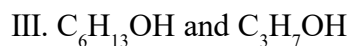
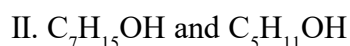
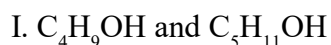


**PHYSICS**

1. Biogas is a mixture of  
A)  $\text{CO} + \text{H}_2 + \text{CH}_4$     B)  $\text{CO}_2 + \text{N}_2$     C)  $\text{CO} + \text{H}_2$     D)  $\text{CO}_2 + \text{CH}_4 + \text{H}_2 + \text{H}_2\text{S}$
2. Choose the source of energy which is different from others  
A) Wood    B) Coal    C) Natural gas    D) Petroleum
3. Which of the following is an example of a fossil fuel?  
A) Coal gas    B) Coke    C) Water gas    D) Natural gas
4. A concentrator type solar heater has a surface area of  $4\text{m}^2$  and it can reflect only 20% of the solar radiations incident on it. Find the energy concentrated by the heater at its focus in one hour. If the rate of solar energy incident on it is  $0.5\text{kJ}/\text{m}^2\text{s}$ .
5. Maximum temperature that can be attained in box type solar cooker is:  
A)  $20^\circ\text{C}$  to  $50^\circ\text{C}$     B)  $10^\circ\text{C}$  to  $20^\circ\text{C}$     C)  $300^\circ\text{C}$  to  $350^\circ\text{C}$     D)  $100^\circ\text{C}$  to  $140^\circ\text{C}$
6. The calorific value of wood is 17 KJ/g. Find the energy released when wood of mass 2kg is completely burnt.  
A) 34000KJ    B) 340KJ    C) 3400KJ    D) 34KJ
7. Infra- red rays have wavelength  
A) equal to 400nm    B) equal to 600 nm    C) less than 400 nm    D) greater than 7nm
8. Harmful radiations emitted by the sun are  
A) visible    B) infra-red    C) ultra- violet    D) radio waves
9. Solar cells are made of  
A) metals    B) insulators    C) semi-conductors    D) none of the above
10. A solar cell converts heat and light energy into  
A) heat energy    B) sound energy    C) electrical energy    D) nuclear energy
11. The energy possessed by wind is  
A) Kinetic energy    B) Potential energy    C) Thermal energy    D) Sound energy
12. Which of the following has highest calorific value?  
A) Petrol    B) Hydrogen gas    C) Coal    D) Methane
13. Which of the following has lowest calorific value?  
A) Kerosene oil    B) Methane    C) Bio-gas    D) Butane
14. The sources of energy which are being produced continuously in nature and are inexhaustible are called  
A) conventional sources    B) non- conventional sources  
C) non- renewablesources    D) none of these



27. Observe the following pairs of organic compounds :



Which of these pair is a homologous series according to increasing order of carbon atom :

- A) III only                      B) II only                      C) I only                      D) all of these

28. Buckminsterfullerene is an allotropic form of:

- A) P                      B) S                      C) C                      D) Sn

29. Oils on treating with hydrogen in the presence of Pd or Ni catalyst form fats. This is an example of:

- A) addition reaction      B) substitution reaction      C) displacement reaction      D) oxidation reaction

30. Carbon forms 4 covalent bonds by sharing its 4 valence electrons with 4 univalent atoms eg. hydrogen. After the formation of 4 bonds, carbon attains the electronic configuration of:

- A) He                      B) Ne                      C) Ar                      D) Kr

### **BIOLOGY**

31. Hormone that controls reabsorption of sodium in urinary tubules and regulates  $Na^+$  and  $K^+$  in body fluids

- A) Nor-adrenaline      B) Adrenaline                      C) Aldosterone                      D) Cortisol

32. Find out the incorrect matching.

- A) Testosterone - Leydig cells                      B) Ovaries - Relaxin  
C) Glucagon - Beta cells                      D) Adrenal cortex - Cortisol

33. Diabetes insipidus is caused due to the deficiency of:

- A) ADH                      B) Insulin                      C) MSH                      D) PRL

34. Somatotrophic hormone stimulates:

- A) Release of growth hormone from anterior pituitary  
B) The release of MSH  
C) Thyroid gland to release thyroxine  
D) Overall growth of body, muscles and bones

35. Find the incorrect statement.

- A) Auxins are produced in apical meristems  
B) Giberellins cause stem elongation and expansion of leaves  
C) Bolting effect is caused by cytokinins  
D) Abscisic acid is stress hormone of plants

36. The gaseous hormone produced by fleshy fruits during ripening is

- A) Ethylene                      B) Cytokinin                      C) Auxin                      D) Abscisic acid

37. The hormone known as milk ejecting hormone  
 A) Prolactin                      B) Vasopressin                      C) Oxytocin                      D) Cortisol
38. Myxoedema is  
 A) Hyper thyroidism in adults                      B) Hypothyroidism in children  
 C) Hypothyroidism in adults                      D) Hyper thyroidism in children
39. Find the mismatch regarding movement of plant parts.  
 A) Positive Geotropism      -    movement towards gravity  
 B) Positive chemotropism    -    movement towards the chemical  
 C) Thigmonasty                -    movement is specific direction in response to touch  
 D) Photonasty                 -    non directional movemnt in response to light
40. Find mismatch.  
 A) Acromegaly                -    hyper secretion of GH in adult  
 B) Grave's disease          -    Hyper thyroidism  
 C) Addison's disease        -    Hyposecretion of Glucocorticoids  
 D) Hyperglycemia          -    Hyper secretion of insulin
41. The order in which meninges exist from outside to inside  
 A) duramater                -    Piamater                      -    arachnoid membrane  
 B) duramater                -    arachnoid membrane    -    Piamater  
 C) arachnoid membrane -    Piamater                      -    duramater  
 D) Piamater                 -    arachnoid mater            -    duramater
42. Part of brain that regulates breathing and heart rate is  
 A) Cerebrum                B) Medulla                      C) Hypothalamus                D) Diencephalon
43. Number of pairs of cranial and spinal nerves in man is respectively  
 A) 10 and 12                B) 10 and 30                      C) 12 and 31                      D) 12 and 33
44. Which is not a function of hypothalamus  
 A) thermoregulation                                      B) induces hunger and thirst  
 C) induces sleep    D) helps in speech production
45. Find the wrongly matched pair.  
 A) Auditory center          -    Temporal lobe  
 B) Visual center             -    Occipital lobe  
 C) Thermostat                -    Hypothalamus  
 D) Biological clock         -    Medulla

## MATHEMATICS

46. The sum of first 'n' natural number is 276 then the value of  $\sqrt{n+2}$  is :
- A) 6                                  B) 5                                  C) 7                                  D) 8
47. The hypotenuse of a right angled triangle is 25 and the difference between the lengths of the other two sides is 17cm then the perimeter of the triangle is :
- A) 56 cm                              B) 55 cm                              C) 58 cm                              D) 60 cm
48. If the roots of  $a(b-c)x^2 + b(c-a)x + c(a-b) = 0$  are equal then :
- A) a, b, c are in A.P      B)  $a^2, b^2, c^2$  are in A.P      C) a, b, c are in H.P      D)  $a^2, b^2, c^2$  are in H.P
49. If the equation  $8x^2 + 3kx + 2 = 0$  has equal roots then the positive value of 'k' is :
- A) 3                                  B) 8                                  C)  $\frac{3}{8}$                                   D)  $\frac{8}{3}$
50.  $\alpha$  be a root of  $x^2 - 3x + 1 = 0$  then  $\alpha^3 + \frac{1}{\alpha^3}$  is :
- A) 12                                  B) 16                                  C) 27                                  D) 18
51. Two water taps together can fill a tank in  $9\frac{3}{8}$  hours. The larger one takes 10 hours less than the smaller one to fill the tank separately. Then the time in which smaller one takes to fill the tank :
- A) 15                                  B) 20                                  C) 25                                  D) 27
52. Number of solutions of  $\frac{2x}{x-3} + \frac{1}{2x+3} + \frac{3x+9}{(x-3)(2x+3)} = 0$  is :
- A) zero                                  B) one                                  C) two                                  D) three
53. The mean of 10 observations is 13. How 1, 2, 3, 4 are subtracted from first 4 data and 5 is added to next two items. Then arithmetic mean of the data is :
- A) 10                                  B) 12                                  C) 13                                  D) 14
54. Which of the following is not a measure of central tendency of given data is :
- A) Mean                                  B) Mode                                  C) Median                                  D) Standard deviation
55. If the mean and median of the set of numbers are 32 and 33 then mode of the data is :
- A) 30                                  B) 31                                  C) 34                                  D) none of these
56. The median of the following set of the data,  
815, 824, 825, 810, 829, 845  
749, 799, 796, 812, 834, 828  
816, 805, 819                                  is :
- A) 813                                  B) 816                                  C) 817                                  D) 818

57. The mode of the following data :

225, 216, 219, 248, 219, 220, 234

215, 219, 220, 221, 224, 219, 216

222, 216, 218, 220, 216, 219

A) 216

B) 219

C) 220

D) 221

58. The first 5 elements of the set  $x_1, x_2, \dots, x_{10}$  are replaced by  $x_i + i$  where  $i = 1, 2, 3, 4, 5$  and last 5 elements are replaced by  $x_j + 5 - j$  where  $j = 6, 7, 8, 9, 10$ . If the mean of  $x_1, x_2, \dots, x_{10}$  is given as  $x$ . Then the mean of the new defined data is :

A)  $x$

B)  $x + 5$

C)  $x - 5$

D)  $x + 10$

59. For what positive value of  $a$  the quadratic  $(4 - a)x^2 + (2a + 4)x + (8a + 1)$  is a perfect square :

A) 2

B) 3

C) 4

D) 5

60. Product of the roots of  $(x - 3)(x - 2) = 12$  is :

A) 12

B) 6

C) -12

D) -6

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*PHYSICS + CHEMISTRY + MATHS + BIOLOGY*

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**PHYSICS**

1. D
2. A
3. D
4. B
5. D
6. A
7. D
8. C
9. C
10. C
11. A
12. B
13. C
14. B
15. C

**CHEMISTRY**

16. B
17. B
18. B
19. D
20. B
21. A
22. D
23. B
24. D
25. D
26. D
27. C
28. C
29. A
30. B

**BIOLOGY**

31. C
32. C
33. A
34. D
35. C
36. A
37. C
38. C
39. C
40. D
41. B
42. B
43. C
44. D
45. D

**MATHEMATICS**

46. B
47. A
48. C
49. D
50. D
51. C
52. B
53. C
54. D
55. D
56. B
57. B
58. A
59. B
60. D