Mock Test Series 1.0

Mock Test – 08

VARC

Directions (1–4): Read the following passage and answer the questions that follow:

Without getting carried away by the wide–eyed protestations of innocence by the modern day Shylocks, there is increasingly lesser doubt that banks have been complicit in precipitating the present imbroglio and what's more, the trail of evidence points towards sins not only of omission, which can be perhaps taken lightly, but explicit sins of commission which cannot be taken lightly. There is also perhaps an increasingly evident undercurrent of resentment against the money lenders within large sections of the population because even though the banks have almost certainly planted the nation head first in this bog of fiscal quagmire, so far they have been appearing to be getting away almost scot–free for their misdemeanors.

That could change pretty soon if the picture emerging from the darkness of the shadows of banking, mortgage sellers, buyers and evaluators is true, and, from the looks of it, it seems that the case is pretty water–tight. The regulators have smelt something fishy and have gone in for in–depth investigation and no, this is not the same as the sub–prime mortgage quicksand but a spin–off of the same with deeper legal ramifications. Despicable, as it may seem, banks are well within their rights to lend to sub–prime borrowers and to go in for foreclosure when regulatory obligations are fulfilled. What cooks the goose is the fact that many home mortgage lenders have resold the loans that they had granted to third and fourth parties through a bidding process. The loans are clubbed together in a common document which contains the salient characteristics of each loan. The document is then circulated and the loans are sold to the highest bidder. In the current rip–off, the successful bidders evidently got the loans evaluated during the due diligence period and found that many of the loans sanctioned by the primary lender did not pass muster the benchmark and the guidelines set by the merchant himself and instead of bringing it to the notice of the concerned regulators, they preferred to negotiate for lower purchasing prices with the merchant. The howler was that the secondary buyers did not bring the material information, which could have and would have affected the decision of the investors to park their money in these assets, to the notice of the investors who were buying into these loans and now we have a situation where everyone involved has tried in some manner or the other to keep the next link in the chain in the dark. Here we are, with loans granted without due diligence, being sold to investors who don't have complete information about the same. Had it been based on pure ethical considerations, it might have slid past with just a rap on the knuckles for the offenders but something's got to give in here.

1. What according to the information provided in the text best establishes the point of discussion?

(a) Unsecured consumer loans palmed off as secured mortgages
(b) Housing loans sanctioned without completing due diligence
(c) Failure of authorities in being vigilant during economic boom
(d) Collusion of bankers in hoodwinking the system.

2. How, according to the passage, was the system taken for a ride?

I. Aspiring home owners were granted loans they weren't eligible for.
II. Relevant disclaimers misappropriated crucial advice.
III. Loans were re–mortgaged, which was in violation of regulations.

(a) Only I and II (b) Only I and III
(c) Only II and III (d) Only I.

3. All of the following, in context of the passage, are true except:

(a) Avarice for transient gains has eclipsed long–term concerns.

(b) The larger picture points to more than just one fly in the ointment.
(c) Fiduciary sentinels haven't exactly covered themselves with glory.
(d) None of the above.

4. The author's stance on the possibility of financial institutions being found guilty can best be described as
(a) optimistic
(b) disinterested
(c) sceptical
(d) simplistic

Directions (5–7): Read the following passage and answer the questions:

The target audience is likely to switch channels in an attempt to whittle away the time while waiting for their favorite program to resume. Even if the ad does reach the desired target audience, the message conveyed comes and departs mostly unnoticed and many people would have trouble recalling an ad that they had seen just two minutes ago. Companies however continue to spend billions of dollars every year in an effort to attract buyers. Instead of paying massive endorsement fees to celebrities to promote a brand and spending a pretty penny on conceptualizing and creating ads, would it not make more sense for the behemoth corporations to save that money and pass on a large share back to the consumers as loyalty benefits? A satisfied user is often the best publicity and companies can simply divide the amount of money they are going to spend on publicity of a product by the expected number of units they are going to sell in that year and share the average expected per unit savings with the consumers. Even if the companies decide to keep a substantial portion of money saved from advertising for themselves and directly pass on the rest to consumers as an across the board price cutback, it can help the consumers to buy more for less in these times of tight liquidity.

Companies keep spending so much money on advertising because they realize that the subconscious mind is working even when the conscious mind tunes out the message. Once the subconscious learns something, that information gets stored in the vast labyrinths of the neural passages that are present in our brains and like a burr beneath the saddle of a horse, the message will keep irritating our subconscious, egging us on to buy the proffered product or service. Also, with the customer being constantly bombarded by inducements for buying, a vacillating mind might just get seduced into pulling out the credit card. Another reason could be that the advertisers and advertising agencies are relying on a collective message that they send out to teeming humanity of equating material possessions with happiness. Another startling input could be that the promoter knows that only ten percent of advertising converts into a sale and therefore the buyers end up paying for the message that the remaining 90% did not heed. In this cat and mouse game of one trying to tempt another into buying, perhaps it is the advertising agency that has the last laugh – their product is selling even if the advertiser's is not and the fall guy for the entire con game is the consumer who is paying for it.

5. What according to the passage is not the reason why companies spend so much on advertising?
(a) Attention span of the target audience is transient.
(b) Viewers skim channels while waiting for their favorite shows to resume.
(c) It serves as a vehicle for promoting the consumerist culture.
(d) The motivation to emulate a public figure stimulates spending..

6. With reference to the passage, which of the following would be true?
I. The buyer is fickle and repeated advertisement can be easily said to be the only way to draw his attention.
II. Unattainability of spare funds requires extra effort to make the customer loosen his purse strings.
III. More and more buyers feel that joy and pleasure and possessions are two sides of a coin.
(a) Only I
(b) Only II
(c) Only III

(d) None of them.

7. What does the word vacillating means in the context of the passage?
(a) dithering
(b) punitive
(c) Vestigial
(d) Castigatory.

Directions (8–10): Read the following passage and answer the questions:

But the reason that mathematicians are not intuitive is that they do not see what is before them, and that, accustomed to the exact and plain principles of mathematics, and not reasoning till they have well inspected and arranged their principles, they are lost in matters of intuition where the principles do not allow of such arrangement. They are scarcely seen; they are felt rather than seen; there is the greatest difficulty in making them felt by those who do not of themselves perceive them. These principles are so fine and so numerous that a very delicate and very clear sense is needed to perceive them, and to judge rightly and justly when they are perceived, without for the most part being able to demonstrate them in order as in mathematics; because the principles are not known to us in the same way, and because it would be an endless matter to undertake it. We must see the matter at once, at one glance, and not by a process of reasoning, at least to a certain degree. And thus it is rare that mathematicians are intuitive, and that men of intuition are mathematicians, because mathematicians wish to treat matters of intuition mathematically, which is not the way to proceed in this kind of reasoning. Not that the mind does not do so, but it does it tacitly, naturally, and without technical rules. Intuitive minds, on the contrary, being thus accustomed to judge at a single glance, are so astonished when they are presented with propositions of which they understand nothing, and the way to which is through definitions and axioms so sterile, and which they are not accustomed to see thus in detail, that they are repelled and disheartened.

8. The tone of the author is
(a) delineative
(b) critical
(c) incisive
(d) inquisitive.

9. Which of the following situations would most discomfort a mathematician?

(a) A feeling of inadequateness upon realizing that he is being outbid for a masterpiece that he`d been hoping to pick up in an auction.

(b) Trying to account for the sudden and sustained drop in serious crime without any evidence of obvious logical explanations.

(c) A feeling of déjà vu upon visiting a country for the first time and finding the language, customs, and many landmarks familiar.

(d) Explain why first rung drug dealers struggle to rent a studio apartment while drug lords live in opulent mansions.

10. The point that the author is trying to make is that
(a) mathematicians, accustomed to well inspected principles, are more logical that intuitive people
(b) intuitive people have an advantage over mathematicians as they can perceive without seeing
(c) mathematicians employ an unemotional approach while intuitive people sense rather than see
(d) mathematicians lack intuition, and can never get it, just as intuitive people cannot become mathematicians

Directions (11–13): Read the following passage and answer the questions.

Now, whatever may be the value of such teaching as a contribution to economic science, it illustrates by its success one cardinal truth, and by implication it bears witness to another. The first truth is that, no matter how desirable any object may be which is obtruded on the imagination of anybody, nobody will bestir himself in a practical way to demand it until he can be persuaded to believe that its attainment is practically possible. The other is this: that the possibilities of redistributing wealth depend on the causes by which wealth is produced. All wealth,

says Marx, can practically be appropriated by the laborers. But why? Because the laborers themselves comprise in their own labor all the forces that produce it. If its production necessitated the activity of any persons other than themselves, these other persons would inevitably have some control over its distribution; since if it were distributed in a manner of which these other persons disapproved, it would be open to them to refuse to take part in its production any longer; and there would, in consequence, be no wealth, or less wealth, to distribute.

Let us, then, examine the precise sense and manner in which this theory of labor as the sole producer of wealth is elaborated and defended by Marx in his Bible of Scientific Socialism. His argument, though the expression of it is very often pedantic and encumbered with superfluous mathematical formulae, is ingenious and interesting, and is associated with historical criticism which, in spite of its defects, is valuable. Marx was, indeed, foremost among those thinkers already referred to who first insisted on the fact that the economic conditions of today are mainly a novel development of others which went before them, and that, having their roots in history, they must be studied by the historical method.

11. Which of the following is/are true as per the passage?

I. The allure of an objective acts as a prod for its achievement.

II. A difference in opinion can impact the productivity of an enterprise.

III. Distribution of wealth and its production are closely interlinked.

(a) Only II
(b) Only III
(c) Both I & II
(d) Both II & III.

12. The author will agree with which of the evaluations of Marx?

I. Marx believed in the use of figures to clarify his stand.

II. Marx believed that those indirectly linked to production cannot claim a share of the pie.

III. Marx believed in interconnectivity of economic events.

(a) Both I & II
(b) Both I & III
(c) Both II & III
(d) Only I.

13. Which of the following can't be deduced from the passage?

(a) The doctrine of Marx suggests that all wealth is produced by labour.
(b) Marx's recognition that the possibilities of distribution rest on the facts of production.
(c) Marx theory of labour as the sole producer of wealth
(d) Marx theory's dependence on numeric makes it most sorted theory of socialism.

Directions (14–16): Read the passage and answer the questions that follow

More than that of any other of modern people, French art is a national expression. It epitomizes very definitely the national esthetic judgment and feeling, and its manifestations share a certain character that is very salient. Of almost any French picture or statue of any modern epoch one's first thought is that it is French. In the field of the fine arts, as in many others, the results are evident of an intellectual co–operation which insures the development of a common standard and tends to subordinate idiosyncrasy. The fine arts, as well as every other department of mental activity, reveal the effect of that intellectual as distinguished from the sensuous instinct which is so much more powerful in France than it is anywhere else. I think, one does feel the absence of imagination, opportunity, of spirituality, of poetry in a word. The French themselves feel something of this. At the Great Exposition of 1889 no pictures were so much admired by them as the English, in which appeared, even to an excessive degree, just the qualities in which French art is lacking.

Some French critics, far from denying this preference of French art, express pride in it, and, indeed, defend it. The French rooms, at least until modern periods are reached, are a demonstration that in the sphere of aesthetics, science does not produce the greatest artists — that something other than intelligent interest and technical accomplishment are requisite to that end, and that system

is fatal to spontaneity. The French classical painters show little absorption, little delight in their subject. They are too cultivated to invent. Selection has taken the place of discovery in their inspiration. They are addicted to the rational and the regulated. Their substance is never sentimental and incommunicable. Their works have a distinctly professional air. Everywhere is the air of reserve, of intellectual good–breeding, of avoidance of extravagance. That French painting is at the head of contemporary painting, as far and away incontestably it is, is due to the fact that it alone has kept alive the traditions of art which, elsewhere than in France, have given place to other and more material ideals. From the first its practitioners have been artists rather than poets, have possessed, that is to say, the organizing rather than the imaginative temperament, but they have rarely been perfunctory and never common.

And one quality is always present: elegance; it is always evidently aimed at and measurably achieved. A refined and cultivated sense of what is sound, estimable, competent, reserved, satisfactory, up to the mark, and above all, elegant and distinguished — has been at once the arbiter and the stimulus of excellence in French painting. It is this which has made the France of the past three centuries, and especially the France of to–day.

14. All of the following are true of French art, except
(a) Predominance of the intellectual over the sensuous instinct
(b) Admirably artistic and extremely little poetic
(c) Perfection of style is invariably noticeable
(d) Amateurish and fanciful in trying to separate beauty from truth

15. Why does the French art not showcase modernity?
(a) French art is at once admirably artistic and extremely little poetic.
(b) It has its own contemporary style far from materialism.
(c) It does not believe in imagining beyond a set of rule
(d) It avoids beauty and colors which form the base of modern art.

16. What does the word incontestably means in the context of the passage?
(a) Irrefutable
(b) Picturesque
(c) Bamboozeld
(d) Battered

Directions (17–24): Read the passage and answer the questions that follow

17. Rearrange to form a meaningful paragraph and type the answer
1. Shoddier still, Claudius has had himself crowned Ruler despite the fact that Hamlet was his father's heir to the throne.
2. To Hamlet, the marriage is "foul incest".
3. The Queen has wed Hamlet's Uncle Claudius, the dead king's brother.
4. Having been summoned home to Denmark from school in Germany to attend his father's funeral, he is shocked to find his mother Gertrude already remarried.
5. Prince Hamlet is depressed.

18. Choose the sentence which doesn't fit into the given context and type the number of sentence as your answer.
1. His literary style interweaves close observation of nature, personal experience, pointed rhetoric, symbolic meanings, and historical lore, while displaying a poetic sensibility, philosophical austerity, and Yankee attention to practical detail.
2. Thoreau's books, articles, essays, journals, and poetry amount to more than 20 volumes.
3. Thoreau's ideal reader was expected to be well versed in Greek and Latin, poetry and travel narrative, and politically engaged in current affairs.
4. He was also deeply interested in the idea of survival in the face of hostile elements, historical change, and natural decay; at the same time he advocated abandoning waste and illusion in order to discover life's true essential needs.

5. Among his lasting contributions are his writings on natural history and philosophy, in which he anticipated the methods and findings of ecology and environmental history, two sources of modern–day environmentalism.

19. Choose the sentence which summarizes the paragraph in the best possible way

People have played on words and pretended to believe that refusing to grant a meaning to life necessarily leads to declaring that it is not worth living. In truth, there is no necessary common measure between these two judgments. One merely has to refuse to be misled by the confusions, divorces, and inconsistencies. One must brush everything aside and go straight to the real problem. One kills oneself because life is not worth living that is certainly a truth– yet an unfruitful one because it is a truism. But does that insult to existence, that flat denial in which it is plunged come from the fact that it has no meaning? Does its absurdity require one to escape it through hope or suicide–this is what must be clarified, hunted down, and elucidated while brushing aside all the rest.

(a) Living with the absurd is a matter of facing the fundamental problem of life and maintaining constant awareness of it.

(b) Fronting the absurd does not necessitate suicide, but, on the contrary, allows us to live life to its fullest.

(c) Facing the absurd or succumbing to it, after the fundamental problem of life has been identified, is the choice that people need to make.

(d) People think that life is inherently meaningless and absurd and therefore they give up on life and commit suicide.

20. Choose the sentence which summarizes the paragraph in the best possible way.

The nineteenth century had been pre–eminently an era of the development of rapid and easy communication between distant parts of the world, particularly between Europe and Asia. So long as these two continents remained far apart the condition of Asia was unchanged and stationary; if there was any change it had been latterly retrogressive, for in India at any rate the eighteenth century was a period of abnormal and extensive political confusion. In Europe, on the other hand, national wealth, scientific discoveries, the arts of war and peace, had made extraordinary progress. Population had increased and multiplied; and partly by territorial conquests, partly by pacific penetration, the Western nations

overflowed politically into Asia during the nineteenth century.

(a) The nineteenth century marked the beginning of tremendous progress in communication and technology which helped link Asia and Europe.

(b) Asia was unchanged till the invention of communication devices and depended on Europe for a change in the ongoing retrogressive state.

(c) The political confusion in India in the eighteenth century and the breakthrough in science and the general progress in Europe were in stark contrast that led to penetration of Europeans into Asia.

(d) There was a great difference in the progress levels of Europe and Asia; Asia was largely unchanged but subsequently the population of Asia multiplied due to entry of the Western nations.

21. The following statement has a part missing. Choose the best option from the four options given below the statement to make up the missing part.

A lot of individuals propose and yet other would like to convince friends and relatives not to buy pirated books .

1. to bring down books' prices to lessen the incidence of piracy, others promote strong legal action against the lawbreakers,
2. bringing down books' prices to lessen the incidents of piracy, others are promoting strong legal action against lawbreakers,

3. bringing down books' prices to lessen the incidents of piracy, others promote strong legal action against lawbreakers,
4. books' prices to be brought down to lessen incidents of piracy, others promote that strong legal action must be taken against lawbreakers.

22. Rearrange to form a meaningful paragraph

1. Several people were killed in demonstrations that have witnessed the participation of thousands of citizens, some of whom have, in an unprecedented act, denounced Iran's orthodox Islamic clergy and publicly praised dynastic rule of the Shah – the reason, it is being suggested, that the circle has turned completely.
2. This time, the protesters are demanding, among other things, better wages, an end to entrenched corruption and the lowering in prices of essential commodities.
3. This New Year, it seems that things have come full circle in Tehran.
4. A combination of economic hardship and politics has turned Iran restive, some say even more restive than in 2009 when a wave of protest at the re–election of a former president had been crushed by force.
5. It is apparent that even though the Iranian economy has not done too badly since international sanctions were lifted in 2015, there remain a few areas that need to be considered seriously.

23. Choose the sentence which doesn't fit in the context

1. Broadly speaking, language can only "grow" through interaction with people and texts that introduce new vocabulary, concepts, and language structures.
2. Knowledge of this vocabulary will not guarantee success, but lack of vocabulary knowledge can ensure failure.
3. In grades 1 to 3, this growth cannot result mainly from reading experiences because most children are not reading content that is as advanced as their oral language.
4. Listening comprehension continues to grow during the elementary years.
5. Thus the typical 3rd–grader can comprehend more complex oral stories, expositions, etc., than the typical 1st–grader..

24. Rearrange to form a meaningful paragraph and type in your answer

1. Bangladesh will build two air bases to strengthen its air force, Prime Minister Sheikh Hasina has announced.
2. "I believe that these activities will further strengthen the force and increase its capability," she was quoted as saying by the Dhaka Tribune.
3. "In terms of technology and strategy, Bangladesh Air Force will be established as a most modern, professional and all–round air force at home and abroad soon," Hasina said on Sunday.
4. The two new air bases will be set up in Barisal and Sylhet.

LRDI

Directions (25–29): Read the following passage and answer the questions that follow:

Below data is given regarding the number of soft toys of three different types (Pikachu, Teddy bear, and Doraemon) made by three soft toys companies S, T and U.

Company S: The number of Teddy bears made by S is 31.25% of total Teddy bears made by three companies and the number of Pikachu made by S is equal to the number of Doraemon made by T. The ratio of the number of Pikachu, Teddy bear and Doraemon made by three companies together are 8: 8: 9 respectively and the ratio of the number of Doraemon made by S, T and U are 3: 2:1 respectively.

Company T: The number of Teddy bears made by T is 40 more than the number of Doraemon made by T. The number of Pikachu made by T is 20 less than the number of Teddy bears made by S.

Company U: The number of Pikachu made by S is 20 more than the number of Pikachu made by U and the number of Teddy bears made by U is 160.

25. What is the ratio of the number of Pikachu made by U to the number of Doraemon made by S?
(a) 12 : 17 (b) 11 : 17
(c) 12 : 19 (d) 11 : 18

26. What is the difference between the number of Teddy bears made by S and the number of Doraemon made by U?

27. The number of Doraemon and Pikachu made by U is what percentage more or less than the number of Teddy bear and Doraemon made by T?
(a) 23.45% (b) 42.25%
(c) 34.61% (d) 19.49%

28. If company M made 20% more Pikachu than U and 50% more Teddy bear than T, then how many Pikachu and Teddy bears were made by company M?
(a) 720 (b) 670
(c) 684 (d) 704

29. The number of Doraemon made by T and S together is what percentage more or less than the number of Teddy bears made by S and U together?
(a) 33.33% (b) 55.55%
(c) 66.67% (d) 75%

Directions (30–34): Read the following passage and answer the questions that follow:

Eight teachers A, B, C, D, E, F, G and H are opted for different subjects viz., English, Economics, Literature, History, Geography, Geology, Sports and Reasoning, but not necessarily in the same order. Their designations in descending order are mentioned below such that English teacher> History teacher>Literature teacher> Reasoning teacher>Sports teacher>Geography teacher>Economics teacher>Geology teacher. The teachers of only two subjects have the same age. The ages (in years) are 20, 30, 40 and 50.

A ranks lower than B, but the age of A is the same as the age of B. C, who is opted for geography, ranks higher than F and H. Two persons ranks between D and E and E is younger than B. Only D and C are elder than F. G, who is opted for Literature, ranks higher than D. The total sum of E and H's age is equal to G's age. The sum of the ages of History and Geology teachers is 60 years.

30. Four among the following five are alike in a certain way, thus forming a group. Which among the following does not belong to the group?
(a) English teacher and Reasoning teacher.
(b) F and Literature teacher
(c) H and E
(d) Geology teacher and D

31. How many teacher/s rank higher than A?

32. If all the teachers are arranged as per the reverse English alphabetical order from top to bottom and their ages are arranged in descending order from top to bottom, then the designation–name–age of which among the following options remains as it is?
(a) Teacher G
(b) Teacher H
(c) Teacher F and Teacher B
(d) None

33. Which among the following options will complete the blanks (i) and (ii) respectively?
Four persons ranks between _____(i)____ , where ____(ii)___ ranks higher than H.
(a) B and C, G
(b) E and G, A
(c) D and E, B
(d) All of these

34. D is the _____
(a) Economics teacher
(b) Sports teacher
(c) Reasoning Teacher
(d) English teacher

Directions (35–39): Read the following passage and answer the questions that follow:

7 people A, B, C, D, E, F & G who are experts of different subjects History, Mathematics, Geography, English, Biology, Chemistry & Physics (not necessarily in same

order) have to go to different cities Goa, Punjab, Pune, New Delhi, Lucknow, Dehradun & Mumbai (not necessarily in same order) for seminar. No two persons are experts of the same subjects. No two people have to go to the same city. One person is an expert of one subject & goes to one city only. They have to go on different days of the week starting from Monday.

G has to go after Thursday. Only 1 person has to go between the person who is an expert of Geography & the person who is an expert of English. At least 2 people have to go between G & B. Only 2 people has to go between C & E who is an expert of Physics. 3 persons has to go between G & D who has to go immediately before the person who has to go to Goa. B, who has to go to Pune, goes immediately before the person who is an expert of Chemistry. Only 2 people goes between the person who goes to Mumbai & the person who goes to New Delhi. C goes after E. F who is a mathematics expert goes immediately before the person who has to go to Mumbai. The person who goes to Punjab is an expert of History & goes immediately after the person who is an expert of Biology.

35. How many people has/have to go between the person who has to go to New Delhi & B?
(a) 1 (b) 2
(c) 3 (d) None

36. Who is an expert of Chemistry?
(a) The person who has to go on Tuesday
(b) The person who has to go to Lucknow
(c) The person who has to go to Dehradun
(d) The person who has to go to New– Delhi

37. B is an expert of ____.
(a) Geography
(b) History
(c) English
(d) Cannot be determined

38. Which of the following statements is definitely true?
(a) C is an English expert
(b) The person who has to go to Goa is an English expert
(c) B has to go before the person who has to go to Lucknow
(d) None of these

39. Who has to go on Sunday?
(a) The person who is an expert of History
(b) A
(c) The person who is an expert of English
(d) The person who is an expert of Geography

Directions (40–44): Read the following information and answer the question the follows:

In a professional setting, a panel interview was conducted involving six candidates: A, B, C, D, E, and F. This interview panel was composed of five members: P, Q, R, S, and T. Each of these members had the authority to award up to 10 marks to a candidate, meaning the highest possible score a candidate could achieve was 50.

The scores attained by the candidates were 5y–4, 4y+4, 4y+2, 5y–2, 4y, and 4y+1, though not necessarily in this order. It should be noted that each panel member allocated a minimum of six marks to each candidate, to maintain fairness in the evaluation.

To preserve the integrity of the scoring system, it was determined that no panel member could award the maximum score of 10 to more than one candidate. Similarly, a candidate was not allowed to receive a full score of 10 from more than one panel member. Also, it is known that the marks given by R to F, R to C & R to E are in AP. Here is some additional context regarding these scores:

Member	P	Q	R	S	T
A	y–2		8	y+1	
B		y		y–2	y–1
C	y–3		8		y
D	y–1	y–1		y–1	y
E		y–2	y		7
F	y+1		7	y–3	
Total	6y – 6	5y+1	5y	5y+2	6y–5

Answer the following questions:

40. Which of the following can be the sequence representing the name of students getting marks in increasing order?
(a) C, B, F, A, D, E (b) C, F, B, D, A, E
(c) F, C, B, D, E, A (d) F, C, D, B, E, A.

41. How many of the following statement/(s) must be true?
(I) Q gave minimum marks to F.
(II) Exactly 2 students got 10 marks from the interviewers
(III) A got the highest marks.
(IV) E got the second highest marks.

42. Which of the following marks was not given by Q to any Candidate?
(a) 6 (b) 10
(c) Both a) and b) (d) Either a) or b)

43. Who got the overall least marks in the interview?
(a) C (b) B
(c) F (d) Either A or C

44. Which mark was given by P to E?

QUANT

45. What is the largest number which leaves remainders of 1, 3 and 7 when it divides 681, 1243 and 1657 respectively?

46. What is the probability of forming words from the letter of the word "COGENT" so that all the vowels always come together?
(a) $\frac{1}{3}$ (b) $\frac{2}{3}$
(c) $\frac{3}{4}$ (d) $\frac{5}{7}$

47. In a competition organized by XYZ Company, it was decided to distribute a total of 80 identical T–shirts among 16 participants such that each participant gets at least some T–shirts but no participant gets an odd number of T–shirts. Please find out the total number of ways in which this can be done?
(a) $^{39}C_{15}$ (b) $^{40}C_{15}$
(c) $^{38}C_{15}$ (d) $^{37}C_{15}$

48. A milkman usually mixes Milk and water in equal proportion and sells it to its customers @ Rs. 60/litre. One fine day, he mixes this mixture with pure water in the ratio of 11:9. Find the ratio of Milk and water in the new mixture thus formed?
(a) 7 : 29 (b) 11 : 17
(c) 29 : 11 (d) 11 : 29

49. Two dogs Tommy and Jimmy start approaching towards each other with constant speeds from their houses X and Y respectively. Tommy reaches House Y in 10 minutes while Jimmy takes 9 minutes to reach House X after meeting Tommy. Identify the total time taken by Jimmy to reach House X?

50. The ratios of Lime Juice and Water in solutions A and B are 6:7 and 11:8 respectively. Solutions A and B are mixed in the ratio 4:5. In 2223 ml of the resulting solution, how much water (in ml) should be mixed so as to obtain a solution in which the ratio of lime juice to water is 3:4?
(a) 105.20 (b) 509.33
(c) 222.33 (d) None of these

51. The sum of three prime numbers is 2192. If one of them exceeds the other by 68, then one of the numbers is?
(a) 1130 (b) 1129
(c) None of these (d) Data inadequate

52. If $6^{x+2y-z} = 216^{3z-6-y}$, $5^{8y-12z} = 625^{3y+3z}$, $11^{6x-4z} = 1331^{x+z}$, then the value of $339(x + y + z)$ is?

53. Let there be two numbers such that when the second number is increased by 120%, then the obtained number is 62 less than the first number and if the second number is increased by 85 then the obtained number is 217 less than the first

number. Which of the following can be the sum of such numbers?

(a) 502
(b) 602
(c) 702
(d) 802

54. Nishi borrowed a certain sum of money from her friend Palak to buy jewellery. She paid back the money borrowed in three equal instalments of Rs. 1,02,400 each with $6\frac{2}{3}\%$ compound interest compounded annually. What was the amount borrowed by her?

55. Let there be a quadrilateral PQRS such that all the sides of the quadrilateral touch a circle. If PQ = $\sqrt{961}$ cm, QR= $\sqrt{1849}$ cm, RS = $\sqrt{729}$ cm, then find the length of the side SP?

(a) $\sqrt{225}$
(b) $\sqrt{441}$
(c) $\sqrt{729}$
(d) None of these

56. If the points X (12, 9) and Y (Z, 11) are on the circle with centre O (8, 6). Find the value of Z?

57. Find the number of zeroes at the end of the product $2^6 \times 5^3 \times 4^8 \times 10^6 \times 6^{13} \times 15^{16} \times 8^3 \times 20^{18} \times 10^9 \times 25^{15}$

58. If (x+6k) is a common factor of $3x^2 + gx + h$ and $3x^2 + jx + i$, then value of k is given by?

(a) $k = \frac{(i-h)}{6(j-g)}$
(b) $k = \frac{(i-h)}{8(j-g)}$
(c) $k = \frac{(h-i)}{10(j-g)}$
(d) None of these

59. If sin (a+3b) = 3 sin (b–a), solve it and fine the value of cot a.

(a) 1
(b) $\cot^3 b$
(c) cot b
(d) $\cot^2 b$

60. A conical tank is being filled by a cylindrical pipe of diameter 10 mm. Approximately how long will it take to complete fill the tank whose diameter at the base is 26 cm and depth is 12 cm. Assume the rate of flow of water from the cylindrical pipe is 20 meters per minute?

(a) 2 min 21 sec
(b) 5 min 21 sec
(c) 1 min 21 sec
(d) 7 min 21 sec

61. Ritesh is employed at an electrical appliance store as a marketing executive. His monthly salary is Rs. 50,000. Further, he is also eligible for bonus amount over and above his salary. If he sells the appliances of Rs. S, then his bonus amount is given by $\left[\left(\frac{s}{200}\right)2+1000\right]$ During first two months of an year, his average sale was Rs. 1000 per month. During next 5 months, his average sale was double the average sale in the first two months. Further, during the last 5 months, his average sale was $\frac{3}{2}$ times the average sale of the 3rd to 7th month. What are his average earnings per month for the whole year (rounded off to the nearest integer?

(a) 61, 140
(b) 81, 140
(c) 91, 140
(d) 51, 140

62. A sale event is organized every Saturday at Central Mall. As part of the sale, one Bluetooth speaker is given free on a purchase of five Bluetooth speakers. Two friends, Ajay and Vicky visited the mall on Saturday and purchased 9 and 15 Bluetooth speakers respectively. Further, it is also known that the price of a Bluetooth Speaker is Rs. 6,250. Calculate the difference in the amount that they would pay if they decided to buy together rather than separately?

63. A Mathematics Olympiad was organized by the National Association for Mathematics. There were a total of N participants in the said Olympiad, of which a% scored above 90. Further, if it is known that b% and c% alone of the male participants and female participants scored above 90. Find the total number of female participants, if b < c?

(a) $\frac{(a-b)}{(c-b)}\times N$

(b) $\frac{(b-c)}{(b-a)}\times N$

(c) $\frac{(a-c)}{(b-a)}\times N$

(d) None of these

64. The solution set of $\left|\frac{20}{7}-6x\right|>11$ is:

(a) $x\in\left(-\infty,-\frac{14}{19}\right)\cap\left(\frac{42}{97},\infty\right)$

(b) $x\in\left(\infty,\frac{14}{19}\right)\cup\left(\frac{33}{17},\infty\right)$

(c) $x\in\left(-\infty,-\frac{19}{14}\right)\cup\left(\frac{97}{42},\infty\right)$

(d) $x\in\left(-\infty,\frac{17}{14}\right)\cup\left(\frac{23}{92},\infty\right)$

65. A contractor was assigned the task of building a national highway which was required to be completed in 105 days for which he employed a total of 150 men. After 55 days, he found that $\frac{3}{5}$ part of the work had already been completed. Ascertain the number of men he can withdraw at this point so that his work still gets finished in time?

(a) 60 (b) 100

(c) 80 (d) 40

66. Anurag and Ravi are the partners of a sugar mill which they started with investments of Rs. 2,50,000 and Rs. 3,50,000 respectively. Further, Neha decides to join their business with the condition that all profit will be distributed equally among all of them. For this, Neha gives Ravi and Anurag a total amount of Rs. 5,00,000. Then find how much do Ravi and Anurag get individually?

(a) (3,00,000) & (2,00,000)
(b) (3,75,000) & (1,25,000)
(c) (2,50,000) & (2,50,000)
(d) (2,00,000) & (3,00,000)

VARC

1.	**(d)**	**5.**	**(b)**	**9.**	**(c)**	**13.**	**(d)**	**17.**	**(54321)**	**21.**	**(3)**
2.	**(a)**	**6.**	**(d)**	**10.**	**(c)**	**14.**	**(d)**	**18.**	**(2514)**	**22.**	**(31425)**
3.	**(d)**	**7.**	**(a)**	**11.**	**(d)**	**15.**	**(b)**	**19.**	**(c)**	**23.**	**(2)**
4.	**(a)**	**8.**	**(a)**	**12.**	**(b)**	**16.**	**(a)**	**20.**	**(d)**	**24.**	**(1432)**

LRDI

25.	**(d)**	**26.**	**(80)**	**27.**	**(c)**	**28.**	**(c)**	**29.**	**(c)**

30.	**(d)**	**33.**	**(a)**	**36.**	**(d)**	**39.**	**(a)**	**42.**	**(b)**
31.	**(3)**	**34.**	**(b)**	**37.**	**(d)**	**40.**	**(c)**	**43.**	**(d)**
32	**(d)**	**35.**	**(d)**	**38.**	**(d)**	**41.**	**(3)**	**44.**	**(9)**

QUANT

45.	**(10)**	**51.**	**(b)**	**57.**	**(82)**	**63.**	**(a)**
46.	**(a)**	**52**	**(–432)**	**58.**	(a)	**64.**	**(c)**
47.	**(a)**	**53.**	**(c)**	**59.**	**(b)**	**65.**	**(d)**
48.	**(d)**	**54.**	**(R.2,70,375)**	**60.**	**(c)**	**66.**	**(b)**
49.	**(15 m.)**	**55.**	(a)	**61.**	**(d)**		
50.	**(b)**	**56.**	**(8)**	**62.**	**(6250)**		

Hints & Solutions

VARC

1. **(d)**

Option 4: Correct; the fact that bankers first gave loans that did not satisfy their guidelines and then neglected to inform subsequent investors about these loans is the root problem.

Option 1: Incorrect; the problem is with 'housing' loans being manipulated.

Option 2: Incorrect; sanctioning is just a small part of the bigger picture.
Option 3: Incorrect; authorities being lax do not condone the wrongs being done by the lenders.

2. **(a)**
I is correct as the loan sanction procedure ignored banks' own guidelines. II is correct as the information given to mortgage buyers and final investors lacked crucial details; 'The howler was that the secondary buyers did not bring the material information, which could have and would have affected the decision of the investors to park their money in these assets, to the notice of the investors who were buying into these loans and now we have a situation where everyone involved has tried in some manner or the other to keep the next link in the chain in the dark'.
III is incorrect as, ' banks are well within their rights to lend to sub–prime borrowers'.

3. **(d)**
Option 1 is incorrect as the greed for short–term profits blinded the long–term business sense. That is why these parties find themselves facing a problem.
Option 2 is incorrect as the larger picture does point to at least two perpetrators – initial lenders and secondary investment houses.
Option 3 is incorrect as the fact that the scam took place right under the noses of regulators points towards their less than stellar performance.
So, option 4 is correct.

4. **(a)**
The opening sentences of the second paragraph, 'That could change pretty soon if the picture emerging from the darkness of the shadows of banking, mortgage sellers, buyers and evaluators is true, and, from the looks of it, it seems that the case is pretty water–tight', point towards option 1 being correct.
Option 2: Incorrect. The author's attitude can be judged from the first paragraph itself when he says that the sins of commission cannot be taken lightly.
Option 3: Incorrect. In the second paragraph, the author states that the case against the financial institutions seems pretty water–tight. Also, he says that the sins of commission cannot be taken lightly.
Option 4: Incorrect. In the second paragraph, the author states that the case against the financial institutions seems pretty water–tight. Also, he says that the sins of commission cannot be taken lightly. The author's attitude seems pretty optimistic that the banks will be prosecuted for their misdoings.

5. **(b)**
If people keep changing channels to avoid advertisements, they would never see one. Hence, there would be no point in spending money on publicizing their products. For the other three choices, it is mentioned in the text that the companies who involve into advertising their products are aware.

6. **(d)**
While the first paragraph deals with alternatives to advertising, the second paragraph explains how it serves a useful purpose for the seller.

7. **(a)**
The word vacillating in the given context means that the mind of the consumer is fickle. Hence the closest match is choice 1.

8. **(a)**
The author describes two categories of people and discusses how their approach towards situations is different. The passage is descriptive in nature, and hence, this is the best option.

9. **(c)**
This question can be best attempted by the process of eliminating the incorrect answer

choices considering all the mentioned traits of the mathematicians.

A feeling of déjà vu in the given scenario would be linked to something that cannot be explained in terms of evident principles. Hence, this is the most likely option.

10. (c)

The author differentiates between the approach used by mathematicians and by intuitive people and explains how people rarely crossover from one category to the other. There's no such comparison mentioned in the text, hence choice 1 is out.

For choice 2, we can't say that the intuitive people have an advantage over the mathematicians.

Choice 4 is extreme.

11. (d)

II is correct because the author states that when people other than workers have a stake in production, their disapproval can result in loss of production/ wealth creation. III is correct because the author states that the possibilities of redistributing wealth depend on the causes by which wealth is produced.

12. (b)

I is correct because the author states that Marx`s arguments were encumbered with superfluous mathematical formulae. III is correct because the last lines of the passage talk about Marx`s belief of historical roots of current economic situations.

13. (d)

The author suggests in the expression is encumbered with superfluous mathematical formulae, hence choice 4 is not supported from the passage.

14. (d)

The author, for all his criticism of French art, is unequivocal about the high quality of French art.

15. (b)

French art is bound in its traditional style and materialism of modern world has not touched it. Also because artists, rather than poets, have spearheaded it, the traditions have been kept alive.

16. (a)

The word which means which can't be contested or challenged. Hence choice 1 fits in the best.

17. (54321)

The given paragraph if arranged logically talk about prince Hamlet who is depressed. The paragraph opens with sentence 5. It is followed by 4 which is in support of sentence 5. It is followed by 3 which states that the queen has wed Hamlet's uncle. 2 and 1 form a mandatory pair describing the effect of this marriage on Hamlet.

18. (2514)

The correct order is 2514. All these sentences talk about Thoreau's writing style. The paragraph deals with Thoreau's personal style of writing, his areas of interest etc. Sentence c is the odd one out as it talks about Thoreau's readers.

19. (3)

Option (3) is the correct answer. Option (1) is incorrect since it does not talk about the choice and the clarification that man needs to make. Option (2) is ruled out since it is a generic statement. Option (4) is ruled out because it is beyond the scope of the passage. Option (3) is the most appropriate because it covers all the important points stated in the paragraph.

20. (4)

The answer is option 4. Option 1 can be eliminated because though communication is mentioned in the given text, technology is not. Option 2 is wrong because the given text does not really state that Asia depended on Europe. Option 3 is wrong because it states the political confusion in India as the reason behind the entry of Europeans in Asia.

21. **(3)**

Between options 2 and 3, both options have the word "incidents". We need a verb (promote) and not a gerund (promoting). Hence, the option (3). In option (1), the usage 'suggest to bring down is incorrect'. In option (4) books' prices 'should' be (and not 'to' be) brought down. Between options (2) and (3), 'incidence' of music piracy can be reduced and not 'incidents'.

22. **(31425)**

Sentence 3 opens the paragraph as it introduces the topic of discussion– things coming up full circle in Tehran. 1 follows next as it explains how the circle has turned completely. Talking about the Islamic clergy in sentence 1, sentence 4 follows next, which talks about Iran's political and economic hardship. Sentences 4 and 2 make a mandatory pair as 4 talks about 2009, while 2 talks about the present time, therefore an appropriate comparison is drawn. Sentence 5 clearly concludes the paragraph as it sums up all the aspects and says that still there are areas that need to be considered seriously.

23. **(2)**

The correct order is 4513. Sentence 4 opens the paragraph and 5 gives a conclusion that can be inferred from this. However, sentence 2 doesn't fit as it talks about "this vocabulary" which has not been mentioned in the passage. Also, the paragraph talks about grade a to c in a very specific context. It talks about reading in a generic sense.

24. **(1432)**

The given paragraph if arranged logically discusses about the two air bases built by Bangladesh. 1 and 4 form a mandatory pair introducing the two air bases and their respective locations. 3 and 2 form a mandatory pair portraying the speech given by Hasina on this issue.

LRDI

25. **(d)**

Detailed Explanation:

Let the total number of Pikachu, Teddy bear, and Doraemon made by all three companies are 8a, 8a and 9a respectively.

And the number of Doraemon made by S, T and U are 3b, 2b and b respectively. The number of Teddy bear made by S = 31.25% of 8a = 2.5a

The number of Pikachu made by S = 2b

The number of Doraemon made by S = 3b

The number of Teddy bear made by T = (2b + 40)

The number of Pikachu made by T = 2.5a – 20

The number of Doraemon made by T = 2b

The number of Teddy bear made by U = 160

The number of Pikachu made by U = (2b – 20)

The number of Doraemon made by U = b

Total number of Doraemon made by all three companies = 9a

=> 3b + 2b + b = 9a

=> 6b = 9a

$$\Rightarrow b = \frac{3a}{2}$$

=> b = 1.5a

And total number of Teddy bear made by all three companies = 8a

=> 2.5a + (2b + 40) + 160 = 8a

=> 2.5a + 2 × 1.5a + 200 = 8a

=> 2.5a = 200

=> a = 80

So, b = 1.5 × 80

=> b = 120

Tabulating the above data:

	Total	Pikachu	Teddy Bear	Doremon
Company S	800	240	200	360

Company T	700	180	280	240
Company U	500	220	160	120
Total	2000	640	640	720

Required ratio = 220: 360 = 11: 18.

26. **(80)**

Detailed Explanation:

Let the total number of Pikachu, Teddy bear, and Doraemon made by all three companies are 8a, 8a and 9a respectively.

And the number of Doraemon made by S, T and U are 3b, 2b and b respectively. The number of Teddy bear made by S = 31.25% of 8a = 2.5a

The number of Pikachu made by S = 2b

The number of Doraemon made by S = 3b

The number of Teddy bear made by T = (2b + 40)

The number of Pikachu made by T = 2.5a – 20

The number of Doraemon made by T = 2b

The number of Teddy bear made by U = 160

The number of Pikachu made by U = (2b – 20)

The number of Doraemon made by U = b

Total number of Doraemon made by all three companies = 9a

=> 3b + 2b + b = 9a

=> 6b = 9a

$$\Rightarrow b = \frac{3a}{2}$$

=> b = 1.5a

And total number of Teddy bear made by all three companies = 8a

=> 2.5a + (2b + 40) + 160 = 8a

=> 2.5a + 2 × 1.5a + 200 = 8a

=> 2.5a = 200

=> a = 80

So, b = 1.5 × 80

=> b = 120

Tabulating the above data:

	Total	**Pikachu**	**Teddy Bear**	**Doremon**
Company S	800	240	200	360
Company T	700	180	280	240
Company U	500	220	160	120
Total	2000	640	640	720

Required difference = 200 – 120 = 80.

27. **(c)**

Detailed Explanation:

Let the total number of Pikachu, Teddy bear, and Doraemon made by all three companies are 8a, 8a and 9a respectively.

And the number of Doraemon made by S, T and U are 3b, 2b and b respectively. The number of Teddy bear made by S = 31.25% of 8a = 2.5a

The number of Pikachu made by S = 2b

The number of Doraemon made by S = 3b

The number of Teddy bear made by T = (2b + 40)

The number of Pikachu made by T = 2.5a – 20

The number of Doraemon made by T = 2b

The number of Teddy bear made by U = 160

The number of Pikachu made by U = (2b – 20)

The number of Doraemon made by U = b

Total number of Doraemon made by all three companies = 9a

=> 3b + 2b + b = 9a

=> 6b = 9a

$$\Rightarrow b = \frac{3a}{2}$$

=> b = 1.5a

And total number of Teddy bear made by all three companies = 8a

=> 2.5a + (2b + 40) + 160 = 8a

=> 2.5a + 2 × 1.5a + 200 = 8a

=> 2.5a = 200

=> a = 80

So, b = 1.5 × 80

=> b = 120

Tabulating the above data:

	Total	Pikachu	Teddy Bear	Doremon
Company S	800	240	200	360
Company T	700	180	280	240
Company U	500	220	160	120
Total	2000	640	640	720

The number of Doraemon and Pikachu made by U = 120 + 220 = 340

The number of Teddy bear and Doraemon made by T = 280 + 240 = 520

So, required % $= \frac{(520-340)}{520 \text{ x } 100} = 34.61\%$

28. **(c)**

Detailed Explanation:

Let the total number of Pikachu, Teddy bear, and Doraemon made by all three companies are 8a, 8a and 9a respectively.

And the number of Doraemon made by S, T and U are 3b, 2b and b respectively. The number of Teddy bear made by S = 31.25% of 8a = 2.5a

The number of Pikachu made by S = 2b

The number of Doraemon made by S = 3b

The number of Teddy bear made by T = (2b + 40)

The number of Pikachu made by T = 2.5a – 20

The number of Doraemon made by T = 2b

The number of Teddy bear made by U = 160

The number of Pikachu made by U = (2b – 20)

The number of Doraemon made by U = b

Total number of Doraemon made by all three companies = 9a

=> 3b + 2b + b = 9a

=> 6b = 9a

$\Rightarrow b = \frac{3a}{2}$

=> b = 1.5a

And total number of Teddy bear made by all three companies = 8a

=> 2.5a + (2b + 40) + 160 = 8a

=> 2.5a + 2 × 1.5a + 200 = 8a

=> 2.5a = 200

=> a = 80

So, b = 1.5 × 80

=> b = 120

Tabulating the above data:

	Total	Pikachu	Teddy Bear	Doremon
Company S	800	240	200	360
Company T	700	180	280	240
Company U	500	220	160	120
Total	2000	640	640	720

The number of Pikachu and Teddy bear made by company M $= \frac{120}{100} \text{ x } \frac{220+150}{100} \text{ x } 280 = 684$

29. **(c)**

Detailed Explanation:

Let the total number of Pikachu, Teddy bear, and Doraemon made by all three companies are 8a, 8a and 9a respectively.

And the number of Doraemon made by S, T and U are 3b, 2b and b respectively. The number of Teddy bear made by S = 31.25% of 8a = 2.5a

The number of Pikachu made by S = 2b

The number of Doraemon made by S = 3b

The number of Teddy bear made by T = (2b + 40)

The number of Pikachu made by T = 2.5a – 20

The number of Doraemon made by T = 2b

The number of Teddy bear made by U = 160

The number of Pikachu made by U = (2b – 20)

The number of Doraemon made by U = b

Total number of Doraemon made by all three companies = 9a

=> 3b + 2b + b = 9a

=> 6b = 9a

$\Rightarrow b = \frac{3a}{2}$

=> b = 1.5a

And total number of Teddy bear made by all three companies = 8a

$\Rightarrow 2.5a + (2b + 40) + 160 = 8a$

$\Rightarrow 2.5a + 2 \times 1.5a + 200 = 8a$

$\Rightarrow 2.5a = 200$

$\Rightarrow a = 80$

So, $b = 1.5 \times 80$

$\Rightarrow b = 120$

Tabulating the above data:

	Total	**Pikachu**	**Teddy Bear**	**Doremon**
Company S	800	240	200	360
Company T	700	180	280	240
Company U	500	220	160	120
Total	2000	640	640	720

The number of Doraemon made by T and S together = 240 + 360 = 600

The number of Teddy bear made by S and LJ together = 200 + 160 = 360

Required percentage $= \frac{(600\text{-}360)}{360\text{x}100} = 66.67\%$

30. (d)

Eight teachers A, B, C, D, E, F, G and H opted for different subjects viz., English, Economics, Literature, History, Geography, Geology, Sports and Reasoning, but not necessarily in the same order.

The rankings of their designations in descending order are mentioned below such that English teacher>History teacher>Literature teacher> Reasoning teacher>Sports teacher>Geography teacher>Economics teacher>Geology teacher.

The teachers of only two subjects have the same age.

The ages (in years) are 20, 30, 40 and 50.

C, who opted for geography, ranks higher than F and H.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher				
Literature teacher				
Reasoning teacher				
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

G, who opted for Literature, ranks higher than D.

Two persons rank between D and E.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher				
Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

Case 1a	Case 2a			
Designations	Teacher	Ages	Teacher	Ages
English teacher				

History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher				
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

A ranks lower than B.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher	B		B	
Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher	A		A	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B		B	
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher	A		A	
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

The age of A is the same as the age of B
E is younger than B.
Only D and C are older than F.
Also, the teachers of only two subjects have the same age.
The ages (in years) are 20, 30, 40 and 50.
So, we can conclude that

D and C	50 years
F	40 years
A and B	30 years
E	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G		G	
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30

History teacher	E	20	E	20
Literature teacher	G		G	
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

The total sum of E and H's age is equal to G's age.

So, the possibility is:

D and C	50 years
F and G	40 years
A and B	30 years
E and H	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G	40	G	40
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G	40	G	40
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

The sum of the ages of History and Geology teachers is 60 years. So, case 1, case 2 and case 1a
canceled.

So, the final arrangement is:

Designations	Teacher	Ages
English teacher	B	30
History teacher	E	20
Literature teacher	G	40
Reasoning teacher	A	30
Sports teacher	D	50
Geography teacher	C	50
Economics teacher	H	20
Geology teacher	F	40.

31. (3)

Eight teachers A, B, C, D, E, F, G and H opted for different subjects viz., English, Economics, Literature, History, Geography, Geology, Sports and Reasoning, but not necessarily in the same order.

The rankings of their designations in descending order are mentioned below such that English teacher>History teacher>Literature teacher> Reasoning teacher>Sports teacher>Geography teacher>Economics teacher>Geology teacher.

The teachers of only two subjects have the same age.
The ages (in years) are 20, 30, 40 and 50.
C, who opted for geography, ranks higher than F and H.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher				
Literature teacher				
Reasoning teacher				
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

G, who opted for Literature, ranks higher than D.
Two persons rank between D and E.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher				
Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

Case 1a	Case 2a			
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher				
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

A ranks lower than B.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher	B		B	
Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher	A		A	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages

English teacher	B		B	
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher	A		A	
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

The age of A is the same as the age of B
E is younger than B.
Only D and C are older than F.
Also, the teachers of only two subjects have the same age.
The ages (in years) are 20, 30, 40 and 50.
So, we can conclude that

D and C	50 years
F	40 years
A and B	30 years
E	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G		G	
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G		G	
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

The total sum of E and H's age is equal to G's age.
So, the possibility is:

D and C	50 years
F and G	40 years
A and B	30 years
E and H	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G	40	G	40
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50

Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G	40	G	40
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

The sum of the ages of History and Geology teachers is 60 years. So, case 1, case 2 and case 1a
canceled.
So, the final arrangement is:

Designations	Teacher	Ages
English teacher	B	30
History teacher	E	20
Literature teacher	G	40
Reasoning teacher	A	30
Sports teacher	D	50
Geography teacher	C	50
Economics teacher	H	20
Geology teacher	F	40.

32. (d)

Eight teachers A, B, C, D, E, F, G and H opted for different subjects viz., English, Economics, Literature, History, Geography, Geology, Sports and Reasoning, but not necessarily in the same order.
The rankings of their designations in descending order are mentioned below such that English teacher>History teacher>Literature teacher> Reasoning teacher>Sports teacher>Geography teacher>Economics teacher>Geology teacher.
The teachers of only two subjects have the same age.
The ages (in years) are 20, 30, 40 and 50.
C, who opted for geography, ranks higher than F and H.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher				
Literature teacher				
Reasoning teacher				
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

G, who opted for Literature, ranks higher than D.
Two persons rank between D and E.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher				
Literature teacher	G		G	

Reasoning teacher	D		D	
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

Case 1a	Case 2a			
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher				
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

A ranks lower than B.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher	B		B	
Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher	A		A	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B		B	
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher	A		A	
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

The age of A is the same as the age of B
E is younger than B.
Only D and C are older than F.
Also, the teachers of only two subjects have the same age.
The ages (in years) are 20, 30, 40 and 50.
So, we can conclude that

D and C	50 years
F	40 years
A and B	30 years
E	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G		G	

Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G		G	
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

The total sum of E and H's age is equal to G's age.
So, the possibility is:

D and C	50 years
F and G	40 years
A and B	30 years
E and H	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G	40	G	40
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G	40	G	40
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

The sum of the ages of History and Geology teachers is 60 years. So, case 1, case 2 and case 1a
canceled.
So, the final arrangement is:

Designations	Teacher	Ages
English teacher	B	30
History teacher	E	20
Literature teacher	G	40
Reasoning teacher	A	30
Sports teacher	D	50
Geography teacher	C	50
Economics teacher	H	20

Geology teacher	F	40.

33. (a)

Eight teachers A, B, C, D, E, F, G and H opted for different subjects viz., English, Economics, Literature, History, Geography, Geology, Sports and Reasoning, but not necessarily in the same order.

The rankings of their designations in descending order are mentioned below such that English teacher>History teacher>Literature teacher> Reasoning teacher>Sports teacher>Geography teacher>Economics teacher>Geology teacher.

The teachers of only two subjects have the same age.

The ages (in years) are 20, 30, 40 and 50.

C, who opted for geography, ranks higher than F and H.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher				
Literature teacher				
Reasoning teacher				
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

G, who opted for Literature, ranks higher than D.

Two persons rank between D and E.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher				
Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

Case 1a	Case 2a			
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher				
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

A ranks lower than B.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher	B		B	

Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher	A		A	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B		B	
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher	A		A	
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

The age of A is the same as the age of B
E is younger than B.
Only D and C are older than F.
Also, the teachers of only two subjects have the same age.
The ages (in years) are 20, 30, 40 and 50.
So, we can conclude that

D and C	50 years
F	40 years
A and B	30 years
E	20 years

	Case 1	Case 2

Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G		G	
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G		G	
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

The total sum of E and H's age is equal to G's age.
So, the possibility is:

D and C	50 years
F and G	40 years
A and B	30 years
E and H	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G	40	G	40
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G	40	G	40
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

The sum of the ages of History and Geology teachers is 60 years. So, case 1, case 2 and case 1a
canceled.
So, the final arrangement is:

Designations	Teacher	Ages
English teacher	B	30
History teacher	E	20
Literature teacher	G	40
Reasoning teacher	A	30
Sports teacher	D	50
Geography teacher	C	50
Economics teacher	H	20
Geology teacher	F	40.

Among the following options, four persons rank between B and C; and G ranks higher than H.

34. (b)

Eight teachers A, B, C, D, E, F, G and H opted for different subjects viz., English, Economics, Literature, History, Geography, Geology, Sports and Reasoning, but not necessarily in the same order.
The rankings of their designations in descending order are mentioned below such that English teacher>History teacher>Literature teacher> Reasoning teacher>Sports teacher>Geography teacher>Economics teacher>Geology teacher.
The teachers of only two subjects have the same age.
The ages (in years) are 20, 30, 40 and 50.
C, who opted for geography, ranks higher than F and H.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher				
Literature teacher				
Reasoning teacher				
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	

Geology teacher	H		F	

G, who opted for Literature, ranks higher than D.
Two persons rank between D and E.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher				
Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher				
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

Case 1a	Case 2a			
Designations	Teacher	Ages	Teacher	Ages
English teacher				
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher				
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

A ranks lower than B.

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E		E	
History teacher	B		B	
Literature teacher	G		G	
Reasoning teacher	D		D	
Sports teacher	A		A	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B		B	
History teacher	E		E	
Literature teacher	G		G	
Reasoning teacher	A		A	
Sports teacher	D		D	
Geography teacher	C		C	
Economics teacher	F		H	
Geology teacher	H		F	

The age of A is the same as the age of B
E is younger than B.
Only D and C are older than F.
Also, the teachers of only two subjects have the same age.
The ages (in years) are 20, 30, 40 and 50.
So, we can conclude that

D and C	50 years
F	40 years
A and B	30 years
E	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G		G	
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G		G	
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	
Geology teacher	H		F	40

The total sum of E and H's age is equal to G's age.
So, the possibility is:

D and C	50 years
F and G	40 years
A and B	30 years
E and H	20 years

	Case 1		Case 2	
Designations	Teacher	Ages	Teacher	Ages
English teacher	E	20	E	20
History teacher	B	30	B	30
Literature teacher	G	40	G	40
Reasoning teacher	D	50	D	50
Sports teacher	A	30	A	30
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

	Case 1a		Case 2a	
Designations	Teacher	Ages	Teacher	Ages
English teacher	B	30	B	30
History teacher	E	20	E	20
Literature teacher	G	40	G	40
Reasoning teacher	A	30	A	30
Sports teacher	D	50	D	50
Geography teacher	C	50	C	50
Economics teacher	F	40	H	20
Geology teacher	H	20	F	40

The sum of the ages of History and Geology teachers is 60 years. So, case 1, case 2 and case 1a

canceled.

So, the final arrangement is:

Designations	Teacher	Ages
English teacher	B	30
History teacher	E	20
Literature teacher	G	40
Reasoning teacher	A	30
Sports teacher	D	50
Geography teacher	C	50
Economics teacher	H	20
Geology teacher	F	40.

35. (d)

Detailed Explanation:

3 persons have to go between G & D who have to go immediately before the person who has to go to Goa.

G has to go after Thursday.

Day	Case 1			Case 2			Case 3		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	D								
Tue			Goa	D					
Wed						Goa	D		
Thu									Goa
Fri	G								
Sat				G					
Sun							G		

B, who has to go to Pune, goes immediately before the person who is an expert of Chemistry.

At least 2 people has to go between G & B. So case 1 is eliminated.

Day	Case 2			Case 3–a			Case 3–b		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune				B		Pune
Tue	D	Chemistry		B		Pune		Chemistry	
Wed			Goa	D	Chemistry		D		
Thu						Goa			Goa
Fri									
Sat	G								
Sun				G			G		

Only 2 people have to go between C & E who is an expert of Physics.

C goes after E. So Case 3 – b is eliminated.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed			Goa	D	Chemistry	
Thu	E	Physics		C		Goa
Fri						
Sat	G					
Sun	C			G		

F, who is a mathematics expert, goes immediately before the person who has to go to Mumbai.

Only 2 people go between the person who goes to Mumbai & the person who goes to New Delhi.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri				F	Mathematics	
Sat	G					Mumbai
Sun	C		New–Delhi	G		

The person who goes to Punjab is an expert of History & goes immediately after the person who is an expert of Biology.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri	A	Biology		F	Mathematics	
Sat	G	History	Punjab	A	Biology	Mumbai
Sun	C		New–Delhi	G	History	Punjab

Only 1 person has to go between the person who is an expert of Geography & the person who is an expert of English. So Case 2 is now rejected.

Day	Case 3–a		
	Person	Subject	Place
Mon	E	Physics	Lucknow/ Dehradun
Tue	B	Geography / English	Pune
Wed	D	Chemistry	New–Delhi
Thu	C	English / Geography	Goa

Fri	F	Mathematics	Dehradun/ Lucknow
Sat	A	Biology	Mumbai
Sun	G	History	Punjab

36. (d)

Detailed Explanation:

3 persons have to go between G & D who have to go immediately before the person who has to go to Goa.

G has to go after Thursday.

Day	Case 1			Case 2			Case 3		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	D								
Tue			Goa	D					
Wed						Goa	D		
Thu									Goa
Fri	G								
Sat				G					
Sun							G		

B, who has to go to Pune, goes immediately before the person who is an expert of Chemistry.

At least 2 people has to go between G & B. So case 1 is eliminated.

Day	Case 2			Case 3–a			Case 3–b		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune				B		Pune
Tue	D	Chemistry		B		Pune		Chemistry	
Wed			Goa	D	Chemistry		D		
Thu						Goa			Goa
Fri									
Sat	G								
Sun				G			G		

Only 2 people have to go between C & E who is an expert of Physics.

C goes after E. So Case 3 – b is eliminated.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed			Goa	D	Chemistry	
Thu	E	Physics		C		Goa
Fri						
Sat	G					
Sun	C			G		

F, who is a mathematics expert, goes immediately before the person who has to go to Mumbai.

Only 2 people go between the person who goes to Mumbai & the person who goes to New Delhi.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri				F	Mathematics	
Sat	G					Mumbai
Sun	C		New–Delhi	G		

The person who goes to Punjab is an expert of History & goes immediately after the person who is an expert of Biology.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri	A	Biology		F	Mathematics	
Sat	G	History	Punjab	A	Biology	Mumbai
Sun	C		New–Delhi	G	History	Punjab

Only 1 person has to go between the person who is an expert of Geography & the person who is an expert of English. So Case 2 is now rejected.

Day	Case 3–a		
	Person	Subject	Place
Mon	E	Physics	Lucknow/ Dehradun
Tue	B	Geography / English	Pune
Wed	D	Chemistry	New–Delhi
Thu	C	English / Geography	Goa
Fri	F	Mathematics	Dehradun/ Lucknow
Sat	A	Biology	Mumbai
Sun	G	History	Punjab

37. (d)

Detailed Explanation:

3 persons have to go between G & D who have to go immediately before the person who has to go to Goa.

G has to go after Thursday.

Day	Case 1			Case 2			Case 3		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	D								
Tue			Goa	D					
Wed						Goa	D		
Thu									Goa
Fri	G								
Sat				G					
Sun							G		

B, who has to go to Pune, goes immediately before the person who is an expert of Chemistry.
At least 2 people has to go between G & B. So case 1 is eliminated.

Day	Case 2			Case 3–a			Case 3–b		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune				B		Pune
Tue	D	Chemistry		B		Pune		Chemistry	
Wed			Goa	D	Chemistry		D		
Thu						Goa			Goa
Fri									
Sat	G								
Sun				G			G		

Only 2 people have to go between C & E who is an expert of Physics.
C goes after E. So Case 3 – b is eliminated.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed			Goa	D	Chemistry	
Thu	E	Physics		C		Goa
Fri						
Sat	G					
Sun	C			G		

F, who is a mathematics expert, goes immediately before the person who has to go to Mumbai.
Only 2 people go between the person who goes to Mumbai & the person who goes to New Delhi.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri				F	Mathematics	
Sat	G					Mumbai
Sun	C		New–Delhi	G		

The person who goes to Punjab is an expert of History & goes immediately after the person who is an expert of Biology.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri	A	Biology		F	Mathematics	
Sat	G	History	Punjab	A	Biology	Mumbai
Sun	C		New–Delhi	G	History	Punjab

Only 1 person has to go between the person who is an expert of Geography & the person who is an expert of English. So Case 2 is now rejected.

Day	Case 3–a		
	Person	Subject	Place
Mon	E	Physics	Lucknow/ Dehradun
Tue	B	Geography / English	Pune
Wed	D	Chemistry	New–Delhi
Thu	C	English / Geography	Goa
Fri	F	Mathematics	Dehradun/ Lucknow
Sat	A	Biology	Mumbai
Sun	G	History	Punjab

B is an expert of either English or Geography. So option D is the correct choice here.

38. (d)

Detailed Explanation:

3 persons have to go between G & D who have to go immediately before the person who has to go to Goa.
G has to go after Thursday.

Day	Case 1			Case 2			Case 3		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	D								
Tue			Goa	D					
Wed						Goa	D		
Thu									Goa
Fri	G								
Sat				G					
Sun							G		

B, who has to go to Pune, goes immediately before the person who is an expert of Chemistry.

At least 2 people has to go between G & B. So case 1 is eliminated.

Day	Case 2			Case 3–a			Case 3–b		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune				B		Pune
Tue	D	Chemistry		B		Pune		Chemistry	
Wed			Goa	D	Chemistry		D		
Thu						Goa			Goa
Fri									
Sat	G								
Sun				G			G		

Only 2 people have to go between C & E who is an expert of Physics.
C goes after E. So Case 3 – b is eliminated.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed			Goa	D	Chemistry	
Thu	E	Physics		C		Goa
Fri						
Sat	G					
Sun	C			G		

F, who is a mathematics expert, goes immediately before the person who has to go to Mumbai.
Only 2 people go between the person who goes to Mumbai & the person who goes to New Delhi.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri				F	Mathematics	
Sat	G					Mumbai
Sun	C		New–Delhi	G		

The person who goes to Punjab is an expert of History & goes immediately after the person who is an expert of Biology.

Day	Case 2			Case 3–a		
	Person	**Subject**	**Place**	**Person**	**Subject**	**Place**
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri	A	Biology		F	Mathematics	
Sat	G	History	Punjab	A	Biology	Mumbai
Sun	C		New–Delhi	G	History	Punjab

Only 1 person has to go between the person who is an expert of Geography & the person who is an expert of English. So Case 2 is now rejected.

Day	Case 3–a		
	Person	**Subject**	**Place**
Mon	E	Physics	Lucknow/ Dehradun
Tue	B	Geography / English	Pune
Wed	D	Chemistry	New–Delhi
Thu	C	English / Geography	Goa
Fri	F	Mathematics	Dehradun/ Lucknow
Sat	A	Biology	Mumbai
Sun	G	History	Punjab

39. (a)

Detailed Explanation:

3 persons have to go between G & D who have to go immediately before the person who has to go to Goa.
G has to go after Thursday.

Day	Case 1			Case 2			Case 3		
	Person	**Subject**	**Place**	**Person**	**Subject**	**Place**	**Person**	**Subject**	**Place**
Mon	D								
Tue			Goa	D					
Wed						Goa	D		
Thu									Goa
Fri	G								
Sat				G					
Sun							G		

B, who has to go to Pune, goes immediately before the person who is an expert of Chemistry.
At least 2 people has to go between G & B. So case 1 is eliminated.

Day	Case 2			Case 3–a			Case 3–b		
	Person	Subject	Place	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune				B		Pune
Tue	D	Chemistry		B		Pune		Chemistry	
Wed			Goa	D	Chemistry		D		
Thu						Goa			Goa
Fri									
Sat	G								
Sun				G			G		

Only 2 people have to go between C & E who is an expert of Physics.
C goes after E. So Case 3 – b is eliminated.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed			Goa	D	Chemistry	
Thu	E	Physics		C		Goa
Fri						
Sat	G					
Sun	C			G		

F, who is a mathematics expert, goes immediately before the person who has to go to Mumbai.
Only 2 people go between the person who goes to Mumbai & the person who goes to New Delhi.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri				F	Mathematics	
Sat	G					Mumbai
Sun	C		New–Delhi	G		

The person who goes to Punjab is an expert of History & goes immediately after the person who is an expert of Biology.

Day	Case 2			Case 3–a		
	Person	Subject	Place	Person	Subject	Place
Mon	B		Pune	E	Physics	
Tue	D	Chemistry		B		Pune
Wed	F	Mathematics	Goa	D	Chemistry	New–Delhi
Thu	E	Physics	Mumbai	C		Goa
Fri	A	Biology		F	Mathematics	
Sat	G	History	Punjab	A	Biology	Mumbai
Sun	C		New–Delhi	G	History	Punjab

Only 1 person has to go between the person who is an expert of Geography & the person who is an expert of English. So Case 2 is now rejected.

Day	Case 3–a		
	Person	Subject	Place
Mon	E	Physics	Lucknow/ Dehradun
Tue	B	Geography / English	Pune
Wed	D	Chemistry	New–Delhi
Thu	C	English / Geography	Goa
Fri	F	Mathematics	Dehradun/ Lucknow
Sat	A	Biology	Mumbai
Sun	G	History	Punjab

40. (c)

As, the marks given by R to F, R to C & R to E are in AP, so we can say that y = 8 + (8–7) = 9
We can proceed with the following table:

Member	P	Q	R	S	T	Total
A	7	c	8	10	j	
B	a	9	f	7	8	
C	6	d	8	h	9	
D	8	8	g	8	9	
E	b	7	9	i	7	
F	10	e	7	6	K	
Total	48	46	45	47	49	

For above table; we have
a + b = 48 – (7 + 6 + 8 + 10) = 48 – 31 = 17
Similarly; c + d + e = 22, f + g = 13, h + i = 16 & j + k = 16
a + b = 17, hence a = 8 or 9 and b = 9 or 8 (Note: No member can give 10 marks to more than one student)
f + g = 13, hence = 6 or 7 and g = 7 or 6
Total score of D = 8 + 8 + 8 +9 + g = 33 + g
'g' must be equal to 7 and score of D = 33 + 7 = 40.
Hence, f = 6.
Now, score of B = 9 + 6 + 7 + 8 + a = 30 + a, we can conclude that 'a' must be equal to 8 and score of B = 38
Hence b must be equal to 9.
We have; h + i = 16
E's score = 9 + 7 + 9 + 7 + i = 32 + i
As per instruction given in the question; 32 + i can be equal to 41 (i >= 10 and i <= 6)
Hence, i = 41 – 32 = 9 and h = 16 – 9 = 7.
Score of C = 6 + d + 8 + 7 + 9 = 30 + d
Score of C may be equal to 36 or 37 because 43 can't be score of C as d cannot be 13.
Case 1: C's score = 36 and d = 6
We have c + d + e = 22
c + 6 + e = 22

c + e = 16

'e' can't be equal to 10 as F and A got 10 marks from P and S respectively.

Possible values of c are $\begin{matrix}7\\8\\9\end{matrix}$

Total score of A must be 43 because the sum of c & j must be equal to 12 & c is always more than 6.

Hence c + j = 43 – (7 + 8 + 10) = 18.

We can see that c = 9 and j = 9 (because neither 'c' nor 'j' can be equal to 10).

Now, e = 16 – c = 16 – 9 = 7 & k = 16 – j = 16 – 9 = 7

Final table is as below:

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	6	8	7	9	36
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	7	7	6	7	37
Total	48	46	45	47	49	

Case 2: C's score = 37 and d = 7

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	7	8	7	9	37
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	6	7	6	7	36
Total	48	46	45	47	49	

41. (3)

As, the marks given by R to F, R to C & R to E are in AP, so we can say that y = 8 + (8–7) = 9

We can proceed with the following table:

Member	P	Q	R	S	T	Total
A	7	c	8	10	j	
B	a	9	f	7	8	
C	6	d	8	h	9	
D	8	8	g	8	9	
E	b	7	9	i	7	
F	10	e	7	6	K	
Total	48	46	45	47	49	

For above table; we have

a + b = 48 – (7 + 6 + 8 + 10) = 48 – 31 = 17

Similarly; c + d + e = 22, f + g = 13, h + i = 16 & j + k = 16

a + b = 17, hence a = 8 or 9 and b = 9 or 8 (Note: No member can give 10 marks to more than one student)

f + g = 13, hence = 6 or 7 and g = 7 or 6

Total score of D = 8 + 8 + 8 +9 + g = 33 + g

'g' must be equal to 7 and score of D = 33 + 7 = 40.

Hence, f = 6.

Now, score of B = 9 + 6 + 7 + 8 + a = 30 + a, we can conclude that 'a' must be equal to 8 and score of B = 38

Hence b must be equal to 9.

We have; h + i = 16

E's score = 9 + 7 + 9 + 7 + i = 32 + i

As per instruction given in the question; 32 + i can be equal to 41 (i >= 10 and i <= 6)

Hence, i = 41 – 32 = 9 and h = 16 – 9 = 7.

Score of C = 6 + d + 8 + 7 + 9 = 30 + d

Score of C may be equal to 36 or 37 because 43 can't be score of C as d cannot be 13.

Case 1: C's score = 36 and d = 6

We have c + d + e = 22

c + 6 + e = 22

c + e = 16

'e' can't be equal to 10 as F and A got 10 marks from P and S respectively.

Possible values of c are $\begin{matrix}7\\8\\9\end{matrix}$

Total score of A must be 43 because the sum of c & j must be equal to 12 & c is always more than 6.

Hence c + j = 43 – (7 + 8 + 10) = 18.

We can see that c = 9 and j = 9 (because neither 'c' nor 'j' can be equal to 10).

Now, e = 16 – c = 16 – 9 = 7 & k = 16 – j = 16 – 9 = 7

Final table is as below:

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	6	8	7	9	36
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	7	7	6	7	37
Total	48	46	45	47	49	

Case 2: C's score = 37 and d = 7

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	7	8	7	9	37
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	6	7	6	7	36
Total	48	46	45	47	49	

42. (b)

As, the marks given by R to F, R to C & R to E are in AP, so we can say that y = 8 + (8–7) = 9

We can proceed with the following table:

Member	P	Q	R	S	T	Total
A	7	c	8	10	j	
B	a	9	f	7	8	
C	6	d	8	h	9	
D	8	8	g	8	9	
E	b	7	9	i	7	
F	10	e	7	6	K	
Total	48	46	45	47	49	

For above table; we have

a + b = 48 – (7 + 6 + 8 + 10) = 48 – 31 = 17

Similarly; c + d + e = 22, f + g = 13, h + i = 16 & j + k = 16

a + b = 17, hence a = 8 or 9 and b = 9 or 8 (Note: No member can give 10 marks to more than one student)

f + g = 13, hence = 6 or 7 and g = 7 or 6

Total score of D = 8 + 8 + 8 +9 + g = 33 + g

'g' must be equal to 7 and score of D = 33 + 7 = 40.

Hence, f = 6.

Now, score of B = 9 + 6 + 7 + 8 + a = 30 + a, we can conclude that 'a' must be equal to 8 and score of B = 38

Hence b must be equal to 9.

We have; h + i = 16

E's score = 9 + 7 + 9 + 7 + i = 32 + i

As per instruction given in the question; 32 + i can be equal to 41 (i >= 10 and i <= 6)

Hence, i = 41 – 32 = 9 and h = 16 – 9 = 7.

Score of C = 6 + d + 8 + 7 + 9 = 30 + d

Score of C may be equal to 36 or 37 because 43 can't be score of C as d cannot be 13.

Case 1: C's score = 36 and d = 6

We have c + d + e = 22

c + 6 + e = 22

c + e = 16

'e' can't be equal to 10 as F and A got 10 marks from P and S respectively.

Possible values of c are $\begin{matrix}7\\8\\9\end{matrix}$

Total score of A must be 43 because the sum of c & j must be equal to 12 & c is always more than 6.

Hence c + j = 43 – (7 + 8 + 10) = 18.

We can see that c = 9 and j = 9 (because neither 'c' nor 'j' can be equal to 10).

Now, e = 16 – c = 16 – 9 = 7 & k = 16 – j = 16 – 9 = 7

Final table is as below:

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	6	8	7	9	36
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	7	7	6	7	37
Total	48	46	45	47	49	

Case 2: C's score = 37 and d = 7

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	7	8	7	9	37

D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	6	7	6	7	36
Total	48	46	45	47	49	

43. (d)

As, the marks given by R to F, R to C & R to E are in AP, so we can say that y = 8 + (8–7) = 9

We can proceed with the following table:

Member	P	Q	R	S	T	Total
A	7	c	8	10	j	
B	a	9	f	7	8	
C	6	d	8	h	9	
D	8	8	g	8	9	
E	b	7	9	i	7	
F	10	e	7	6	K	
Total	48	46	45	47	49	

For above table; we have

a + b = 48 – (7 + 6 + 8 + 10) = 48 – 31 = 17

Similarly; c + d + e = 22, f + g = 13, h + i = 16 & j + k = 16

a + b = 17, hence a = 8 or 9 and b = 9 or 8 (Note: No member can give 10 marks to more than one student)

f + g = 13, hence = 6 or 7 and g = 7 or 6

Total score of D = 8 + 8 + 8 +9 + g = 33 + g

'g' must be equal to 7 and score of D = 33 + 7 = 40.

Hence, f = 6.

Now, score of B = 9 + 6 + 7 + 8 + a = 30 + a, we can conclude that 'a' must be equal to 8 and score of B = 38

Hence b must be equal to 9.

We have; h + i = 16

E's score = 9 + 7 + 9 + 7 + i = 32 + i

As per instruction given in the question; 32 + i can be equal to 41 (i >= 10 and i <= 6)

Hence, i = 41 – 32 = 9 and h = 16 – 9 = 7.

Score of C = 6 + d + 8 + 7 + 9 = 30 + d

Score of C may be equal to 36 or 37 because 43 can't be score of C as d cannot be 13.

Case 1: C's score = 36 and d = 6

We have c + d + e = 22

c + 6 + e = 22

c + e = 16

'e' can't be equal to 10 as F and A got 10 marks from P and S respectively.

Possible values of c are $\begin{matrix}7\\8\\9\end{matrix}$

Total score of A must be 43 because the sum of c & j must be equal to 12 & c is always more than 6.

Hence c + j = 43 – (7 + 8 + 10) = 18.

We can see that c = 9 and j = 9 (because neither 'c' nor 'j' can be equal to 10).

Now, e = 16 – c = 16 – 9 = 7 & k = 16 – j = 16 – 9 = 7

Final table is as below:

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	6	8	7	9	36
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	7	7	6	7	37
Total	48	46	45	47	49	

Case 2: C's score = 37 and d = 7

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	7	8	7	9	37
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	6	7	6	7	36
Total	48	46	45	47	49	

44. (9)

As, the marks given by R to F, R to C & R to E are in AP, so we can say that y = 8 + (8–7) = 9

We can proceed with the following table:

Member	P	Q	R	S	T	Total
A	7	c	8	10	j	
B	a	9	f	7	8	
C	6	d	8	h	9	
D	8	8	g	8	9	

E	b	7	9	i	7	
F	10	e	7	6	K	
Total	48	46	45	47	49	

For above table; we have

a + b = 48 – (7 + 6 + 8 + 10) = 48 – 31 = 17

Similarly; c + d + e = 22, f + g = 13, h + i = 16 & j + k = 16

a + b = 17, hence a = 8 or 9 and b = 9 or 8 (Note: No member can give 10 marks to more than one student)

f + g = 13, hence = 6 or 7 and g = 7 or 6

Total score of D = 8 + 8 + 8 +9 + g = 33 + g

'g' must be equal to 7 and score of D = 33 + 7 = 40.

Hence, f = 6.

Now, score of B = 9 + 6 + 7 + 8 + a = 30 + a, we can conclude that 'a' must be equal to 8 and score of B = 38

Hence b must be equal to 9.

We have; h + i = 16

E's score = 9 + 7 + 9 + 7 + i = 32 + i

As per instruction given in the question; 32 + i can be equal to 41 (i >= 10 and i <= 6)

Hence, i = 41 – 32 = 9 and h = 16 – 9 = 7.

Score of C = 6 + d + 8 + 7 + 9 = 30 + d

Score of C may be equal to 36 or 37 because 43 can't be score of C as d cannot be 13.

Case 1: C's score = 36 and d = 6

We have c + d + e = 22

c + 6 + e = 22

c + e = 16

'e' can't be equal to 10 as F and A got 10 marks from P and S respectively.

$$\begin{matrix} 7 \\ 8 \\ 9 \end{matrix}$$

Possible values of c are

Total score of A must be 43 because the sum of c & j must be equal to 12 & c is always more than 6.

Hence c + j = 43 – (7 + 8 + 10) = 18.

We can see that c = 9 and j = 9 (because neither 'c' nor 'j' can be equal to 10).

Now, e = 16 – c = 16 – 9 = 7 & k = 16 – j = 16 – 9 = 7

Final table is as below:

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	6	8	7	9	36
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	7	7	6	7	37
Total	48	46	45	47	49	

Case 2: C's score = 37 and d = 7

Member	P	Q	R	S	T	Total
A	7	9	8	10	9	43
B	8	9	6	7	8	38
C	6	7	8	7	9	37
D	8	8	7	8	9	40
E	9	7	9	9	7	41
F	10	6	7	6	7	36
Total	48	46	45	47	49	

QUANT

45. (10)

Let the largest such number be N

Therefore, N is given by HCF (681–1, 1243–3, 1657–7)

N = HCF (680, 1240, 1650)

N = 10

46. (a)

Vowels in the word "COGENT" are O and E

Total number of consonants in the given word are 4;

Now, consider O and E to be a single unit (∵ it has been given that the vowels will always be together)

Therefore, on the basis of the given condition, the word can be arranged in a total of 5! * 2! Ways (∵ O and E can interchange their respective places as well and thus can be arranged in 2! Ways)

Total number of ways of arranging the words of "COGENT" is 6!

Therefore, the required probability is given by

$$\frac{(5!*2!)}{6!}$$

$$= \frac{1}{3}$$

47. (a)

Let the 16 participants get 2a, 2b, 2c…….2p T–shirts respectively (∵as each participant gets an even number of shirts)

It is known that 2a + 2b + 2c +……2p = 80

Therefore, a + b + c +……..p = 40

Therefore, the required number of ways in which this can be done is given by ${}^{40-1}C_{16-1} = {}^{39}C_{15}$ (∵ each participant gets atleast some T–shirts. One can understand this concept by imagining a total of 40 sticks kept on a surface (Total number of spaces between them will be 39) and total 15 "+" signs are to be inserted in those 39 spaces (15 "+" signs are required for dividing the values into 16 parts):

48. (d)

Ratio of original mixture and pure water in the new mixture = 11:9

Let the quantity of original mixture and pure water be 11x and 9x respectively.

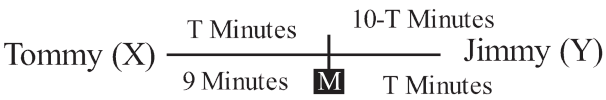
Therefore, quantity of milk and water in the original mixture would have been 5.5x each as it is already given that the original mixture contained milk and water in equal proportion

Therefore, total amount of milk in the new mixture = 5.5x

Total amount of water in the new mixture = 5.5x + 9x = 14.5x

Therefore, required ratio = $\frac{5.5x}{14.5x} = 11:29$

49. (15 minutes)



Let, Tommy and Jimmy meet at a certain point (denoted by "M") after T minutes from the start

Therefore, Tommy will take a total of 10–T Minutes from Point M to Y (as it is given that he reaches Y in 10 minutes)

Further, it is also given that Jimmy takes a total of 9 minutes to reach X after Point M.

Therefore, total time taken for Jimmy to reach Point X will be T+9 Minutes

As both are travelling at constant speeds, therefore ratio of time taken by them to cover a certain distance will be equal

Therefore, $\frac{T}{9} = \frac{10-T}{T}$

T2 + 9T – 90 = 0

Upon solving the quadratic equation, we get T = –15 and 6

As T cannot be negative, T = 6

Therefore, total time taken by Jimmy to reach X = 6 + 9 = 15 Minutes.

50. (b)

2223 ml of the resulting solution will contain 988 ml and 1235 ml of Solutions A and B respectively (as they were mixed in the ratio of 4:5 respectively)

Quantity of water in Solution A = $\frac{7}{13}$ of 988

= 532 ml

Quantity of water in Solution B = $\frac{8}{19}$ of 1235

= 520 ml

Total Quantity of water is 1052 ml

Let "x" ml of water is required to added to the solution so that the water forms $\frac{4}{7}$ of the total solution (as the ratio between lime juice to water is given as 3:4)

Therefore, $(1052 + x) = \frac{4}{7}(2223 + x)$

x = 509.33 ml

51. (b)

Sum of three prime numbers is given to be 2192 which means that one of the numbers is an even number (only then can the sum of those three prime numbers result in an even number)
This means that 2 is one of the numbers as it is the only even prime number
Let the other two prime numbers be x and y respectively. Therefore, x + y = 2190.
Further, it is also given that one exceeds the other number by 68. Therefore, we add 68 to 2, we get 70 which is not prime)
Therefore, we can say that x – y = 68
Therefore, x= 1129 and y = 1061

52. **(–432)**

$6^{x+2y-z} = 6^{9z-18-3y}$

$x+2y-z = 9z-18-3y$

$x+5y-10z = -18$ – (i)

$5^{8y-12z} = 5^{12y+12z}$

$8y-12z = 12y+12z$

$-4y = 24z$

$y = -6z$

$11^{6x-4z} = 11^{3x+3z}$

$6x-4z = 3x+3z$

$3x = 7z$

$x = \frac{7z}{3}$

∴ Putting the values of x and y in (i)

$\frac{7z}{3} - 40z = -18$

$7z - 120z = -54$

$-113z = -54$

$z = \frac{54}{113}$

$x = \frac{126}{113}$

$y = \frac{-324}{113}$

$339 (x+y+z)$

$= -432$

53. **(c)**

Let the second number be 100x then the first number will be 220x + 62 (as second number upon increase of 120% is still less than the first number by 62) Further, on the basis of the condition given we have 100x + 85 = 220x + 62 – 217.
Upon solving, we get x = 2
Therefore the numbers are 502 and 200 respectively
Sum of numbers will be 702

54. **(Rs. 2,70,375)**

Amount borrowed = Sum of the present values of each of the instalments

$\frac{1,02,400}{\left(\frac{16}{15}\right)^1} + \frac{1,02,400}{\left(\frac{16}{15}\right)^2} + \frac{1,02,400}{\left(\frac{16}{15}\right)^3}$ as $6\frac{2}{3}$ % is equivalent to $\frac{1}{15}$ and the powers represent the number of years after which the said instalment was paid

= 96000 + 90000 + 84375
= Rs. 2,70,375

55. **(a)**

On the basis of the given condition, we have
PQ + RS = QR + SP
31 + 27 = 43 + SP
SP = 15 = $\sqrt{225}$

56. **(8)**

On the basis of the given information, we can deduce that OX and OY are the radii of the said circle.
Therefore, OX = OY

$\sqrt{(12-8)^2 + (9-6)^2} = \sqrt{(Z-8)^2 + (11-6)^2}$

$\sqrt{25} = \sqrt{(Z-8)^2 + 25}$

$(Z-8)^2 = 0$

$Z - 8 = 0$

$Z = 8$

57. **(82)**

Number of zeroes at the end of given product is nothing but the power of 10 = 2 * 5

Therefore, we only need to ascertain the power of 2 and 5 from the given product

Upon solving the same, we get $2^{95} * 5^{82}$

Therefore the power of 10 in the given product will be 82 as 10 is formed by both 2 and 5 and we have 95 2's but only 82 5's available. So we can say that only 82 2's and 5's can be clubbed together to form the powers of 10

Therefore, the number of zeroes at the end of the said product will be 82.

58. **(a)**

x + 6k is a factor implies that at x = –6k, both the given equations will result in 0.

Therefore, substituting the value of x as –6k in both the equations and equating them with each other as both are equal to 0, we have

$3(36k^2) – 6kg + h = 3(36k^2) –6kj + i$

$–6kg + h = –6kj + i$

$6kj – 6kg = i–h$

$6k(j–g) = i–h$

$k = \frac{(i-h)}{6(j-g)}$

59. **(b)**

We know, $\text{Cos } 3\theta = 4 \cos^3 \theta – 3 \cos \theta$ and $\text{Sin } 3\theta = 3 \text{ Sin } \theta – 4 \sin^3 \theta$

$\text{Sin a . cos 3 b + cos a. sin 3 b}$

$= 3 [\text{sin b. cos a} – \text{cos b. sin a}]$

$\text{sin a. cos 3 b + 3 sin a. cos b}$

$= 3 \text{ cos a. sin b} – \text{cos a sin 3 b}$

$\text{sin a (cos3 b + 3 cos b)} = \text{cos a (3 sin b} – \text{sin3 b)}$

$\text{sin a . 4 cos}^3 \text{ b} = \text{cos a. 4 sin}^3 \text{ b}$

$\frac{4 \cos^3 b}{4 \sin^3 b}$

$\cot^3 b = \cot a$

60. **(c)**

Radius of the conical tank will be 13 cm and height is given as 12 cm

Therefore, total volume of the conical tank will be

$\frac{1}{3}\pi * (13)^2 * 12 \text{cm}^3$

Radius of the cylindrical pipe will be 5 mm or 0.5 cm and the rate of flow of water is given as 20 meters per minute or 2000 cm per minute

Therefore, amount of water which will flow in 1 minute will be $\pi (0.5)^2 2000 \text{ cm}^3$

Therefore, total time required to fill the tank

$= \frac{\text{Volume of the tank}}{\text{Volume of water flowing from the cylindrical pipe in 1 minute}}$

$= \frac{1}{3}\pi * (13)^2 * \frac{12\text{cm}^3}{\pi (0.5)^2} 2000 \text{ cm}^3$

= 1 Minute 21 Seconds Approx.

61. **(d)**

Bonus Amount during the first two months

$= \left(\frac{1000}{200}\right)^2 + 1000 = 1025$ per month

Bonus Amount during the next 5 months =

$= \left(\frac{2000}{200}\right)^2 + 1000 = 1100$ per month (Average sale = 2*1000)

Bonus Amount during the last 5 months

$= \left(\frac{3000}{200}\right)^2 + 1000 = 1225$ per month (Average sale $= \frac{3}{2} * 2000$)

Average Bonus Amount per month

$= 1025 * 2 + 1100 * 5 + 1225 * \frac{5}{12}$

= 1139.58 Approx.

Average earnings per month = Monthly Salary + Average Bonus Amount per month

= Rs. 51,140 (rounded off to the nearest integer).

62. (6250)

On every purchase of 5 bluetooth speakers,
1 bluetooth speaker is given free
Therefore Ajay alone needs to invest 6250 * 8
(as he will get one Bluetooth speaker free)
Further, Vicky alone needs to invest 6250 * 13
(as he will get two Bluetooth speakers free)
Total amount they invested on buying alone
6250 * 21
But, had they decided to buy together the given 24 Bluetooth Speakers, the amount invested would have been
= 6250 * 20 (as they would have been eligible for 4 Free Bluetooth Speakers)
Therefore the required difference would be 6250 * 21 – 6250 * 20
= 6250.

63. (a)

Solving the above question through mixtures and allegations, we can say following about the participants who scored above 90

Males		Females
b%		c%
	a%	
(c–a)		(a–b)

Therefore, we get the ratio of Male and female participants as (c– a) :(a–b)
Therefore, number of female participants

$$=\frac{(a-b)}{a-b}+c-a*N$$

$$=\frac{(a-b)}{c-b}*N$$

64. (c)

(i) If $\frac{20}{7}$ –6x > 0, we have

$$\frac{20}{7}-6x>11$$

$$x<\frac{-19}{14}$$

(ii) If $\frac{20}{7}$ –6x < 0, we have

$$6x-\frac{20}{7}>11$$

$$x>\frac{97}{42}$$

Therefore, following will be the range of x

$$x\in\left(-\infty,\frac{-19}{14}\right)\cup\left(\frac{97}{42},\infty\right)$$

65. (d)

We know that in 55 days $\frac{3}{5}$ part of the work was completed with 150 men on the job. Therefore, remaining $\frac{2}{5}$ part of the work is required to be completed in (105–55) 50 days, let us assume that here the total number of men required is 'M'
Applying the concept of Men, days and the part of the work completed, we have

$$\left(\frac{150*55}{\frac{3}{5}}\right)=\left(\frac{M*50}{\frac{2}{5}}\right)$$

Calculating the above, we get the value of M = 110 men
Therefore, the number of men he could withdraw = 150–110 = 40.

66. (b)

Ratio of investments is 5:7 (note that the total parts here are 12)
So we can say that, in order that the profit ratio becomes equal among all 3 (each one invests $\frac{12}{3}$ = 4 parts)
Therefore, the number of parts required to be deducted from Anurag and Ravi to make each of

them equal to 3 parts is 1 and 3 respectively, which implies that the amount of Rs. 5,00,000 given by Neha will be shared between Anurag and Ravi in the ratio of 1:3

Therefore, amount that Ravi gets is Rs. 3,75,000 and Anurag gets Rs. 1,25,000.