AFCAT 1 2013 QUESTION PAPER

INSTRUCTIONS:

- 1. Total No. of Questions–100. Each Question is of three marks.
- 2. One mark will be deducted for every wrong answer.
- 3. Do not write or mark on the Question Paper.
- 4. Question Paper to be returned before leaving the Exam Hall.

DIRECTIONS (Qs. 1-5): Read the following passage carefully and answer the questions given below:

We shall go on the end, we shall fight in France, we shall fight on the seas and oceans, we shall fight with the growing confidence and strength in the air, we shall defend our island, whatever the cost may be, we shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills. We shall never surrender, and even if this island or a large part of it was subjugated and starving, then our empire beyond the seas would carry on the struggle, until the New World steps forth to the rescue and the liberation of the Old.

- On the basis of the passage which of the following statements 1. may be said to be correct?
 - (a) The speaker is encouraging his men for the conquest of France
 - (b) The speaker is an aggressive and maniacal war-monger
 - The speaker is not satisfied with the conquest of the island (c)
 - (d) The speaker is a patriot urging the defence of his motherland
- 2. The speaker in the passage wants to go on fighting because
 - (a) he is a raving lunatic
 - (b) he is in a state of utter despair
 - he expects help from other quarters (c)
 - (d) he is the leader of a suicide squad
- Which of the following pair of the phrases helps best to 3. bring out the intension of the speaker?
 - "Go on to the end", "shall never surrender" (a)
 - "Growing confidence", "subjugated and starving" (b)
 - "Subjugated and starving", "fighting and landing around" "Fighting in the streets", "subjugated and starving" (c)
 - (d)
- The passage consists of repetitive patterns in syntax and 4. vocabulary. The effect of this style is that it
 - (a) reveals the speaker's defects in giving a speech
 - (b) produces the impression of bad poetry
 - (c) conveys the speaker's helpless situation
 - (d) reinforces the speaker's basic intention
- 5. The tone of the speaker is
 - (a) pleading and urging
 - (b) inspiring and encouraging
 - (c) discouraging and gloomy
 - (d) menacing and bullying

DIRECTIONS (Os. 6-8): In each of the following, choose the word most similar in meaning to the word given in capitals.

6. "MEDDLE"

a)	Disregard	(b)	Overlook
	-		

- (c) Interfere
- (d) Free

- "ABJURE" 7.
 - (a) Renounce
 - (c) Abide
- 8. "ESTRANGE"
 - (a) Endanger (b) To become puzzling (c) Miscalculate
 - (d) Alienate

DIRECTIONS (Qs. 9 and 10): In each of the following, choose the word most nearly opposite in meaning to the word given in capitals.

9. "DEROGATORY"

	(a)	Conferred	(b)	Immediate
	(c)	Praising	(d)	Private
10.	"WA			
	(a)	Widen	(b)	Poor
	(c)	Swell	(d)	Tight

DIRECTIONS (Qs. 11–15): In each of the following questions, find out which part has an error

- 11. The police has (a)/arrested the thief (b)/who broke into my house (c)/last night. (d)
- 12. The man who (a)/they thought to be (b)/a gentleman turned out (c)/to be a rogue. (d)
- 13. I told him on his face (a)/that he could not hope (b)/to pass the stringent (c)/Medical examination of the Services Selection Board. (d)
- 14. Mohan is one of those boys (a)/who has expressed (b)/ willingness for joining (c)/the education tour. (d)
- **15.** I may spend (a)/ this summer vacations (b)/with one of my friends (c)/ in the back waters of Kerala. (d)

DIRECTIONS (Qs. 16-20): Pick up the most effective word from the given words to fill in the blanks to make the sentence meaningfully complete.

- 16. According to the weather ______ it is going to be cloudy today.
 - (a) announcement (b) indication
 - (c) prediction (d) forecast
- ____ the murder of their leader by **17.** The villagers burning the police van.
 - (a) protested (b) avenged
 - (d) consoled (c) mourned

TIME LIMIT: 2 HOURS

(b) Run off secretly

(d) Discuss

18.	While on the routine fight, the aircraft was hit by a missile and into flames					
	(a) fired	(b)	hurat			
	(a) med	(0)				
10	(c) caught	(d)	engulfed			
19.	Hari got the company car	tor a	price as he was	3		
	the senior most employee	in the co	ompany.			
	(a) reduced	(b)	discounted			
20	(c) fixed The unempty helperiour of	(a) the sele	nominai			
20.	and a some and a s	the solu				
	(a) clashed	(b)	aggrieved	3		
	(a) incensed	(0) (b)	impeached			
БИ		(u)	Impeached			
DI	RECTIONS (Qs. $21 - 40$):	<i>Choose</i>	the correct answer.	3		
21.	Who accorded the title 'M	lahatma"	' to MK Gandhi?			
	(a) Sardar Patel	(b)	Nehru			
	(c) Sarojini Naidu	(d)	Rabindranath Tagore			
22.	The Non co-operation Mo	vement	started in which year?	_		
	(a) 1900	(b)	1921	3		
•••	(c) 1940	(d)	1935			
23.	During the Middle Ages of	education	n was confined only to			
	(a) Kshatriyas	(b)	Branmins	3		
24	(c) Peasants	(a)	Shudras			
24.	Who among the following was responsible for the spread of					
	(a) A shalea	(b)	Mahavira	2		
	(a) Ashoka (a) Parsayanth	(U) (d)	Ivialiavila Chandra Cunta Maurua	3		
25	(c) Faisavallul The elements which have	(u)	Le of ionization potential			
23.	are strong	low van	de of formzation potential			
	(a) oxidising agents			3		
	(b) reducing agents			0		
	(c) oxidising and Reducing agents depending upon the					
	reactants					
	(d) none of these					
26.	Wayne Rooney, the fame	ous footl	caller, hails from which	3		
	country?					
	(a) Italy	(b)	Brazil			
	(c) Argentina	(d)	England			
27.	The official song 'WakaW	Vaka' of	FIFA World Cup held in	3		
	the year 2010 at South A	frica wa	s sung by which popular			
	singer?					
	(a) Madonna	(b)	Destiny Child			
	(c) Shakira	(d)	Rehanna			
28.	In the year 2011, the ace badminton player Saina Nehwal was					
	honoured with which sports award?					
	(a) Dronacharya award					
	(b) Kajiv Gandni Knel Katna award					
	(c) Arjun award					
•••	(d) None of these		. 1 . 1	4		
29.	I erm Visible Horizon' in	astronor	ny is defined as			
	(a) The circle of contact	of the ea	rtn and the cone of visual			
	rays passing through	n the mei	ridian of the place	,		
	(D) I ne circle of confact	or the ea	run and the cone of visual	- 4		

- (b) The circle of contact of the earth and the cone of visual rays not passing through the meridian of the place
- (c) The circle of contact of the earth and the cone of visual rays passing through the point of observation
- (d) The circle of contact of the earth and the cone of visual rays not passing through the point of observation
- 0. NREGA stands for (a) National Revenue Engagement Guarantee Association (b) National Revenue Employment Guarantee Act National Rural Employment Guarantee Association (c) (d) National Rural Employment Guarantee Act **1.** River Satluj originates from (a) Northern slopes of the Kailash range (b) Spring at Verinarg (c) Rakas Lake Amarkantak plateau (d) 2. Limonitic ore is the ore of which metal? (a) Iron (b) Aluminium (c) Zinc (d) Cobalt **3.** Black revolution relates to which of the following? (a) Self-dependence in foodgrains production Self-dependence in milk production (b) (c) Self-dependence in petroleum/crude oil (d) None of these 4. Karrar is the unmanned bomber aircraft of Iraq (b) Iran (a) Turkey (d) Pakistan (c) 5. Who is the author of book 'Keeping the Faith: Members of a Parliamentarian'? (a) David Omand (b) Raja Shehadeh (c) Raghav Bahl (d) Somnath Chatterjee 6. is a thyroid hormone which controls the balance of calcium in the body (a) Calcitonin (b) Thyroxine (c) Calmodulin (d) All of these 7. The cell wall in plants is interrupted by narrow pores carrying fine strands of cytoplasm which interlink the contents of the cells. These strands are called:-(a) Plasmohole (b) Microvilli (c) Plasmodesmata (d) Plasmalemma 8. Who is the cricketer bestowed with an honorary commission in the Territorial Army? (b) Kapil Dev Sachin Tendulkar (a) (c) Virendra Sehwag (d) Harbhajan Singh 9. The transport phenomenon occurs only in state of a gas and is (a) non-equilibrium, irreversible (b) non-equilibrium, reversible (c) equilibrium, irreversible (d) equilibrium, reversible Which of the following compounds form nitrites with nitrous 0. acid? (a) Primary amines (b) Secondary amines (d) All of these (c) Tertiary amines 1. The number whose square is equal to the difference of the squares of 37 and 23 is (b) 28.98 (a) 45.09
 - (c) 47.09 (d) 28

12. The average age of 8 men is increased by 4 years when one of them whose age is 30 years is replaced by a new man. What is the age of new man?

- (a) 55 years (b) 62 years
- (c) 42 years (d) 69 years

1/4 full, it weighs 9 kg. Find the weight of empty vessel.

- (a) 4 kg (b) 5 kg (c) 8 kg (d) 3 kg 44. If a - b = 4 and ab = 45 find the value of $a^3 - b^3$. (a) 604 (b) 370 (d) 199 (c) 253 45. If $a/(a + b) = \frac{15}{21}$, what is (a + b)/(a - b) equal to? (b) 23/11 (a) 13/9 (c) 14/5 (d) 21/9
- 46.
- $\frac{(798+579)^2 (798-579)^2}{(798\times579)} = ?$ 2 (a) (b) 6 (c) 4 (d) 8
- 47. A man's average monthly expenditure for the first four months of the year was ₹ 231.25. For the next five months, the average monthly expenditure was ₹22.75 more than what it was during the first four months. If the person spent ₹ 605 in all during the remaining three months of the year, find what percentage of his annual income of ₹ 3500 did he save in the year?
 - (a) 10% (b) 15% (c) 20% (d) 25%
- 48. The average age of students of a class is 15.8 years. The average age of boys in the class is 16.4 years and that of the girls is 15.4 years. The ratio of the number of boys to the number of girls in the class is
 - (a) 1:2 (b) 2:3 (d) 3:5 (c) 3:4
- 49. 18 buckets of water fill a tank when the capacity of each bucket is 8 litres. How many buckets will be needed to fill the same tank, if the capacity of the bucket is 12 litres?
 - 12 (a)
 - 13.5 (b)
 - 24 (c)
 - can not be determined due to insufficient data (d)
- 50. Srinivasan invests two equal amounts in two banks giving 8% and 12% rate of interest respectively. At the end of year the interest earned is ₹ 1500. Find the sum invested in each. (a) ₹8500 (b) ₹15000
 - (c) ₹7500 (d) ₹17000
- 51. The simple interest accrued on a sum of money at the end of four years is 1/5th of its principal. What is the rate of interest per annum?

(a)	4%	(b)	5%
(c)	6%	(d)	Inadequate data

- 52. A sum of ₹ 2600 is lent out into two parts, one at 9% and another at 7%. If the total annual income is ₹ 206, find the money lent at 7%.
 - (a) ₹1400 (b) ₹900
 - (c) ₹1600 (d) ₹1200
- 53. In an election between two candidates, 70% of the voters cast their votes, out of which 2% of the votes were declared invalid. A candidate got 7203 votes which was 60% of the total valid votes. Find the total number of voters enrolled in that election.
 - (a) 18050 (b) 17500
 - (c) 17000

percent a house holder must reduce his consumption of kerosene so as not to increase his expenditure?

- (b) 9.9% 11% (a)
- (c) 11.09% (c) 8.25%
- 55. 75 pupils from a school appeared for an examination and 80% of them passed. Another school entered 10 more pupils than the first school and five pupils less than the first school passed. The pass % of in the second school was (a) 75% (b) 84% (c) 72% (d) 64.7%
- 56. Divide ₹ 80 in the production of 3:6:7. (b) ₹15,₹30,₹35 (a) ₹10,₹35,₹40
 - (b) ₹10,₹40,₹35 (c) ₹15,₹35,₹30
- 57. Calculate the amount on ₹ 1875 for 2 years at 4% per annum. compounded yearly.
 - (b) ₹776 (a) ₹676
 - (d) ₹2028 (c) ₹1778
- 58. If x varies as y and x = 8 when y = 15 then the values of x when v = 10 is
 - (b) 15/8 (a) 5
 - (c) 8/15 (d) 16/3
- **59.** In a mixture of 60 litres, the ratio of milk and water is 2 : 1. What amount of water must be added to make the ratio of milk and water as 1:2?
 - (a) 42 Litres (b) 56 Litres
 - (c) 60 Litres (d) 77 Litres
- 60. A sum of ₹ 10,000 is lent partly at 6% and the remaining at 10% p.a. If the yearly interest on the average is 9.2%, the money lent at 10% is
 - (a) ₹8000 (b) ₹8500
 - (d) ₹2000 (c) ₹5000

DIRECTIONS (Qs. 61 – 65): Choose the word which is least like the other words in the group

61. (a) Garo (b) Khasi Kangra (d) Jayantia (c) **62.** (a) Virgo (b) Pisces Cancer (d) Orion (c) (b) Foot **63.** (a) Shoulder (b) Finger (d) Elbow **64.** (a) Canoe (b) Dingy Yatch (d) Igloo (c) **65.** (a) Inn (b) Club (d) Hostel Motel (c)

DIRECTIONS (Qs. 66 – 70) : The following questions consist of two words that have a certain relationship to each other, followed by four alternatives. Select the best alternative that has the same relationship as the original pair of words

(b)

66. Liquor : Drink

(a) Bread : Butter

- (c) Sniff: Inhale
- **67.** Evaporation : Cloud
 - (a) Mountain : Snow (b)
 - (c) Pressure : Atmosphere (d) Tension : Breakdown
- 68. Barrel: Vial
 - (a) Book : Pamphlet (c) Brochure: Complier
- (b) Book : Reader

(d) Water : Sip

(d) Length: Height

Tea : Beverage

Book : Pages

(d) 7203

- 69. Cream : Cosmetics
 - (a) Tiger : Forest
 - (c) Magazine : Editor
- (b) Mountain : Valley(d) Teak : Wood
- 70. Carnivore : Herbivore
- (b) Horse : Lion
- (a) Flesh : Plant(c) Camel : Giraffe
- (d) Animal: Bird

DIRECTIONS (Qs. 71 – 80) : Three words in bold letters are given in each question, which have something in common among themselves. Out of the four given alternatives, choose the most appropriate description about these three words.

71. Hamlet : Macbeth : Faustus

- (a) They are princes
- (b) They are plays by Shakespear
- (c) They are characters from various dramas
- (d) They were romantic hereoes.

72. Vesuvius : Etna : Kilimanjaro

- (a) These are sites of volcanoes
- (b) These are island countries.
- (c) These are hills of Italy.
- (d) These lie in polar region.

73. Knot: Watt: Fathorn

- (a) The terms are used by sailors
- (b) The terms are used for installing electricity
- (c) The terms are connected with rope
- (d) They are units of measurement.

74. Barauni : Digboi : Ankleshwar

- (a) They are famous for oil fields.
- (b) They are famous for religious places.
- (c) They are tourist places of South India.
- (d) They are famous for handlooms.

75. Knight: Rook: Bishop

- (a) These are missionaries
- (b) They are churchmen.
- (c) These are chessmen.
- (d) These are ranks of military.

76. Abhi Bhattacharya : Utpal Dutt : Satyajit Ray

- (a) They are character actors.
- (b) They are directors of Bengali movies.
- (c) They are famous poets and writers.
- (d) These personalities belong to Bengali

77. Voodoo: Sorcery: Necromancy

- (a) They are ancient arts found in sculptures.
- (b) They are terms connected with black magic.
- (c) They are ancient scripts.
- (d) They are means of communication of pre-historic age.

78. Rourkela: Bokaro: Durgapur

- (a) They are steel plants.
 - (b) They have coal mines.
- (c) They have atomic plants
- (d) They are on the sea coast.

79. Spinach : Fenugreek : Celery

- (a) These are cactus plants
- (b) These are wild plants
- (c) These are wild flowers.
- (d) These are leafy vegetables.

80. Yeats: Ghalib: Kabir

- (a) They were social reformers.
- (b) They were famous poets.
- (c) They were saints.
- (d) They were yoga instructors

DIRECTIONS (Qs. 81 – 85) : There are two sets of figures namely the Problem figures containing five figures 1, 2, 3, 4, 5 and answer figures (a), (b), (c), (d). You have to select one figure from the Answer figures which will continue the same series as given in the Problem figures.

Δ × 81. < > < **v** = Λ Π (4) (1)(2)(3) (5) +↑ ↑ Λ \sim Λ (a) (b) (c) (d)N R 82. (1)(2)(3)(4)(5)N (b) (d) (c) (a) 83. (2)(3) (4) (5)(1)(a) (b) (c) (d) // ЪД 84. $\langle |$ ÐX ĹΠ^Γ (1)(2)(3)(4) (5) æ Æ Юł (b) (c) (d) (a) ο 85. 0 0 0 0 (3)(4) (1)(2)(5)0 (a) (b) (c) (d)

DIRECTIONS (Qs. 86-90) : *The following situations involve a cluster of three or more geometrical figures, having one or more dots placed at any point inside the cluster. This cluster is followed by a set of four alternative figures each composed of a cluster of the same type of figures. Now, for each dot we have to observe the region in which it is enclosed i.e. in which of the geometrical figure this region is common.*

From amongst the figures marked (a), (b), (c) and (d), select the figures which satisfies the same conditions of placement of the dot as in fig. (X).



(X)



DIRECTIONS (Qs. 91 to 95) : In this portion, a figure is given as an original figure (X) followed by four answer figures. The original figure is embedded or hidden in one of the answer figures (a, b, c & d). Select the alternative that carries the correct figure which clearly shows the embedded portion of the original figure.



(X)



DIRECTIONS (Qs. 96 -100) : In each of the following questions, a part of the figure is missing. Find out from the given option (a), (b), (c) or (d), the right figure to fit in the missing figure (X).

















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AFCAT 1 2013 QUESTION PAPER

ANSWER KEY									
1. (d)	2. (c)	3. (a)	4. (d)	5. (b)	6. (c)	7. (a)	8. (d)	9. (c)	10.(c)
11.(a)	12.(d)	13.(b)	14.(b)	15.(b)	16.(d)	17.(b)	18.(b)	19.(b)	20.(c)
21.(d)	22.(b)	23.(b)	24.(a)	25.(b)	26.(d)	27.(c)	28.(b)	29.(c)	30.(d)
31.(c)	32.(a)	33.(c)	34.(b)	35.(d)	36.(a)	37.(c)	38.(b)	39.(a)	40.(d)
41.(b)	42.(b)	43.(a)	44.(a)	45.(d)	46.(c)	47.(c)	48.(b)	49.(a)	50.(c)
51.(b)	52.(a)	53.(b)	54.(b)	55.(d)	56.(b)	57.(d)	58.(d)	59.(c)	60.(d)
61.(b)	62.(d)	63.(b)	64.(d)	65.(b)	66.(b)	67.(d)	68.(a)	69.(d)	70.(a)
71.(c)	72.(a)	73.(d)	74.(a)	75.(c)	76.(d)	77.(b)	78.(a)	79.(d)	80.(b)
81.(a)	82.(c)	83.(d)	84.(b)	85.(a)	86.(d)	87.(c)	88.(c)	89.(b)	90.(d)
91.(b)	92.(d)	93.(b)	94.(d)	95.(a)	96.(b)	97.(d)	98.(b)	99.(b)	100.(a)

- 1. (d) The speaker is a patriot who is urging to fight against France for saving his motherland at any cost.
- 2. (c) The speaker wants a change, for which he is expecting his people (countrymen) and people from other quarters to come forth and fight for it.
- 3. (a) The phrase "Go on to the end, shall never surrender" means turning all odds to save his motherland from France.
- 4. (d) Repetition of something means putting pressure and highlighting it. In this paragraph, speaker is highlighting his intentions of fighting for the country till the very end.
- 5. (b) Speaker is encouraging his countrymen to fight for their island and his words are inspiring.
- 6. (c) Meddle means to interfere in something that is not one's concern.
- 7. (a) Renounce and abjure means to formally declare one's abandonment.
- 8. (d) Estrange means to cause someone to be no longer involved or connected with something.
- 9. (c) Derogatory means showing a critical or disrespectful attitude which is opposite of praising.
- 10. (c) Wane means to diminish, weaken or lessen which is opposite to swell that means to grow.
- 11. (a) The police have arrested the thief who broke into my house last night. Here the verb 'has' is to be replaced by 'have' because the subject is a 1st person.
- 12. (d) Rouge is misspelt as rougue. Rouge means an unprincipled, deceitful, and unreliable person.
- (b) Here 'could' is to be replaced by 'should'. Could is used in a hypothetical situation, where the speaker wants to express ability instead of willingness. Whereas 'should' expresses advisability.
- 14. (b) Here 'has' is to be replaced by 'have'.
- 15. (b) Here vacation is to be used as a singular because the noun 'friend' present after the pronoun is a plural.

- 16. (d) Forecast is used to predict or estimate a future event.
- 17. (b) Avenged means to inflict harm in return for an injury or wrong done to oneself or another.
- (b) Burst means tobreak open or apart suddenly and violently, especially as a result of an impact (here the impact is hit by a missile).
- (b) Being the senior most employee, Hari got a discount on the company car. The discount was proportional to his long service for the company.
- 20. (c) Incensed means extremely angry. Thus the unruly behaviour of the soldiers made their commander extremely angry.
- 21. (d) Rabindranath Tagore bestowed the title 'mahatma' to M.K.Gandhi.
- 22. (b) The Non-cooperation movement was a significant phase of the Indian struggle for freedom from British rule. It was led by Mohandas Gandhi and was supported by the Indian National Congress.
- 23. (b) In ancient India, during the Vedic period from about 1500 BC to 600 BC, most education was based on the Veda (hymns, formulas, and incantations, recited or chanted by priests of a pre-Hindu tradition) and later Hindu texts and scriptures.Education, at first freely available in Vedic society, became over time more discriminatory as the caste system, originally based on occupation, evolved, with the brahman (priests) being the most privileged of the castes.
- 24. (a) Ashoka sent his only daughter Sanghamitra and son Mahindra to spread Buddhism in Sri Lanka (then known as Tamraparni). As a Buddhist emperor, Ashoka believed that Buddhism is beneficial for all human beings as well as animals and plants, so he built a number of stupas, Sangharama, viharas, chaitya, and residences for Buddhist monks all over South Asia and Central Asia.
- 25. (b) Elements with a low ionization energy tend to be reducing agents and form cations.

- 26. (d) Wayne Mark Rooney is an English footballer who plays as a forward for Manchester United and the England national team. Aged nine, Rooney joined the youth team of Everton, for whom he made his professional debut in 2002 at the age of 16.
- 27. (c) The official song of the 2010 World Cup "Waka Waka" was performed by the Colombian singer Shakira and the band Freshlyground from South Africa, and is sung in both English and Spanish. The song is based on a traditional African soldiers' song, "Zangalewa".
- 28. (b) Saina Nehwal was awarded the "Rajiv Gandhi Khel Ratna award" which is India's highest award for excellence in the field of sports, following her terrific achievements in badminton in the year 2010.
- 29. (c) In astronomy the horizon is the horizontal plane through (the eyes of) the observer. It is the fundamental plane of the horizontal coordinate system, the locus of points that have an altitude of zero degrees. While similar in ways to the geometrical horizon, in this context a horizon may be considered to be a plane in space, rather than a line on a picture plane.
- 30. (d) It is an Indian law that aims to guarantee the 'right to work' and ensure livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.
- 31. (c) The Sutlej is sometimes known as the Red River. It is the easternmost tributary of the Indus River. Its source is Lake Rakshastal in Tibet. From there, it flows at first west-northwest for about 260 kilometres (160 mi) to the Shipki La pass, entering India in Himachal Pradesh state. It then turns slightly, heading west-southwest for about 360 kilometres (220 mi) to meet the Beas River near Makhu, Firozpur district, Punjab state.
- 32. (a) Limonite is an iron ore consisting of a mixture of hydrated iron(III) oxide-hydroxides in varying composition.
- (c) Black revolution is related to self dependence in petroleum/crude oil.
- 34. (b) Karrar is an unmanned combat air vehicle produced for the military of Iran. According to reports, the UCAV can bomb targets at high speed. It is the first longrange unmanned aerial drone manufactured in Iran. The long-range drone was unveiled on August 23, 2010 one day after the activation of the nuclear reactor in Bushehr.
- 36. (a) The thyroid also produces calcitonin, which plays a role in calcium homeostasis.

- 37. (c) Plasmodesmata (singular: plasmodesma) are microscopic channels which traverse the cell walls of plant cells and some algal cells, enabling transport and communication between them. Plasmodesmata evolved independently in several lineages, and species that have these structures.
- 38. (b) On 24 September 2008 Kapil Dev joined the Indian Territorial Army and was commissioned as a Lieutenant Colonel by General Deepak Kapoor, Chief of the Army Staff. He joined as an honorary officer.
- 39. (a) The aim of statistical mechanics is the interpretation and prediction of the observed macroscopic properties of matter in terms of the mechanical properties of the constituent molecules and the nature of the interaction among them. It is restricted to the non-equilibrium statistical mechanics of non-reacting gases that is to the theory of transport phenomena.
- 41. (b) Let the number = x $x^{2} = (37)^{2} - (23)^{2}$ $x^{2} = 1369 - 529$ x = 28.98

44.

45.

42. (b) Total age increased = $(8 \times 4) = 32$ years Age of new man = 30 + 32 = 62 years

43. (a) Let 'x' be the height of empty vessel and y be the height of full vessel.

x+y=24(1)
x+
$$\frac{y}{4} = 9$$
(2)
Solving eq. (1) and (2)
x=4 kg.
(a) a-b = 4
ab = 45
(a-b)² = a² + b² - 2ab
96+90 = a² + b²
(4)² = a² + b² - 2 × 45
a² + b² = 106
a³ - b³ = (a-b) (a² + b² + ab)
= (4) (106 + 45)
= 604
(d) $\frac{a}{a+b} = \frac{15}{21}$
21a = 15a + 15b
6a = 15b
2a = 5b

$$\frac{a+b}{a-b} = \frac{\frac{5}{2}b+b}{\frac{5}{2}b-b} = \frac{5b+2b}{5b-2b}$$
$$= \frac{7}{3} \times \frac{3}{3} = \frac{21}{9}$$

 $a = \frac{5}{-}b$

46. (c)
$$\frac{(798+579)^2 - (798-579)^2}{(798+579)}$$

$$\Rightarrow (798)^2 + (579)^2 + 2 \times 798 \times 579$$

$$\frac{-(798)^2 - (579)^2 + 2 \times 798 \times 579}{798 \times 579}$$

$$\Rightarrow \frac{4 \times 798 \times 579}{798 \times 579} = 4$$
47. (c) Total expenditure spent on first four months

$$= 4 \times 231.25 = ₹925$$
Total expenditure spent on next five months

$$= 5 \times (231.25 + 22.75)$$

$$= 5 \times 254 = ₹1270$$
Total expenditure for 12 months

$$= 925 + 1270 + 605 = ₹2800$$
Required % = $\frac{3500 - 2800}{3500} \times 100 = 20\%$
48. (b) Boys Girls
16.4 15.4

15.8 / 0.4 0.6

Boys to girls ratio = 0.4 : 0.6 or 2 : 349. (a) More capacity, less buckets (Indirect proportion) 12 : 18 : 8 : x

$$\frac{12}{16} = \frac{8}{x} \Longrightarrow x = \frac{18 \times 8}{12} = 12$$

50. (c) Let the sum invested be $\mathbf{\overline{\xi}} \mathbf{x}$.

$$\frac{x \times 8 \times 10}{100} + \frac{x \times 12 \times 1}{100} = 1500$$

8x + 12x = 150000
20x = 150000
x = 7500

51. (b) Let sum =₹x, S.I = $\frac{1}{5}x$ Time = 4 years, Rate = ? S.I. $\frac{P \times R \times T}{100}$

$$\Rightarrow \quad \frac{1}{5}x = \frac{x \times R \times 4}{100}$$

$$R = \frac{100}{5 \times 4} = 5\%$$

₹(2600 – x). Then,

$$\frac{x \times 7 \times 1}{100} + \frac{(2600 - x) \times 9 \times 1}{100} = 206$$

$$7x + 9 \times 2600 - 9x = 20600$$

$$-2x = 20600 - 9 \times 2600$$

$$\Rightarrow x = 1400$$

53. (b) Let the total number of votes enrolled be x. Then, number of votes cast = 70% of valid votes = 98% of (70% of x)60% of [98% of 70% of x] = 7203

$$\frac{70}{100} \times \frac{98}{100} \times \frac{60}{100} \times x = 7203$$
$$7203 \times 100 \times 100 \times 100$$

$$\mathbf{x} = \frac{7205 \times 100 \times 100 \times 100}{70 \times 98 \times 60}$$

x=17500

54. (b) If the price of a commodity increases by R%, then the reduction in consumption so as not to increase the expenditure is

$$\left[\frac{R}{100+R} \times 100\right]\% = \frac{11}{100+11} \times 100 = 9.9\%$$

55. (d) Pupils from first school appeared for an examination = 80% of 75 = 60
Pupils from second school appeared for an examination = 55
Total pupils in second school = 75 + 10 = 85

Pass % of second school = $\frac{55}{85} \times 100 = 64.7\%$

56. (b) 3x+6x+7x=80 16x=80 x=5Numbers are 15, 30, 35

57. (d)
$$A = P \left(1 + \frac{R}{100}\right)^T$$

Where A = Amount, P = Principal, R = Rate % per annum T = Time in years

$$A = 1875 \times \frac{26}{25} \times \frac{26}{25}$$
$$A = ₹2028.$$

58. (d)

$$8 = 4 \text{ k} \times 15$$
$$k = \frac{8}{15}$$
$$x = ky$$
$$x = \frac{8}{15} \times 10$$
$$x = \frac{16}{3}$$

x = ky

59. (c) Milk =
$$\frac{2}{3} \times 60 = 40l$$

Water =
$$\frac{1}{3} \times 60 = 20l$$

Let 'x' be the amount to be added to milk and water.

$$\frac{40+x}{20+x} = \frac{1}{2}$$

$$80 + 2x = 20 + x$$

$$60 = x$$

60. (d) Let x be the money lent at 10%

$$920 = \frac{(10000 - x) \times 6 + x \times 10}{100}$$
$$92000 = 60000 - 6x + 10x$$
$$32000 = 4x$$

- 61. (b) Garo, Khasi, Jainti are hills and Kangra is a valley.
- 62. (d) All expect orion are Zodiac signs while orion is a cosntellaiton.
- 63. (b) Expect foot all are parts of hand.
- 64. (d) Igloo is a type of house whereas rest are type of boats.
- 65. (b) Club is the place of entertainment and rest are places of living.

- 66. (b) Liquor is a drink. Similarly tea is a beverage.
- 67. (d) Tension causes the breakdown as evaporation forms the cloud.
- 68. (a) Second one is the bigger form of first.
- 69. (d) First is a kind of second.
- 70. (a) Carnivore are flesh eating animals and herbivores are plant eating animals.
- 71. (c) They were characters from various dramas.
- 72. (a) These are sites of volcanoes.
- 73. (d) They are units of measurement.
- 74. (a) They are famous for oil fields.
- 75. (c) These are chessmen.
- 76. (d) These personalities belong to Bengal.
- 77. (b) These are terms connected with black magic.
- 78. (a) These are places having steel plants.
- 79. (d) These are the leafy vegetables.
- 80. (b) They were the famous poets.
- (a) 'V' shifts by half and rotate by 45° and another figure shift alternatively by 45° and 90° and figure also changes.
- 83. (d) In all even number of figures outer most line increases by one shift by 60° and innermost line increases by one in even figures and shift by 60° in odd figures.
- 84. (b) Figure rotates by 90° and everytime one extra line is added to figure.