

# FIITJEE

**Time: 120 Minutes**

**Maximum Marks: 100**

## **CHANDIGARH NTSE STAGE 1 2020-21 \_SAT**

### **Instructions to the Candidates**

**Read the following instructions carefully before you answer the questions:**

1. Answer are to be given on a SEPRATE ANSWER SHEET.
2. Please write your twelve digits Roll Number very clearly on the Test-booklet and Answer Sheet as given in your admission card.
3. Please note and follow the instructions given on the answer sheet for writing the answers.
4. Darken the CIRCLE with pen for answering the question in the appropriate space against the number corresponding to the question you are answering.
5. There are 100 question in the test.
6. Since all questions are compulsory, do not try read the whole question paper before beginning to answer it.
7. If you do not know the answer to any question, do not spend much time on it and pass on to the next one. Time permitting, you can come back to the question, which you have left in the first instance and try them again.
8. Since the time allotted for this question paper is very limited you should make the best use of it by not spending too much time on any one question.
9. Rough work can be done anywhere in the booklet but not on Answer sheet/loose paper.
10. Every correct answer will be awarded one mark.
11. Please return the answer sheet to the invigilator after the test.

**SOCIAL SCIENCE**

1. Which of the following indicated the main objectives of French Constitution in 1791.
  - (1) Constitutional Monarchy
  - (2) Right to vote for all men above 25 years of age
  - (3) Declaration of Rights of man and citizens
  - (4) Only men of 25 years and paid taxes were allowed to vote

(A) All the above (B) 2, 3, 4  
(C) 1, 2, 3 (D) 1, 3, 4
2. The name associated with "APRIL THESES" is.....
 

(A) Karl Marx (B) Robert Owen  
(C) Lenin (D) Stalin
3. BUDENOVKA is .....
 

(A) Russian Coat (B) Russian Hat  
(C) Russian Tie (D) Russian Uniform
4. Arrange the following in the correct Chronological order of the events
  - (1) Pearl Harbour Attack
  - (2) German Invasion of Russia
  - (3) German Invasion of Poland
  - (4) Hitler pulling Germany out of League of Nations

(A) 1 2 3 4 (B) 2 3 1 4  
(C) 4 3 1 2 (D) 4 3 2 1
5. Consider the following statements and choose the correct ones.
  - (1) British invited German expert, DIETRIECH BRANDS for advice in saving forests
  - (2) Brandis was made first inspector General of Forests
  - (3) Brandis set up Indian Forest Serviced in 1864
  - (4) Brandis helped formulated the Indian Forests Act in 1869

(A) 1234 are correct (B) only 134 are correct  
(C) 123 are correct (D) only 1 is correct
6. Dhangars were the pastoral community of .....
 

(A) Gujrat (B) Maharashtra  
(C) Karnataka (D) Chhattisgarh
7. Name the French philosopher who explained-What makes the nation?
 

(A) JEAN-JACQUES ROUSSEAU (B) FREDERIC SORRIEU  
(C) MONTESQUIE (D) ERNST RENAN
8. Arrange the following into correct Chronological order:
  - (1) Arrival of Simon Commission in India
  - (2) Lord Irvin announced Dominion status of India
  - (3) Gandhiji sent the letter stating 11 demands
  - (4) Poona Pack

(A) 1 2 3 4 (B) 2 3 4 1  
(C) 3 4 1 2 (D) 4 1 2 3
9. Which of the following statements are false:
  - (1) Silk route linked ASIA-EUROPE-NORTH AFRICA
  - (2) Silk route was route both by land and sea
  - (3) Buddhism travelled across silk route
  - (4) Precious metals-Gold & silver flowed from Asia to Europe

(A) 1 and 4 (B) only 1  
(C) only 3 (D) only 4
10. Europeans were attracted to Africa, why?
 

(A) By its Natural Beauty (B) To expand industries  
(C) By its vast land resources and mineral wealth (D) All the above
11. ....of Korea is among world's oldest existed book with moveable metal types printing.
 





(A) Diamond Sutra (B) Bible  
(C) Jikji (D) Ukiyo

12. Following statement refer to the life of Baba Ramchandra in Awadh. Choose the false statement.  
 (A) Peasants were led by Baba Ramchandra in Awadh  
 (B) Baba Rama Chandra was a sanyasi  
 (C) He worked as indentured labourer in Assam  
 (D) He headed Oudh Kisan Sabha with J.L. Nehru
13. choose the right option of peaks in descending order of their heights.  
 (1) Kanchenjunga (2) Dodabetta  
 (3) Anaimudi (D) Nanda Devi  
 (A) 1 2 3 4 (B) 2 3 4 1  
 (C) 3 4 1 2 (D) 1 4 3 2
14. River Kaveri makes the second biggest water fall in India. It is.....  
 (A) Jog falls (B) Duduwa falls  
 (C) Shiva Samundram falls (D) Dudhsagar falls
15. **MAHAWAT** is the local name of .....rainfalls in Indian Plains.  
 (A) Summer (B) Winter  
 (C) Spring (D) Autumn
16. Which of the following are the features of National population Policy-2000  
 (1) Imparts free and compulsory education upto 14 years of age  
 (2) Reducing infant mortality rate to below 30 per 1000 live births  
 (3) Achieving universal immunization of children  
 (4) Promoting early marriage among girls  
 (A) 1 2 3 4 (B) 1 3 4 only  
 (C) 1 2 3 only (D) 2 3 4 only
17. Laterite soil is very useful in growing.....  
 (A) Rice, Wheat, Mustard (B) Tea, coffee and Cashewnuts  
 (C) Pulses, sugarcanes and resins (D) Cotton, Maize
18. Match the following

MULTI PURPOSE DAMS	NAME OF RIVERS
A. Rana Pratap Sagar	i. Bhagirathi River
B. Salal project	ii. Chambal River
C. Tehri Dam	iii. Krishna River
D. Nagarjuna Sagar Dam	iv. Chenab River

- (A) A-i, B-ii, C-iii, D-iv (B) A-ii, B-iv, C-I, D-iii  
 (C) A-iii, B-I, C-ii, D-iv (D) A-iv, B-iii, C-ii, D-i
19. Average climatic conditions for growing sugar cane are.....  
 (A) 21°C –27°C (75 cm –100 cm rainfall) (B) 25°C –20°C (25 cm –50 cm rainfall)  
 (C) Below 18°C (75 cm –100 cm rainfall) (D) 21°C –27°C (50 cm –65 cm rainfall)
20. The first ever cement plant set up in India was.....  
 (A) Mumbai 1i904 (B) Kolkata 1944  
 (C) Chennai 1940 (D) Chennai 1904
21. The river associated with national water way no. 2 is.....  
 (A) Ganges (B) Sutleg  
 (C) Kaveri (D) Brahmaputra
22. Consider the following facts and decide which of these facts would you call a democracy.  
 (1) Elections are held regularly  
 (2) Voter are bribed by the leaders  
 (3) Govt. arrests the leaders who protest peacefully against the wrong policies  
 (4) Govt. works for the welfare of the people  
 (A) 1, 2, 3, 4 (B) 1 and 2  
 (C) only 1 (D) 1 and 4
23. Who, among the following leaders was boron in Saudi Arabia and opposed Muslim separatist politics and later became first education minister of India  
 (A) Jaipal Singh (B) Abul Kalam Azad  
 (C) G.Durgabai Deshmukh (D) Dr. Zakir Hussain

24. "Nyaya Yuth" (Struggle for justice) was movement launched by Chaudhary Devi Lal against which ruling party in Haryana?  
 (A) Janta Dal (B) Congress  
 (C) BSP (D) BJP
25. The constitution of Belgium has been amended four times between the years.  
 (A) 1970-1992 (B) 1970-1990  
 (C) 1972-1992 (D) 1970-1993
26. Which country among the following countries suffered disintegration due to political fights on the basis of religious and ethnic identities.  
 (A) Yugoslavia (B) India  
 (C) Belgium (D) Netherland
27. Which of the following political parties came to power in Bolivia in 2006.  
 (A) The communist party (B) The republic party  
 (C) The socialist party (D) The conservative party
28. Match the following regionals political parties with their symbols:

Political party	Symbol
A. Telegu Desam Party	i. 
B. YSR Congress Party	ii. 
C. Shromani Akali Dal	iii. 
D. The Conservative Party	iv. 

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

29. Match the following:

A. Electricity Bill	i. Fixed Capital
B. Computers	ii. Human Capital
C. Labour	iii. Working Capital

- (A) A-i, B-ii, C-iii (B) A-iii, B-i, C-ii  
 (C) A-ii, B-iii, C-i (D) A-iii, B-ii, C-i

30. A person is considered poor if his or her income level falls below a given.....  
 (A) Maximum level necessary to fulfil needs (B) Minimum level necessary to fulfill basic needs  
 (C) Both 1 and 2 (D) Level below per capita income of the country
31. Prime Minister Rozgar yojana was started in.....  
 (A) 1973 (B) 1983  
 (C) 1993 (D) 2003
32. Yellow card is issued to.....  
 (A) People above poverty line (B) People below poverty line  
 (C) People in government jobs (D) People in private sector
33. Mr. Dhiman took a loan of Rs. 20 Lakhs Mr. Dhiman took a loan of Rs. 20 Lakhs from bank to purchases a house. The annual rate of interest on the load is 12% per annum and loan is to be repaid in 10 years in instalments. The bank retains the papers of new houses as collateral, which will be returned to Mr. Dhiman only when he repays the entire loan amount with interest.  
 Analyze the loan information given above and choose the right option for the same.  
 (A) Mode of repayment (B) Interest on loan  
 (C) Terms of Credit (D) collateral

34. There are two statements marked as Assertion (A) and Reason (R). Read the statements carefully and choose the correct option.  
 Assertion (A): The goods and services are produced globally.  
 Reason (R): Production process is divided into small parts but is not spread out across the globe.  
 (A) Both A and R are true and R is correct explanation of A  
 (B) Both A and R are true and R is not the correct explanation of A  
 (C) A is true and R is false  
 (D) A is false and R is true
35. Which one of the following minerals belong to the category of ferrous minerals?  
 (A) Gold (B) Copper  
 (C) Manganese (D) Bauxite
36. Which one of the following groups of cities is connected by the National Highway no. 7/  
 (A) Delhi-Amritsar (B) Delhi-Kolkata  
 (C) Delhi-Mumbai (D) Varanasi-Kanyakumari
37. Name the place where the Non-cooperation movement turned violent?  
 (A) Champaran (B) Kheda  
 (C) Nagpur (D) Chauri Chaura
38. Whose name of the following is associated with Kesari?  
 (A) Jyotiba Phule (B) Dr. Ambedkar  
 (C) Bal Gangadhar Tilak (D) Mahatma Gandhi
39. Who wrote the book 'Hind Swaraj'?  
 (A) Mahatma Gandhi (B) Jawaharlal Nehru  
 (C) Lal Bahadur Shastri (D) Maulana Azad
40. In which of the following year was Treaty of Vienna signed?  
 (A) 1811 (B) 1810  
 (C) 1815 (D) 1812

**CHEMISTRY**

41. Which of the following compound is responsible for tarnishing of silver?  
 (A)  $Ag_2O$  (B)  $Ag_2CO$   
 (C)  $Ag_2S$  (D)  $AgCN$
42. Vinger on reaction with baking soda produces a gas which when passed through lime water turns it milky. The milkiness is due to the formation of:  
 (A) Calcium Oxalate (B) Calcium Carbonate  
 (C) Calcium Hydroxide (D) Calcium Bicarbonate
43. Match list-I with List-II and select the correct answer by using the codes given below the list:

List-I (Name of Acid)	List-II (Source)
(A) Lactic acid	(i) Tamarind
(B) Malic Acid	(ii) Curd
(C) Acetic Acid	(iii) Tomato
(D) Tartaric Acid	(iv) Vinger

- (A) (A) (B) (C) (D)  
 (i) (iv) (ii) (iii)
- (B) (A) (B) (C) (D)  
 (ii) (i) (iv) (iii)
- (C) (A) (B) (C) (D)  
 (ii) (i) (iii) (iii)
- (D) (A) (B) (C) (D)  
 (ii) (iii) (iv) (i)
44. When a copper vessel is exposed to moist air for long time it acquires a dull green coating. This coating is a mixture of:  
 (A) Copper Oxide and Copper Carbonate (B) Copper Hydroxide and Copper carbonate  
 (C) Copper Oxide and Copper Hydroxide (D) Copper Peroxide and Copper Carbonate
45. The Buckminster fullerene has  
 (A) 60 Carbon atoms (B) 58 Carbon atoms  
 (C) 62 Carbon atoms (D) 56 Carbon atoms

46. Plaster of Paris can be prepared by heating \_\_\_\_\_ to a temperature of  $100^{\circ}\text{C}$ .  
 (A)  $\text{CaSO}_3 \cdot 2\text{H}_2\text{O}$  (B)  $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$   
 (C)  $\text{CaCO}_3 \cdot 2\text{H}_2\text{O}$  (D)  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
47. The Atomic number of four elements P, Q, R and S are 6, 8, 14 and 16 respectively. Out of these elements the metalloid is:  
 (A) P (B) Q  
 (C) R (D) S
48. Which of the following metals and nonmetals is found in the liquid state at room temperature?  
 (A) Gallium and Iodine (B) Gallium and Bromine  
 (C) Mercury and Bromine (D) Mercury and Sulphur
49. The fluorescence on the walls of discharge tube is due to.  
 (A) Cathode rays (B) Anode rays  
 (C) Canal rays (D) None of the above
50. Isotopes of an element always have the  
 (A) Same number of Proton (B) Same number of the Neutron  
 (C) Same Charge (D) None of the above
51. Li is similar in behaviour to  
 (A) C (B) Si  
 (C) Mg (D) Be
52. The velocity of a reaction is defined as the  
 (A) increase of concentration of reactants per unit time  
 (B) decrease of concentration of reactants per unit time  
 (C) increase of concentration of products per unit time  
 (D) both B and C
53. Property of self combination of the atom of the same element of form long chain is known as  
 (A) Protonation (B) Carbonation  
 (C) Coronation (D) Catenation

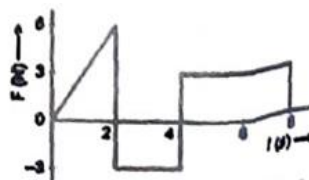
### PHYSICS

54. When light passes from one medium to another medium, which of the following remains unchanged.  
 (A) Refractive index (B) Frequency  
 (C) Wavelength (D) Velocity
55. Two waves have intensities in the ratio 1:9. If these waves produce interference, then ratio of maximum and minimum intensities is  
 (A) 3:1 (B) 4:1  
 (C) 9:1 (D) 16:1
56. The minimum wave length of the X-rays produced by electrons accelerated through a potential difference of V (Volt) is directly proportional to  
 (A)  $\sqrt{V}$  (B)  $V^2$   
 (C)  $1/\sqrt{V}$  (D)  $1/V$
57. A radioactive element has half life period 1600 years. After 6,400 years, what amount will remain?  
 (A)  $1/2$  (B)  $1/16$   
 (C)  $1/8$  (D)  $1/4$
58. For a transistor  $I_c/I_e = 0.96$ . The current gain in common emitter configuration is  
 (A) 6 (B) 12  
 (C) 24 (D) 48
59. The mean free path of molecules of a gas (radius r) is inversely proportional to :  
 (A)  $r^3$  (B)  $r^2$   
 (C) r (D)  $r^{1/2}$

60. If force(F), velocity (V) and time (T) are taken as fundamental units, then dimension of mass are:  
 (A)  $[FVT^1]$  (B)  $[FVT^{-2}]$   
 (C)  $[FV^{-1}T^{-1}]$  (D)  $[FV^{-1}T]$
61. A conducting sphere of radius R is given a charge Q. The electric potential and the electric field at the centre of sphere respectively are  
 (A) zero and  $\frac{Q}{4\pi\epsilon_0 R^2}$  (B)  $\frac{Q}{4\pi\epsilon_0 R}$  and zero  
 (C)  $\frac{Q}{4\pi\epsilon_0 R}$  and  $\frac{Q}{4\pi\epsilon_0 R^2}$  (D) Both and zero
62. In an ammeter 0.2% of main current passes through the galvanometer. If resistance of galvanometer is G, the resistance of ammeter will be:  
 (A)  $\frac{1}{499}G$  (B)  $\frac{499}{500}G$   
 (C)  $\frac{1}{500}G$  (D)  $\frac{500}{499}G$
63. If the focal length of objective lens is increased then magnifying power of:  
 (A) Microscope will increase but that of tele scope will decrease  
 (B) Microscope and telescope both will increase  
 (C) Microscope and telescope both will decrease  
 (D) Microscope will decrease but that of telescope will increase
64. Following figures show the arrangement of bar magnets in different configuration. Each magnet has magnetic dipole moment  $\rightarrow M$ . Which configuration has the higher net magnetic dipole moment?



65. For a satellite, escape velocity is  $11 \text{ kms}^{-1}$ . If the satellite is launched at an angle of  $60^\circ$  with vertical, the escape velocity will be  
 (A)  $11 \text{ Kms}^{-1}$  (B)  $11\sqrt{3} \text{ Kms}^{-1}$   
 (C)  $11/\sqrt{3} \text{ Kms}^{-1}$  (D)  $33 \text{ Kms}^{-1}$
66. The force F acting on a particle of mass m is indicated by force -time graph shown below:  
 The change in momentum of the particle over the time interval from zero to 8s is:  
 (A) 24 Ns  
 (B) 12 Ns  
 (C) 20 Ns  
 (D) 6 Ns



**BIOLOGY**

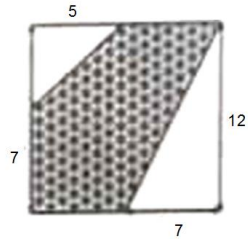
67. Read the following statement and select the correct option  
 (1) Wind-pollinated flowers need to produce more amount of pollen grain  
 (2) Seeds from cross-pollinated flowers produce weaker and less healthy plants.  
 (A) A is false, B is true (B) A is true, B is false  
 (C) Both A and B are true (D) Neither A nor B is true
68. Which of the following is not controlled by medulla  
 (A) Blood pressure (B) Salivation  
 (C) Body posture (D) Vomiting

69. Among the statement give below select the ones that correctly describe the concept of sustainable development.
1. Planned growth with minimum damage of environment.
  2. Growth irrespective of the extent of damage to the environment.
  3. Stopping all developmental
  4. Growth that is acceptable to all the stakeholders.
- (A) (i) and (iv) (B) (ii) and (iii)  
(C) (ii) and (iv) (D) (iii) only
70. Which one of the following is a definition of ecosystem.
- (A) Different communities of plants, animals and microbes together with their environment.  
(B) Different communities of plants and microbes and their environment.  
(C) A community of organisms interacting with one another.  
(D) An association of seven plants and animals
71. The correct pathway of blood circulation is
- (A) Auricles → ventricles → Arteries → veins  
(B) Ventricles → auricles → Veins → Arteries  
(C) Ventricle → Veins → Arteries → Auricles  
(D) Veins → Ventricles → Arteries → Auricles
72. Choose the event that does not occur in photosynthesis.
- (A) Absorption of light by chlorophyll  
(B) Reduction of carbon dioxide to carbohydrates  
(C) Oxidation of carbon to carbon dioxide  
(D) Conversion of light energy to chemical energy
73. Which one of the following statement is true?
- (A) In human, there are two pairs of sex chromosomes  
(B) A child who inherits an X-chromosome from father, will be a boy.  
(C) A child who inherits a Y-chromosome from father, will be a girl  
(D) A child who inherits an X-chromosome from father, will be a girl
74. The accumulation of non-biodegradable substances in a food chain in increasing amount at each higher trophic level is known as
- (A) Accumulation (B) Biomagnification  
(C) Pollution (D) Eutrophication
75. By adding diluted saliva in starch solution, the starch solution stops giving iodine tests. This proves-
- (A) Starch becomes non reactive in the presence of saliva  
(B) Saliva has enzyme which degrades starch into sugars.  
(C) Starch was hydrolysed by water before adding saliva  
(D) None of these
76. Iodine is necessary for the synthesis of which hormone?
- (A) Auxin (B) Thyroxin  
(C) Adrenaline (D) Insulin
77. In human males, all the chromosomes are paired perfectly except one. This unpaired chromosome is
- (A) Large chromosome (B) Small chromosome  
(C) Y-chromosome (D) X-chromosome
78. The main cause of abundant coliform bacteria in the river Ganga is
- (A) Disposal of unburnt corpses into water (B) Discharge of effluents from electroplating industries  
(C) Washing of clothes (D) Immersion of ashes
79. Accumulation of non-biodegradable pesticides in the food chain in increasing amount at each higher trophic level is known as
- (A) Eutrophication (B) Pollution  
(C) Biomagnification (D) Accumulation
80. Which of the following is an example of homologous organs?
- (A) Our arm and a dog's foreleg (B) Our teeth and an elephant's tusk  
(C) Potato and runners of grass (D) All of the above



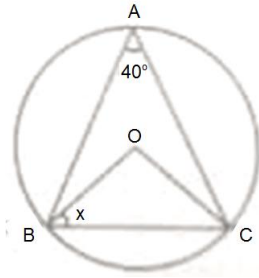
**MATHEMATICS**

81. A hemispherical bowl of internal radius 9 cm is fully of liquid. The liquid is to be filled into the cylindrical shaped small bottle each of diameter 3 cm and height 4cm. How many bottles are needed to empty the bowl?  
 (A) 52 (B) 54  
 (C) 53 (D) 51
82. A ship sails 12 km due north of a port and then sails 14 km due east. How far is the ship from port?  
 (A) 15.4 (B) 16.4  
 (C) 18.4 (D) 17.4
83. The area of shaded portion in the given figure,



- (A) 77 sq. units (B) 74 sq. units  
 (C) 72 sq. units (D) 89.5 sq. units
84. The  $p^{\text{th}}$  term of an A.P. is  $q$  and the  $q^{\text{th}}$  terms is  $p$ . find the  $r^{\text{th}}$  term  
 (A)  $p + q + r$  (B)  $p + q - r$   
 (C)  $p + q + r$  (D)  $p - q - r$
85. If the angle of elevation of a cloud from a point 'h' meter above a lake is ' $\alpha$ ' and the angle of depression of its reflection in the lake is ' $\beta$ ', find the distance of the cloud from the point of observation.  
 (A)  $\frac{2h \sec \alpha}{\tan \beta - \tan \alpha}$  (B)  $\frac{2h}{\tan \beta - \tan \alpha}$   
 (C)  $\frac{2h \sec \alpha}{\tan \beta + \tan \alpha}$  (D)  $\frac{2h}{\tan \beta + \tan \alpha}$
86. Shilpa sells apples to her customer at the cost price itself but uses a weight of 800g instead of 1kg weight. Find the profit percentage.  
 (A) 30% (B) 35%  
 (C) 25% (D) 20%
87. If a natural number ' $\alpha$ ' is divided by 7, the remainder is 5. If a natural number ' $\beta$ ' is divided by 7, the remainder is 3. The remainder is ' $r$ ' if  $\alpha + \beta$  is divided by 7. Find the value of  $\frac{3r + 5}{4}$   
 (A) 2 (B) 7  
 (C) 8 (D) 11
88. Ruhan's salary in 2019 is Rs. 1,77,100, His salary from 2016 has risen annually by 10, 15 and 40 percent respectively to reach 2019 salary figures. What was his salary in 2016.  
 (A) Rs. 1,00,000 (B) Rs. 1,20,000  
 (C) Rs. 1,15,000 (D) Rs. 95,000
89. A railway engine is travelling along a circular railway track of radius 1500 metres with as speed of 66 km/hr. Find the angle turned by the engine is 10 seconds.  
 (A)  $5^\circ$  (B)  $6^\circ$   
 (C)  $7^\circ$  (D)  $8^\circ$
90. If  $x$  men can do a work in 8 days and  $(x + 4)$  can do the work in 6 days then  $x$  is equal to  
 (A) 10 (B) 6  
 (C) 12 (D) 24
91. If  $x^2 + y^2 + z^2 = r^2$  where  $x = r \cos \alpha \cos \beta$ ,  $y = r \cos \alpha \sin \beta$ , then  $z$  has one of the following values  
 (A)  $r \cos \alpha$  (B)  $r \tan \alpha \cos \beta$   
 (C)  $r \tan \alpha \tan \beta$  (D)  $r \sin \alpha$

92. Find the value of 'x' from the given figure in which O is the centre of circle.



- (A)  $40^\circ$  (B)  $50^\circ$   
(C)  $80^\circ$  (D)  $90^\circ$
93. Radha's grandfather was 8 times older to her 16 years ago. He would be 3 times of her age 8 years from now. Eight years ago, what was the ratio of Radha's age to that of her grandfather?  
(A) 1:2 (B) 3:8  
(C) 11:53 (D) 1:5
94. One liter of water weighs 1kg. How many cubic millimetres of water weighs 0.1 gms?  
(A) 100 (B) 1  
(C) 10 (D) 0.1
95. The probability that card drawn from a pack of 52 cards will be diamond or a queen is  
(A)  $\frac{2}{13}$  (B)  $\frac{4}{13}$   
(C)  $\frac{1}{13}$  (D)  $\frac{1}{52}$
96. If  $x = y^a$ ,  $y = z^b$ ,  $z = x^c$  then find the value of abc  
(A) 0 (B) 1  
(C) 2 (D) 3
97. If  $\alpha \neq \beta$  but  $\alpha^2 = 5\alpha - 3$ ,  $\beta^2 = 5\beta - 3$  then equation whose roots are  $\frac{\alpha}{\beta}$  &  $\frac{\beta}{\alpha}$  is  
(A)  $3x^2 - 19x + 3 = 0$  (B)  $3x^2 + 19x + 3 = 0$   
(C)  $3x^2 - 18x + 3 = 0$  (D)  $3x^2 + 18x + 3 = 0$
98. If  $x = b + c$ ,  $y = c + a$ ,  $z = a + b$  then Find the value of  $\frac{x^2 + y^2 + z^2 - yz - zx - xy}{a^2 + b^2 + c^2 - bc - ca - ab}$   
(A) 0 (B) 1  
(C) 2 (D) -1
99. If  $\tan\theta + \sin\theta = a$  and  $\tan\theta - \sin\theta = b$ , what is the value  $(a^2 - b^2) + \sqrt{ab}$   
(A) -3 (B) -4  
(C) 3 (D) 4
100. The line segment joining the points (3,4) and (1,2) is trisected at the points A&B. If the co-ordinates of A&B are (a, -2) &  $(\frac{5}{3}, b)$  respectively. Find the values of a and b.  
(A)  $a = 0, b = \frac{7}{3}$  (B)  $a = \frac{7}{3}, b = 0$   
(C)  $a = 7, b = 3$  (D)  $a = 3, b = 7$