _____water is required in the body to be healthy.
(a) 2.5 litres   (b) 1.5 litres   (c) 2 litres   (d) 3 litres

42. One of the following statements is NOT true, i.e., _____
(a) Other fluids are as beneficial as water.   (b) An adult needs 1.5 litres of liquid daily.
(c) Coffee can be considered as substitute of required liquid.
(d) Water keeps our body and mind in shape.

43. _____ is not a symptom of dehydration.
(a) dry mouth   (b) headache   (c) lack of energy   (d) high blood pressure

44. In case of dehydration, one should
(a) not take water more than 2.5 litres   (b) take plenty of tea and coffee
(c) take plenty of liquids   (d) eat food frequently

Complete the following passages by selecting the most suitable option from each list given below them to fill the corresponding gap.

The history of human development is (45) _____ man's continuous and sometimes (46) _____ incursions into (47) _____ that he has appropriated for his own use. Occasionally he has even (48) _____ other natural animal inhabitants.

45. (a) marked with   (b) marked of   (c) marked by   (d) marked up
46. (a) arrogant   (b) arrogance   (c) Both are correct   (d) Both are incorrect
47. (a) territory   (b) territorial   (c) terrestrial   (d) All are incorrect
48. (a) improved   (b) killed   (c) excluded   (d) exclude

Read the passage and select the correct form of the missing word/phrase to complete it.
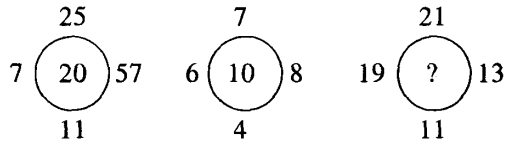
Two teenagers (49) _____ grocery shop last year. They (50) _____ what they thought the cash box.

49. (a) broke into   (b) break into   (c) broken into   (d) broke out
50. (a) locate   (b) had   (c) located   (d) got

51. Keshav walked 3 m towards North, turned West and walked 2 m then turned North and walked 1 m and finally turned East and walked 5 m. How far is he from the starting point?
    (a) 5m   (b) 8m   (c) 10m   (d) 12m

52.


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      25           7            21
 7 ( 20 ) 57   6 ( 10 ) 8   19 ( ? ) 13
      11           4            11
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    (a) 16   (b) 25   (c) 36   (d) 49

53. If > denotes +, <denotes −, + denotes ÷, ^ denotes × , − denotes =, × denotes>, =denotes <. Which one of the statement is correct?
    (a) 6+3>8=4+2<1   (b) 4 > 6 + 2 x 32 + 4 < 1
    (c) 8<4+2=6>3   (d) 14 + 7 > 3 = 6 + 3 > 2

54. If CENPNPJL is written as DOOK, then what does FHNPNPCE stand for?
    (a) FOOD   (b) ROOT   (c) GOOD   (d) FOUR

55. 4, 6, 9, 14, 21, 32, _____
    (a) 45   (b) 55   (c) 40   (d) 50

56. ZY, ML, XW, KJ, VU, IH, TS - -
    (a) FE   (b) GF   (c) FG   (d) EF

The following questions are based on the letter series. In each series some letters are missing. The letters in each series are arranged in a proper sequence. Find the sequence and complete the series by one of the choices given below each questions

57. —ab—b—aba— —abab
    (a) abbaa   (b) bbaab   (c) abaab   (d) aaaba

58. If EXAMINATION could be given the code number 125, what code number can be given to HARDWORK?
    (a) 521   (b) 250   (c) 68   (d) 98

Study the following information carefully and answer the given questions:

B, M, T, R, K, H and D are travelling in a train compartment with III-tier sleeper berth. Each of them has a different profession of Engineer, Doctor, Architect, Pharmacist, Lawyer, Journalist and Pathologist. They occupied two lower berths, three middle berths and two upper be4hs. B, the Engineer, is not on the upper berth. The Architect is the only other person who occupies the same type of berth that of B. M and H are not on the middle berth and their professions are Pathologist and Lawyer respectively. T is a Pharmacist. D is neither a Journalist nor an Architect. K occupies the same type of berth as that of the Doctor.

59. What is D's profession?
    (a) Pharmacist   (b) Lawyer   (c) Doctor   (d) Engineer

60. Which of the following groups occupies the middle berth?
    (a) DKT   (b) HKT   (c) DKR   (d) DHT

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Answer key

1. b		2. b		3. d	
4. b		5. a	6. d		7. a
8. d	9. a	10. a	11. c	12. c	13. d
	14. b		15. c	16. c	17. a
18. c			19. a		20. c
21. a	22. d	23. b	24. a	25. a	26. a
27. a		28. b			29. d
30. a	31. b		32. a	33. c	34. d
	35. a	36. c	37. b	38. b	39. b
40. a	41. a	42. c	43. d	44. c	45. c
46. a	47. a	48. c	49. a	50. c	
				51. a	52. a
53. c	54. c	55. a	56. b	57. d	58. d
59. c	60. a				