Solutions for IIFT 2018 held on 02.12.2018 (Booklet Code: D)

SECTION – 1

1. Which of the following is NOT an activity generally carried out by using a shell company?
   (A) Production and Manufacturing
   (B) Transfer Pricing
   (C) Tax Evasion
   (D) Raising funds for starting business

   Choice (A)

2. Match the Trophies and Cup associated with each Sport:
   1. Badminton   :   a.   Durand Cup
   2. Hockey   :   b.   Bama Belleck Cup
   3. Table Tennis   :   c.   Rangaswamy Cup
   4. Football   :   d.   BWF World Championships

   (A) 1-d, 2-c, 3-b, 4-a   (B) 1-c, 2-b, 3-d, 4-a   (C) 1-d, 2-b, 3-c, 4-a   (D) 1-b, 2-c, 3-d, 4-a

   Choice (A)

3. Match the Biographies/Autobiographies of India's sport players:
   1. The World Beneath His Feat   :   a.   Milkha Singh
   2. Imperfect   :   b.   Mary Kom
   3. The Race of My Life   :   c.   Sanjay Manjrekar
   4. Unbreakable   :   d.   Pullela Gopichand

   (A) 1-d, 2-c, 3-a, 4-b   (B) 1-a, 2-b, 3-d, 4-c   (C) 1-c, 2-a, 3-d, 4-b   (D) 1-b, 2-a, 3-d, 4-c

   Choice (A)

4. Correctly match the following terms?
   1. Isobront   :   a.   Joins points with the same light intensity
   2. Isocheim   :   b.   Joins points with the same wind direction
   3. Isogon   :   c.   Joins points with the same mean temperature in winter
   4. Isophote   :   d.   Joins points of a given phase of a thunderstorm activity

   (A) 1-d, 2-c, 3-b, 4-a   (B) 1-a, 2-b, 3-c, 4-d   (C) 1-d, 2-a, 3-b, 4-c   (D) 1-a, 2-c, 3-d, 4-b

   Choice (A)

5. Which of the following Telecom Operator has launched the app based internet calling service "WINGS" in India?
   (A) BSNL   (B) JIO   (C) Airtel   (D) Vodafone

   Choice (A)

6. Which of the following agreement is NOT related to the World Trade Organization (WTO)?
   (A) Agreement on Trade Related Intellectual Property Rights
   (B) General Agreement on Trade in Services
   (C) Multilateral Agreement on Transport and Logistics
   (D) Agreement on Agriculture

   Choice (C)

7. IIFT has been entrusted with the responsibility of setting up of India–Africa Institute of Foreign Trade as a Centre of Excellence in the area of International Business and Trade with Pan–Africa reach. This effort of Government of India will come under which of the following types of Diplomacy?
   (A) Track – III Diplomacy   (B) Track – II Diplomacy
   (C) Track – V Diplomacy   (D) Track – VII Diplomacy

   Choice (C)

8. Why are the Indirect Taxes termed as 'Regressive Taxing Mechanisms'?
   (A) Indirect taxes are charged uniformly to all the income groups.
   (B) Indirect tax with different tax rates are charged differentially to different people.
   (C) Indirect taxes have progressive tax schedule, meaning high income group may pay more taxes.
   (D) None of the above

   Choice (A)

9. Which of the following is the most exported agricultural commodity from India in terms of value?
    (A) Tea   (B) Rice   (C) Rubber   (D) Cotton

                                         Choice (B)

10. Which of the following is a correct sequence of Sea Ports of India from 'South to North'?
    (A) Cochin → Vizhinjam → Kozhikode → Mangalore
    (B) Kozhikode → Vizhinjam → Cochin → Mangalore
    (C) Vizhinjam → Cochin → Kozhikode →Mangalore
    (D) Vizhinjam → Kozhikode → Mangalore → Cochin

                                         Choice (C)

11. Which of the following country is not a member of BIMSTEC?
    (A) China   (B) Bhutan   (C) Nepal   (D) Myanmar

                                         Choice (A)

12. Which of the following industry is not covered in the 'Index of Eight Core Industries' in India?
    (A) Electricity   (B) Crude Oil   (C) Natural Gas   (D) Pharmaceutical

                                         Choice (D)

13. Given below are the logos of various global firms. On the basis of their logo, select the correct functional area they operate in.

    (A) Airlines, Automobiles, Banking, Petroleum   (B) Banking, Airlines, Automobiles, Petroleum
    (C) Airlines, Petroleum, Automobiles, Banking   (D) Banking, Airlines, Petroleum, Automobiles

                                         Choice (B)

14. To strengthen its maritime network and enhance trade & economic ties, Government of India has decided to invest in a port in Indonesia. The name of this port is
    (A) Sabang   (B) Samarinda   (C) Sibolga   (D) Sorong

                                         Choice (A)

15. Which of the following statement about American Businessman Elon Musk is not correct?
    (A) His full name is Elon Reeve Musk
    (B) He is Argentina–born American entrepreneur and businessman
    (C) He founded www.X.com in 1999 (which later became PayPal), SpaceX in 2002 and Tesla Motors in 2003
    (D) He is instrumental in leading the design and manufacture of electric Sedan and SUV cars

                                         Choice (B)

16. Rand is the currency of which of the following country?
    (A) Tanzania   (B) Somalia   (C) Sudan   (D) South Africa

                                         Choice (D)

17. Bharat Desai and Neerja Sethi, the Indian – American couple has made USD 2 Billion jackpot by selling their company to French IT major, ATOS. Name the company they sold.
    (A) Syntel   (B) Symtel   (C) Syotel   (D) Simtel

                                         Choice (A)

18. Which of the following company has designed the humanoid 'Sophia'?
    (A) Hansen Robotics Ltd   (B) Hanson Robotics Ltd
    (C) Hansan Robotics Ltd   (D) Hemsen Robotics Ltd

                                         Choice (B)

SECTION – 2

Directions (19-34) This section consists of 5 passages followed by questions. Read each passage carefully. Answer the questions by selecting the most appropriate option (with reference to the passage).

PASSAGE 1

We use the word culture quite casually when referring to a variety of thoughts and actions. I would like to begin my attempt to define cultures by a focus on three of its dictionary meanings that I think are significant to our understanding of the general term-culture. We often forget that it's more essential usage is as a verb rather than as a noun, since the noun follows from the activities involved in the verb. Thus the verb, to culture, means to cultivate. This can include at least three activities: to artificially grow microscopic organisms; to improve and refine the customs, manner and activities of one's life; to give attention to the mind as part of what goes into the making of what we call civilization, or what was thought to be the highest culture. In short, one might argue that culture is the intervention of human effort in refining and redefining that which is natural, but that is gradually takes on other dimensions in the life of the individual, and even more in the interface between the individual and society. When speaking of society, this word also requires defining. Society, it has been said, is what emerges from a network of interactions between people that follow certain agreed upon and perceptible patterns. These are determined by ideas of status, hierarchy and a sense of community governing the network. They are often, but not invariably, given a direction by those who control the essentials in how a society functions, as for instance, its economic resources, its technology and its value systems. The explanation and justification for who controls these aspects of a society introduces the question of its ideology and often its form.

The resulting patterns that can be differentiated from segment to segment of the society are frequently called its cultures. Most early societies register inequalities. The access of their members to wealth and status varies. The idea of equality therefore has many dimensions. All men and women may be said to be equal in the eyes of God, but may at the same time be extremely differentiated in terms of income and social standing, and therefore differentiated in the eyes of men and women. This would not apply to the entire society. There may be times when societies conform to a greater degree of equality, but such times may be temporary. It has been argued that on a pilgrimage, the status of every pilgrim is relatively similar but at the end returns to inequalities. Societies are not static and change their forms and their rules of functioning. Cultures are reflections of these social patterns, so they also change. My attempt in this introduction is to explain how the meaning of a concept such as culture has changed in recent times and has come to include many more facets than it did earlier. What we understand as the markers of culture have gone way beyond what we took them to be a century or two ago. Apart from items of culture, which is the way in which culture as heritage was popularly viewed, there is also the question of the institutions and social codes that determine the pattern of living, and upon which pattern a culture is constructed. Finally, there is the process of socialization into society and culture through education. There is a historical dimension to each of these as culture and history are deeply intertwined. There is also an implicit dialogue between the present and the past reflected in the way in which the readings of the past changed over historical periods.

Every society has its cultures, namely, the patterns of how the people of that society live. In varying degrees this would refer to broad categories that shape life, such as the environment that determines the relationship with the natural world, technology that enables a control over the natural world, political-economy that organizes the larger vision of a society as a community or even as a state, structures of social relations that ensure its networks of functioning, religion that appeals to aspirations and belief, mythology that may get transmuted into literature and philosophy that teases the mind and the imagination with questions. The process of growth is never static therefore there are mutations and changes within the society. There is communication and interaction with other societies through which cultures evolve and mutate. There is also the emergence of subcultures that sometimes take the form of independent and dominant cultures or amoeba-like breakaway to form new cultures. Although cultures coincide with history and historical change, the consciousness of a category such as culture, in the emphatic sense in which the term is popularly used these days, emerges in the eighteenth century in Europe. The ideal was the culture of elite groups, therefore sometimes a distinction is made between what came to be called 'high culture' that of the elite, and 'low culture' that of those regarded as not being of the elite, and sometimes described as 'popular'. Historical records of elite cultures in forms such as texts and monuments for instance, received larger patronage and symbolized the patterns of life of dominant groups. They were and are more readily available as heritage than the objects of the socially lower groups in society whose less durable cultural manifestations often do not survive. This also predisposed people to associate culture as essentially that of the elite.

19. What is the central idea of the passage?
  (A) The author has explained the importance of religion and equality before God
  (B) The author has defined culture and its sub-elements
  (C) The author has explained the social inequalities existing in a society
  (D) The author has explained the contextual metamorphosis of culture in different contexts

Solution:
The author defines culture in various ways, associates it with society, explains how 'cultures are reflections of social patterns, and so they change', and also talks about how subcultures emerge to take the form of independent cultures over time. Only Choice (D) captures the central idea of the passage.   Choice (D)

20. According to the author what are the characteristics of 'Society'?
  (A) Society consists of rich and poor
  (B) Society consists of relationships between people who have agreed to follow certain social norms
  (C) Society consists of inequalities between people who have access to and control over resources
  (D) Society consists of people who go on pilgrimage together

Solution:
Refer to para 1, line 12 - 'Society, it has been said, … ' points to the answer as Choice (B).
                                        Choice (B)

21. With reference to the above passage, what are the important elements of 'Culture'?
  (A) Social inequalities, wealth, status, social norms
  (B) High culture elite and low culture popular
  (C) History, education, religion, beliefs, social patterns
  (D) Growth, civilisation, communication, texts and monuments

Solution:
The passage gives references to all the elements mentioned in Choice (C). History – the evolution of cultures over time; Education – Para 2, line 16 - 'Finally, ...' ; Religion – God and pilgrimages; Beliefs – Paras 1,2 ; Social Patterns – Para 2, line 10.   Choice (C)

PASSAGE 2

Today, we have specialists in various professions, but many among them are unconcerned with the world beyond their owen specialization. It is sometimes said that they are replacing the public intellectual. But the two are not identical. There are many more academics, for instance, than existed before. But it seems that most refer not to confront authority even if it obstructs the path of free thought. Is this because they wish to pursue knowledge undisturbed, or because they are ready to discard knowledge should authority require them to do so? Or does association with national or international agencies require that critical assessments of social thought and action remain sotto voce? Today, as always, the public intellectual is expected to take a position independent of those in power, enabling him or her to question debatable ideas, irrespective of who propagates them. Reasoned critiques are often the essential starting point. The public intellectual has to see himself or herself as a person who is as close to being autonomous as its possible, and more than that, be seen by others as such.

An acknowledged professional status makes it somewhat easier to be autonomous. Such status brings with it another kind of authority, conceded, even if grudgingly, by professional peers and this does make some small impact on the non-professional world. The public intellectual of today, in addition to being of such a status, has to have at the same time a concern for what constitutes the rights of citizens, particularly on issues of social justice, and further, there should be a readiness to raise these matters as public policy. The combination of drawing upon the professional respect that a person has garnered, together with a concern for society, can sometimes establish the moral authority of that person and ensure public support. This is a conceded qualification and not a tangible one. In the past it was those who had distanced themselves somewhat from society who were believed not to have a vested interest in the changes they were suggesting. Although this was not always so, we know that close associations, such as formal affiliation to a political party, can inhibit free-thinking and prescriptions for action, even if it has the advantage of providing a certain leverage to the suggestions being made. As an attitude of mind, autonomy is more readily expected of the professional specialist or the academic. Such persons, and they are not the only ones, can suggest alternative ways of thinking, even about problems of the larger society. Their thinking should emerge from reasoned, logical analyses. Yet academics today are hesitant to defend even the right to make what might be broadly called alternative, if not rational interpretations, however sensitively they may be expressed. This is evident from the ease with which books are banned and pulped, or demands made that they be burned, and syllabuses changed under pressure from religious or political organizations, or the intervention of the state. Why do such actions provoke so little reaction among many academics and professionals? The answer that is usually given is that they fear the instigators who are persons with the backing of political authority. But is this the only answer?

Is it assumed that opinions about governance and society must hinge on ideologies linked to political parties and as a result there can be no thinking about how to configure society in a manner that is independent of a necessary commitment to political parties? Surely in this day and age, it is possible to be an independent liberal in this country with ideological commitments that are not determined solely by political parties? Being a liberal is an attitude of mind that determines the fight for space in a society when that society resists ethics and reasoned thinking. The understanding of what one is battling for assumes an ideological direction but this does not require association with a political party. And there should also be the freedom to choose one's position on an issue and this position need not be in conformity with the ideological take of a particular political party on every occasion. The public intellectual has, by definition, to be liberal, that is, to insist that there be space to present varying perspectives and that wherever possible, reason and ethics should have primacy in whatever debates are taking place. This is not a new definition and has been a recognizable part of the interface between knowledge and society since earliest times. Approximations to orthodoxy and orthopraxy have always been contested by similar approximations to heterodoxy although those leading the charge do not always have or need to have the same social identity. This is apparent among people and situations in the Indian past yet we have often ignored it or failed to recognize it. How an intellectual even without being a public intellectual, requires a more than average knowledge in his/her professional specialization and beyond that a familiarity with the context of that knowledge: how did it come about and what are the implications for the people who use that knowledge. To be a technician (or be technically accomplished) in a specialization, however good, is not sufficient. An intellectual perspective requires that the specialized knowledge one possesses should be related to social concerns where required and to other branches of knowledge as well. Added to this it helps if that knowledge can be contextualized in an accessible way for a wider range of people to understand facets of the variegated world in which we live, and to which understanding the specialization contributes. The public intellectual uses such foundations in his/her thinking in order to extend the understanding of the world we inhabit, and to do so by insisting on space for debate and the right to informed opinion.

22. According to the author, 'Public Intellectual' is one who
    (A) is very knowledgeable, possesses a postgraduate or higher degree and is a specialist in his field
    (B) is liberal minded, considers varying perspectives, takes an independent position and is concerned for greater good
    (C) has a professional status, works with national and international agencies and is an expert in specific domain
    (D) has the backing of political authority, speaks and writes sensitively about various issues and is concerned about social policy

    Solution:
    Para 3, line 11 gives the definition of "Public Intellectual". Also, para 2 gives sufficient information to suggest that the answer has to be Choice(B). The other choices are incorrect.
    Choice (B)

23. How does the author differentiate between Public Intellectuals of the past and today?
    (A) Public intellectuals of the past were merely academicians and idealists. Public intellectuals of today are more learned and specialist in their own field
    (B) Public intellectuals of the past were not concerned about matters of social policy or social concerns. Public intellectuals of today are technically accomplished and believe in reasoned critiques.
    (C) Public intellectuals of the past were more concerned with rational thought. Public intellectuals of today are more sensitive to different perspectives
    (D) Public intellectuals of the past were distanced from vested interests, liberal in thought and spoke up about issues concerning society. Public intellectuals of today are concerned about being politically correct while expressing views

Solution:
Para 2 gives the information to answer this question. Refer to line 10 - 'In the past, … Line 18 - 'Yet academics today…Choices A, B, C distort the facts and hence incorrect.   Choice (D)

24. With reference to the above passage, explain the relationship between Orthodoxy, Orthopraxy and Heterodoxy as proposed by the author as applicable to the 'Public Intellectual'
    (A) The 'Public Intellectual' can be both orthodox and orthoprax but not heterodox
    (B) The 'Public Intellectual' can be heterodox but not orthodox and orthoprax
    (C) The 'Public Intellectual' can be both orthoprax and heterodox but not orthodox
    (D) The 'Public Intellectual' can be orthodox but not heterodox and orthopraxy

Solution:
These terms are introduced in para 3, but the terms themselves are not defined. However, the author explains them with the example of a technician.
'To be a technician...' would correspond to 'orthodox'.
The next sentence - 'An intellectual perspective ...' would correspond to 'orthoprax' (someone who believes in doing the right thing without having any affiliation to any religious beliefs) because now the technician is not limited to specialized knowledge alone, but also possess knowledge related to social concerns as well. However, this person still operates at an individual level.
The next sentence - 'Added to this...' would refer to 'heterodox' because the individual has expanded his sphere of influence to the external world/greater good. This reasoning matches with the author's idea of 'Public Intellectual'.
Choice (B)

PASSAGE 3

We love information. Especially in times of crisis. Have you ever noticed your tendency to become glued to the television or Internet when disaster strikes? It is human nature to try to gather as much information as possible, to make sense and create meaning when we don't understand what is happening. We seek information for another reason too, control. We operate under the illusion that if we can gain more information, we will not only understand what is happening, we might just be able to control it. I am not suggesting that there is no value to information or to clearly defined reporting and accountability relationships for routine business operations. I am instead calling out the temptation that an information-centred approach to agility offers: there's a desire to settle into the illusion that information will give you control, when in many situations it is simply not possible to gather or process enough information to be effective when it counts.

Recognizing that there are many situations that you not only cannot control but cannot predict is a radical mind-set and practice shift for most. It requires that you decide whether your goal is to reduce the perception of uncertainty or to actually become more effective in its midst. It also involves more than a simple reconfiguration of the organisation chart and job descriptions. It require relinquishing the illusion of control that lies at the very foundation of most management training and business practice. This shift is being made in one of the most hierarchal, command- and –control organization in the country, the United States military. Recognizing the insidious nature of information age strategies and their tendency to lead to either analysis paralysis or the false security of convenient stories, the U.S. military has begun to make a fundamental shift in its approach to VUCA (volatility, uncertainty, complexity, and ambiguity), a shift from information to interactions. This change does not begin with restructuring and redeployments but with a fundamental shift in min-set. In fact, the term. VUCA was first coined by the U.S. Army War College to describe increasingly complex and unpredictable combat conditions." VUCA has become shorthand for the reality of lift in the twenty-first century. Most business approaches to VUCA focus on strategies to reduce uncertainty. These strategies tend to centre around gaining greater control, including amassing more and better information, minimizing risk, and improving planning and analysis. While risk and uncertainty reduction are valid strategies, they do not necessarily make an organization more agile, for two reasons: (1) collecting more and better information takes time and may foster the illusion of control and comfort when, in reality, it is impossible to gather all available information in complex, changing contexts, let alone fully analyze and make meaning of, it and (2) planning and analysis are dependent on relatively stable contexts. Another liability of information-centred approaches is that they typically lead to more questions and the need to gather more information to reduce the uncertainty created by the information already collected. There is an even more significant liability of the information-centred approach to agility: our preconceptions lead us to filter out information that does not align with our expectations. Under the stress of an unexpected challenge or opportunity, our ability to access our higher thinking capacity can be reduced, leading us to fall back on the version of the story we expected. Warnings of terrorist threats before 9/11 and potential malfunctions of crucial components prior to the Challenger space shuttle disaster went unheeded because they did not fit the narrative that was co-constructed by leaders during years of experience and expectation. Agile leaders, teams and organizations know they cannot afford to get caught up in a story. They are instead learning how they might be more effective by focusing on their interactions with one another and with the available information in the dynamic present moment.

Let me emphasize that this is a shift away from an overreliance on information. I am not suggesting you curtail important industry and market data analysis, or take this as encouragement to blindly make decisions when further investigation is warranted. I am encouraging you to shift away from the false comfort such information can offer, and toward the relational context in which you make sense of it, decide and act. When we make the shift from information to interaction, we may be called to shift more than our relationship to external information; we may need to shift the way we perceive ourselves as well. The agility shift requires that we value our capacity to connect and build relationships over-or at least as much' as-our hard-won expertise. Years of experience, training and credentials are, of course, still valuable. But their value is minimal without the networks to which the skills, knowledge, experience, and resource awareness are linked. In other words, separating the process of "knowing what" and "knowing how" from the process of "knowing who" significantly diminishes agility capacity. The shift from information to interaction values the human system in which all meaning and action take place. Rather than problematizing this system as non-objective or messy, the agility shift embraces it and engages it more fully. You may not be able to control or predict what happens, but with a conscious, continuous commitment to interacting within your web of relationships and resources, you will be more effective than you ever imagined. The agility shifts is first and foremost a shift in mind-set. This mind-set values interactions within the dynamic present moment. It is also a shift from the false comfort of "a plan" to achieving a state of readiness to find opportunity in the unexpected.

25. With reference to the above passage what is the author's stand with regard to 'information'?
(A) The author considers information as important in order to reduce risk and uncertainty while taking decisions
(B) The author considers information as important for human beings as they love information
(C) The author considers information as necessary but an obstacle in taking quick decisions by organization leaders
(D) The author considers that there is an over reliance on information leading to complacency in decision making

Solution:
Para 3, line 1 clearly indicates that there is an 'over reliance on information'. Also, the subsequent sentences suggest that Choice (C) is contradictory. Choice (A) is only one part of the whole purpose of the passage. The author clearly states that there needs to be a shift in our thought and action. Choice (B) trivialises the author's agenda – which says that information is important, but over reliance on it can lead to policy paralysis and hence there needs to be alternative thinking in how we use information. Choice (D) is the best pick. Choice (D)

26. According to the author what causes 'analysis-paralysis'?
(A) Today's leaders are not able to take decisions because of lack of policy thereby causing paralysis of policy
(B) Today's leaders have access to lot of information and spend more time on analyzing rather than acting upon it
(C) Today's leaders are not able to take decisions because they do not have the skills to analyse information
(D) Today's leaders are paralysed because they do not have networking with other leaders

Solution:
Para 2, line 8 gives the answer to this question.
Choice (B)

27. Which references to the above passage, 'agility shift' is
(A) The uncertainty reduction mind set of leaders to gather more information in order to take effective decisions
(B) The mind set of leader's towards using the VUCA approach in order to take effective decisions
(C) The mind set of leaders to reduce over reliance on information and move to interaction in order to take effective decisions
(D) The mind set of leaders to seek more information and analysis in order to take effective decisions

Solution:
Paras 2 and 3 talk about shift from 'information to interactions'. Para 3, line 7 clearly defines this.
Choice (C)

28. According to the author, why do we 'love' information?
(A) Today the internet and television provide us with easy access to lot of information and entertainment
(B) Information helps us in anticipating and preventing crisis like 9/11
(C) Information provides us with an illusion of control and we remain in our comfort zone
(D) Information helps us in getting more knowledge and enhancing expertise

Solution:
Para 1 gives the answer to this question.
Choice (C)

PASSAGE 4

While majoring in computer science isn't a requirement to participate in the Second Machine Age, what skills do liberal arts graduates specifically possess to contribute to this brave new world? Another major oversight in the debate has been the failure to appreciate that a good liberal arts education teaches many skills that are not only valuable to the general world of business, but are in fact vital to innovating the next wave of breakthrough tech-driven products and services. Many defences of the value of a liberal arts education have been launched, of course, with the emphasis being on the acquisition of fundamental thinking and communication skills, such as critical thinking, logical argumentation, and good communication skills. One aspect of liberal arts education that has been strangely neglected in the discussion is the fact that the humanities and social sciences are devoted too the study of human nature and the nature of our communities and larger societies. Students who pursue degrees in the liberal arts disciplines tend to be particularly motivated to investigate what makes us human: how we behave and why we behave as we do. They're drive to explore how our families and our public institutions-such as our schools and legal systems-operate, and could operate better, and how governments and economies work, or as is so often the case, are plagued by dysfunction. These students learn a great deal from their particular courses of study and apply that knowledge to today's issues, the leading problems to be tackled, and various approaches for analysing and addressing those problems.

The greatest opportunities for innovation in the emerging era are in applying evolving technological capabilities to finding better ways to solve human problems like social dysfunction an political corruption; finding ways to better educate children; helping people live healthier and happier lives by altering harmful behaviours; improving our working conditions; discovering better ways to tackle poverty; Improving healthcare and making it more affordable;

making our governments more accountable, from the local level up to that of global affairs; and finding optimal ways to incorporate intelligent, nimble machines into our work lives so that we are empowered to do more of the work that we do best, and to let the machines do the rest. Workers with a solid liberal arts education have a strong foundation to build on in pursuing these goals. One of the most immediate needs in technology innovation is to invest products and services with more human qualities, with more sensitivity too human needs and desires. Companies and entrepreneurs that want to succeed too day and in the future must learn to consider in all aspects of their product and service creation how they can make use of the new technologies to make them more humane.

Still, many other liberal arts disciplines also have much to provide the world of technological innovation. The study of psychology, for example, can help people build products that are more attuned to our emotions and ways of thinking. Experience in Anthropology can additionally help companies understand cultural and individual behavioural factors that should be considered in developing products and in marketing them. As technology allows for more machine intelligence and our lives become increasingly populated by the Internet of things and as the gathering of data about our lives and analysis of it allows for more discoveries about our behaviour, consideration of how new products and services on be crafted for the optimal enhancement of our lives and the nature of our communities, workplaces and governments will be of vital importance. Those products and services developed with the keenest sense of how they can serve our human needs and complement our human talents will have a distinct competitive advantage. Much of the criticism of the liberal arts is based on the false assumption that liberal arts students lack rigor in comparison to those participating in the STEM disciplines and that they are 'soft' and unscientific whereas those who study STEM fields learn the scientific method. In fact the liberal arts teach many methods of rigorous inquiry and analysis, such as close observation and interviewing in ways that hard science adherents don't always appreciate. Many fields have long incorporated the scientific method and other types of data driven scientific inquiry and problem solving.

Sociologists have developed sophisticated mathematical models of societal networks. Historians gather voluminous data on centuries-old household expenses, marriage and divorce rates, and the world trade, and use data to conduct statistical analyses, identifying trends and contributing factors to the phenomena they are studying. Linguists have developed high-tech models of the evolution of language, and they've made crucial contributions too the development of one of the technologies behind the rapid advance of automation- natural language processing, where by computers are able to communicate with the, accuracy and personality of Siri and Alexa. It's also important to debunk the fallacy that liberal arts students who don't study these quantitative analytical methods have no 'hard' or relevant skills. This gets us back too the arguments about the fundamental ways of thinking, inquiring, problem solving and communicating that a liberal arts education teaches.

29. What is the central theme of the passage?
  (A) A combination of STEM skills as well as skills of liberal arts are required by Companies in order to develop products that are most relevant today.
  (B) Companies need to develop products that are technologically sophisticated and use lot of data driven technology.
  (C) The Second machine Age is causing disruption and is going to require a higher number of workers specialised in STEM
  (D) Students with liberal arts background will be able to solve all the social problems as they are experts in the use of quantitative analytical methods

  Solution:
  Choice (A) captures the central theme of the passage that it requires both liberal arts and STEM skills to make meaningful technological advancements relevant for today. Choices (B) and (C) make no reference to the importance of liberal arts skills. Choice (D) is too extreme by using "will be able to solve" and "all the social problems" when the passage only suggests that liberal arts will be able to qualitatively and quantitatively contribute to technological innovation with 'human qualities' and 'sensitivity to human needs'.
  Choice (A)

30. How can companies gain an edge in today's era of technological innovation?
  (A) By creating products and services that are technologically sophisticated which can perform a wide range of functions using scientific methods.
  (B) By creating products and services that are affordable, humane and do the work that humans don't want to do
  (C) By creating products and services that are technologically advanced and are endowed with human qualities that can be used to solve variety of social problems.
  (D) By creating products and services that are similar to human being and use date based problem solving methodologies.

  Solution:
  Choice (C) is the best fit. Choice (A) does not capture the essence of how companies can gain an edge - as indicated in the last sentence of para 2. Choice (B) is incorrect as it uses '...that humans don't want to do'. Para 2 line 8 only mentions '…and to let machines do the rest.' Choice (D) distorts an qualities' and 'sensitivity to human needs' as given in para 2.
  Choice (C)

31. What is the author's opinion with regard to the contribution of students of liberal arts and those of STEM, in this new technological age?
   (A) Students of liberal arts have good soft skills but are not skilled with quantitative analytical methods, while STEM students possess both of these
   (B) Students of STEM can contribute effectively by applying rational decision making algorithms. Liberal Arts students provide understanding of social issues but cannot contribute to the development of technological innovations
   (C) Students of STEM are better positioned to participate in the Second machine Age as they have technical skills and understand machine language. Liberal Arts students are not suitable as they do not have degrees in computer science
   (D) Students of Liberal Arts because of their knowledge of human nature can contribute effectively to technological innovations with human qualities. Stem students can contribute to technological innovations but not to human aspects.

Solution:
Choice (A) is incorrect. Choice (B) is incorrect because the author clearly gives examples where liberal arts students contributed to technological innovations. Choice (C) is also incorrect. Choice (D) clearly captures the author's opinion.

Choice (D)

PASSAGE 5

For policy makers to this day, GDP remains the definitive yardstick for economic performance, permitting them to assess the health and progress of a nation's economy and, by extension, people's lives. Yet GDP's dominance has brought criticism. It fails to capture changes to an economy's structure, such as the shifts to a service-led or technology-based economy. Some have protested that it fails to capture the unofficial or black market economy. Others have asserted that any purely economic indicator by itself may be inadequate to truly measure society's progress. It is therefore no surprise that over the last several decades, economists, sociologists, and other academics have devised other metrics for tracking happiness, well-being, and social progress, some of which have garnered a substantial following. Implicit in these metrics is a challenge to GDP as the dominant measure of human progress-despite the fact that these measures sometimes themselves rely on GDP or some variance of GDP and come with limitations of their own. Even so, GDP remains a compelling measure of economic as well as social progress inasmuch as improvements in economic GDP translate into social progress. Policymakers have nevertheless become interested in these alternative measures, which, even if they do not displace GDP as the most prominent measure of economic growth, have value in complementing GDP in future assessments for economic and living standard progress. Furthermore, these proposed additions to GDP remind us that the endgame for public policy is progress and improved living standards rather than GDP growth for growth's sake. Nonetheless, these rankings reveal that consistently richer Countries (in terms of GDP) rank at the top of the indices and poorer ones at the bottom. For example, happiness indices reflect a demand that happiness be recognized as a criterion for government policy. First published in 2012, the *World Happiness Report* measures happiness by indexing GDP per capita alongside social support, life expectancy, freedom, generosity, and the absence of corruption. Of the 155 Countries collated in the 2017 *World Happiness Report*, the ten happiest countries, in descending order, are Norway, Denmark, Iceland, Switzerland, Finland, the Netherlands, Canada, New Zealand, Australia, and Sweden. The ten least happy countries, beginning with the least happy, are the Central African Republic, Burundi, Tanzania, Syria, Rwanda, Togo, Guinea, Liberia, South Sudan, and Yemen. While the United States is the largest country in GDP terms, it ranks fourteenth on the 2017 happiness index. A more traditional measure that goes beyond GDP alone is the United Nation's Human Development Index (HDI). First published in 1990, the HDI assesses longevity, education, and income across each nation's population, on the premise "that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone." The HDI reveals how two countries with the same level of gross national income (GNI)-that is, the total domestic output (GDP) plus foreign GDP generated by citizens abroad, minus domestic output created by foreigners-can end up with such different outcomes. In this way, it allows observers to compare the relative effectiveness of different policy choices and capital investments. In this index, Norway, Australia, and Switzerland rank at the top, with GNIs above US$40,000, and the Central African Republic, Niger, and Chad are at the bottom of the index, all with GNIs of less than US$2,000 per capita. Some of these measures move beyond individuals and attempt a holistic assessment of the health of society. Since its founding in 2012, the Social Progress Imperative has offered a Social Progress Index that examines a range of social and environmental indicators beyond GDP, from access to electricity to religious tolerance, to measure three distinct dimensions of social progress: Basic Human Needs, Foundations of Wellbeing, and Opportunity. The 2017 Social Progress Index covers 133 countries and 94 percent of the world's population. The world as a whole would score 64.85 in Social Progress based on an average of all countries. On average, the top cluster of fourteen countries ranked as having "very high social progress"-including Denmark, Finland, Iceland, Norway, and Switzerland among others-scores 94.92 on Basic Human Needs, Foundations of Wellbeing, and Opportunity. The cluster of seven countries described as having "very low social progress" include the Central African Republic, Afghanistan, Chad, Angola, Niger, Guinea, and Yemen. For this cluster the average dimension scores of Basic Human Needs, Foundations of Wellbeing, and Opportunity are 42.67, 45.42, and 27.74. What can we learn from these various indices? While noneconomic factors such as health, well-being, and quality

of life matter to humanity, economic measures such as GDP generally correlate to success in the other areas, with a small amount of variation among those who are awarded the top spot. In a nutshell, economic growth underpins all else; a country needs economic growth to achieve happiness, well-being, and ultimately human progress. To be sure, GDP estimates provide a snapshot of GDP at a single point in time, but nothing more. A large GDP can indicate that a country is rich yet mask that its economy might be struggling and scarcely growing.

32. What is the author's opinion regarding GDP as a measure for economic performance of a country?
    (A) GDP is the yardstick for measuring economic growth of a country
    (B) GDP provides policy makers with definitive steps to be taken for improving economic performance
    (C) GDP provides accurate but incomplete information of an economy at a single point of time
    (D) GDP is the only reliable measure that can be used for framing economic policy

    Solution:
    Refer to the last part of the passage – the penultimate sentence. The '...but nothing more.' points to GDP not providing complete information.
    Choice (C)

33. What are the characteristics of non-GDP measures?
    (A) Non GDP measures are subjective in nature and cannot be relied upon
    (B) Non GDP measures are not standardized and not universally accepted across countries
    (C) Non GDP measures provide data regarding living standards, development, and social progress
    (D) Non-GDP measures cannot contribute to public policy making

    Solution:
    As per the passage, non-GDP measures such as HDI, SPI point to non-economic factors beyond GDP. Factors such as social progress, well-being, quality of life, etc. Choice (C) captures this correctly.
    Choice (C)

34. According to the passage, what is the difference between using just GDP measures and using non-GDP measures in policy making?
    (A) Economic measures such as GDP generally correlate to success in other areas and lead to social progress but non-GDP measures do not
    (B) GDP measure contribute effectively towards policy making as they provide objective and actionable inputs but non-GDP measures are open to interpretation
    (C) Non GDP measures are able to provide information on gaps in public policy making whereas GDP provides information only on economic performance
    (D) Non GDP measures are not accepted by most countries but GDP measures are accepted universally

    Solution:
    Choice (A) is incorrect as the passage gives enough data to disprove that non-GDP measures do indicate social progress. Choice (D) is incorrect as the passage gives examples of countries where non-GDP measures are accepted. The latter part of Choice (B) is misleading. Best pick is Choice (C).
    Choice (C)

SECTION – 3

Directions (Questions 35-37): Create a word using all jumbled alphabets as provided in the table below and identify its appropriate meaning.

35.

	O	U
A	L	
I	C	S
Q	U	O

(A) Verbose
(B) Taciturn
(C) Rational
(D) Alluring

Solution:
The word in the grid is 'LOQUACIOUS' meaning 'tending to talk a great deal; talkative'. Thus, the answer is 'verbose', which means 'using or expressed in more words than are needed'.

.   Choice (A)

36.

C	B	A
	R	E
A	M	

(A) Innocent   (B) Tarried
(C) Gruesome   (D) Pleasing

Solution:
The word in the grid is 'MACABRE' meaning 'disturbing because concerned with or causing a fear of death'. Thus, the answer is 'gruesome', which means 'horrifying'.   Choice (C)

37.

P	E	I
T		Y
	K	N
E	R	C

(A) Spiteful   (B) Careless
(C) Ignorant   (D) Fussy

Solution:
The word in the grid is 'PERNICKETY' meaning 'placing too much emphasis on trivial or minor details'. Thus, the answer is 'fussy'.   Choice (D)

Directions (Questions 38-39): Choose the correct answer from the options provided below to indicate the most appropriate word to complete the pair.

38. CICERONE : GUIDE : : DRAGOMAN : . . . . .?
(A) Cavalry officer
(B) Interpreter
(C) Hauler
(D) Turnkey

Solution:
A cicerone is a guide, who gives information about places of interest to sightseers; thus, a dragoman is an interpreter, especially in countries speaking Arabic, Turkish, or Persian.   Choice (B)

39. SYLVAN : WOODS : : TERRESTRIAL : . . . . .?
(A) Urban
(B) Fear
(C) Earth
(D) Planets

Solution:
The word 'sylvan' is associated with woods, just as the word 'terrestrial' relates to earth.

Choice (C)

Directions (Questions 40-42): Select the most appropriate pair of words from the given option to meaningfully complete sentence(s).

40. Despite being the ……….. partner in the relationship, the franchiser does not always have all the …………..
(A) sincere ……… limitations
(B) authoritative ………legalities
(C) dominant ……… advantages
(D) active ……… losses

Solution:
First, a franchiser is an entity such as a company or producer that allows its products or services to be franchised. This entity essentially grants permission to other firms to provide the products or services to its customer under the same name and pre-determined pricing. Thus, a franchiser would apparently have the upper hand or be the 'dominant' partner in the franchiser-franchisee relationship, yet the word 'despite' in our sentence indicates that may not always be the case, and the franchiser may not always have all the say or 'advantages'. (A) and (D) are ruled out, as we assume that the franchisor has all the advantages, and not 'limitations' or 'losses'.

Choice (C)

41. With large classes, it is difficult for teachers to ……… regular essay type questions for homework because ……… lone answers would take too much time.
(A) consider ……… writing
(B) revalue ……… concise
(C) pursue ……… feeling
(D) handle ……… weighing

Solution:
The sentence implies that evaluating essay type questions is challenging for teachers, hence the word pair is 'handle (essay … questions)' and 'weighing' (long answers). (A) is ruled out, as teachers don't write essays.   Choice (D)

42. 'Patriotism is the last refuge of scoundrel', says Johnson. In the modern world where the cunning selfish people ………and the hard working, conscientious people ………. The quotation holds good.
(A) dominate ……… suppress
(B) thrive………suffer
(C) enjoy………mutilate
(D) empower………subjected

Solution:
The adage proclaims loud and clear that scoundrels become politicians. Thus, cunning and selfish people prosper or 'thrive', and hardworking and principled people fall by the wayside or 'suffer'. Choice (B)

Directions (Questions 43-44): Match the correct answers.

43. 1. Adonis : a. An idler or loafer
2. Don Juan : b. An awkward, rough fellow
3. Wastrel : c. A handsome man
4. Lout : d. A rake or seducer

(A) 1-c, 2-b, 3-d, 4-a
(B) 1-b, 2-d, 3-a, 4-c
(C) 1-b, 2-a, 3-d, 4-c
(D) 1-c, 2-d, 3-a, 4-b

Solution:
An Adonis is an extremely handsome young man. A Don Juan is a captivating man known as a great lover or seducer of women. A wastrel is a good-for-nothing person. A lout is an uncouth and aggressive man. Thus, the answer is (D). Choice (D)

44. 1. En Masse : a. Adjective
2. Fetter : b. Verb
3. Malinger : c. Adverb
4. Raspy : d. Noun

(A) 1-c, 2-d, 3-b, 4-a
(B) 1-b, 2-a, 3-d, 4-c
(C) 1-d, 2-b, 3-c, 4-a
(D) 1-d, 2-c, 3-a, 4-b

Solution:
'En masse' refers to being all together, such as to resign en masse, thus the term is an adverb. A 'fetter' is a chain or manacle used to restrain a prisoner, hence the word is a noun. To 'malinger' is to pretend to be ill, thus the word is a verb. 'Raspy' refers to a harsh-sounding voice, hence the word is an adjective. Thus, the answer is (A).
. Choice (A)

Directions (Questions 45-46): Identify the error in the sentences given below.

45. The job is much worse than expected (a)/if I would have realized (b)/how awful it was going to be (c)/I would not have accepted it (d).

(A) a
(B) b
(C) c
(D) d

Solution:
The sentence is in the subjunctive form, and should read as follows: '…..if I had realized how awful it was going to be, I would not have accepted it.' Thus, the error is in part (b), and the answer is (B).
Choice (B)

46. While luminaries of the dance world (a)/has no dearth of opportunities to display their art, (b)/upcoming dancers suffer from (c)/an unfortunate lack of exposure (d).
(A) a
(B) b
(C) c
(D) d

Solution:
There is clearly a subject-verb agreement error in the sentence: '… luminaries … have …' (plural), hence the error lies in (b), and the answer is (B).
Choice (B)

Directions (Questions 47-50): Identify the origin/source of the words given below.

47. Auto-da-fe`(Noun)
The ceremony for pronouncing judgment by the Inquisition which was followed by the execution of sentence by secular authorities; broadly, the burning of a heretic.
(A) Latin
(B) Italian
(C) Portuguese
(D) French

Solution:
Auto-da-fé refers to the Portuguese: "act of faith". It's a public ceremony during which the sentences upon those brought before the Spanish Inquisition were read and after which the sentences were executed by the secular authorities. Thus, the answer is (C).
Choice (C)

48. Voracious (Adjective)
To devour
(A) Hebrew
(B) Greek
(C) German
(D) Latin

Solution:
Voracious is one of several English words that derive from the Latin verb vorare, which means "to eat greedily" or "to devour. Thus, the answer is (D).
. Choice (D)

49. Echt (Adjective)
True, genuine, real and authentic
(A) German
(B) Latin
(C) Italian
(D) Greek

Solution:
The word 'echt' meaning to be genuine is borrowed from German echt ("real"), hence the answer is (A).   Choice (A)

50. Aegis (Noun)
Under the protection of
(A) Russian
(B) Greek
(C) French
(D) Arabic

Solution:
Aegis refers to sponsorship or protection and refers to a shield borne by Zeus in Greek Mythology, hence the answer is (B).   Choice (B)

Directions (Questions 51–52): Choose the appropriate answer for rephrasing the underlined portion of the sentence.

51. Sky – Airlines recently announced aggressive cost – cutting measures <u>ranging from a new airport check-in procedures that encourage passengers to use self-service kiosks and reductions</u> in the size of its fleet.
(A) such as improvement of airport check-procedure, encouragement of passengers to use self-service kiosks and reducing.
(B) ranging from new airport check-in procedures that encourage passengers to use self-service kiosks and to reductions.
(C) ranging from new airport check-in procedures that encourage passengers to use self-service kiosks to reductions.
(D) ranging from new airport check-in procedures that encourage passengers to use self-service kiosks of reducing.

Solution:
(A) errs in parallelism – 'improvement … encouragement … reducing'. So does (D) – 'procedures … reducing'. (B) mentions 'from …. and to …', which makes no sense. (C) is correct in all respects: 'from … procedures … to … reductions'.   Choice (C)

52. Although the square root of a negative number has no real value, it is not necessarily true that <u>equations involving imaginary numbers like these are practically inapplicable.</u>
(A) equations involving these inapplicable imaginary numbers are practical
(B) equations involving such imaginary numbers have no practical applications
(C) there is no practical applications for equations involving such imaginary numbers as these

(D) equations involving imaginary numbers such as these are inapplicable practically

Solution:
(A) ends with 'imaginary numbers are practical', which sounds illogical. (C) mentions 'there is no … applications', which is grammatically incorrect. (D) mentions 'inapplicable practically' which sounds redundant. (B) is correct in all respects.
                    Choice (B)

Directions (Questions 53–54): The sentences given in each question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.

53. (A) But, clearly, the government still has the final say.
(B) In the past few years, the Reserve Bank of India might have wrested considerable powers from the government when it comes to monetary policy.
(C) The RBI's announcements on certain issues become effective only after the government notifies them.
(D) Isn't it time the government vested the RBI with powers to sanction such changes, leaving their ratification later?
(A) ACBD   (B) ACDB
(C) DACB   (D) BACD

Solution:
(B) clearly represents wishful thinking: the RBI may have grabbed some power from the government. (A) comes to the point – that the government has the last word. (C) gives supporting evidence – that the government has to ratify RBI announcements. (D) questions this regressive state of affairs. The paragraph, thus, is BACD.   Choice (D)

54. (A) All levels of demand, whether individual, aggregate, local, national, or international are subject to change.
(B) At the same time, science and technology add new dimensions to products, their used and the methods used to market them.
(C) Aggregate demand fluctuates with changes in the level of business activity, GNP and national income.
(D) The demand of individuals tend to vary with changing needs and rising income.
(A) BCAD   (B) ADCB
(C) CBDA   (D) DCAB

Solution:
(A) introduces the concept of demand as such. Since (A) mentions 'individual, aggregate' and so on and so forth, (D) follows with 'individual' and (C) follows with 'aggregate'. (B) looks at further aspects of change – 'science and technology'. Thus, the paragraph is ADCB. .   Choice (B)

SECTION – 4

55. A Business Group has 3 Companies X, Y, Z and a Trust P which is engaged in charitable activities. Each group company has to donate 5% of its own funds to the Trust, excluding the loan which the company has taken from other companies of the group. X has given a loan to Y which is equivalent to 10% of the funds of Y. After receiving the loan, Y has funds which are 2 times the funds of Z. If Z gave ₹10,000 as donation to the Trust P, how much is the approximate contribution of Y to the Trust P?
(A) ₹17,000
(B) ₹18,000
(C) ₹19,000
(D) ₹20,000

Solution:

Z's funds = $10000 \times \frac{100}{5}$ = 2 lakhs

Y has funds which are 2 times the funds of Z i.e. y's funds = 4 lakhs

X has given a loan to Y which is equivalent to 10% of the funds of Y.

Y's funds + 10% of y's funds = 4 lakhs.

Y's funds = $\frac{4}{1.1}$ lakhs

Y's donation = $\frac{5}{100} \left(\frac{4}{1.1} \text{ lacks}\right)$ = 18181.81, which is ~ 18000

Y's contribution to the Trust p = 18000

Choice (B)

56. A bucket contains 200cc of liquid. A solid ball is dropped in the bucket resulting in the rise of liquid level to 1.3 times of its original level. If the radius of the base of the bucket is 3 cm and the radius of the surface of the liquid level is 1 cm more than the radius of the base of the bucket before the ball is dropped. Find the volume of the solid metal ball.
(A) 68cc
(B) 80cc
(C) 92cc
(D) Can't be determined

Solution:
Let the height of the liquid level before the ball was dropped be h.

The radius of the surface of the liquid level then is 4 cm

$\frac{h}{3} \pi (4^2 + 3^2 + 4 \times 3)$ = 200cc

h = $\frac{600}{37\pi}$

The liquid level raises by 0.3h as a result of the solid metal ball being dropped

By similarity, the radius of the surface of the liquid level after the solid metal ball is dropped is 4.3 cm

Volume of the solid metal ball

= $\frac{1.3h}{3} \pi (4.3^2 + 3^2 + 4.3 (3))$ – original volume

of liquid in the bucket) = $\frac{1.3h}{3} \pi (4.3^2 + 3^2 + 4.3 (3))$ – 200

= $(1.3) \frac{\frac{600\pi}{37\pi}}{3} (40.39) - 200 = 83.82$cc

Closest answer is 80 cc   Choice (B)

57.
P . . . . . Q
R . . . . . S
T . . . . . U
V . . . . . W
Using 5 dots in each of the lines PQ, RS, TU and VW as the vertices, how many triangles can be drawn such that the base is on any one of the above lines?
(A) 120   (B) 150   (C) 200   (D) 600

Solution:
. The base on any one of the lines can be formed in $^5C_2$ i.e. 10 ways.
To form a triangle, the base has to be joined to any of the 15 points on the other lines.
Number of triangles that can be drawn when the base is on any one of the lines = (10) (15) = 150 and number of triangles that can be drawn totally = (150) (4) = 600

Choice (D)

58. In the triangle PQR, S is the midpoint of QR. X is any point on PR. T is the point on QR such that PT || SX. If the area of triangle PQR is 5.8 sq.cm, then the area of triangle RTX is
(A) 2.9 sq.cm
(B) 3.2 sq.cm
(C) 5.8 sq.cm
(D) 2.45 sq.cm

Solution:
. S is the midpoint of QR. So, area of ΔPSR = $\frac{1}{2}$(Area of Δ PQR) = $\frac{5.8}{2}$ = 2.9 Sq. cm

(∵ Median divides a triangle into two triangles of equal area)
PT|| XS
So area of ΔXSP = area of Δ XST (∵ The triangles have the same height and the common base XS)
Adding area of ΔXSR both sides, we have area of ΔPSR = Area of ΔRTX
Area of ΔRTX = Area of ΔPSR = 2.9 sq.cm
Choice (A)

59. Given P(x, y) = x² + xy +y²; Q(x, y) = x² – xy + y². Find the value of P(7, Q(9, 4))
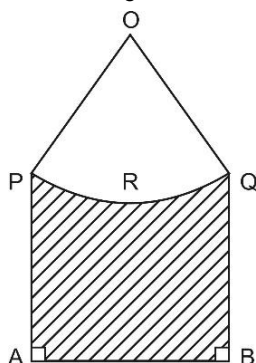(A) 4169
(B) 4197
(C) 4089
(D) 4127

Solution:
P(x, y) = x² + xy + y² and Q(x, y) = x² – xy + y².
Q(9, 4) = 9² – 9(4) + 4² = 61
P(7, Q(9, 4)) = P(7, 61) = 7² + 7(61) + 61² = 4197
Choice (B)

60. In the given figure, PA = QB and PRQ is the arc of the circle, centre of which is O such that angle POQ = 90°. If AB = $25\sqrt{2}$ cm and the perpendicular distance of AB from centre O is 30cm. Find the area of the shaded region?

(A) $625\sqrt{2}$ sq.cm

(B) $625\left(\dfrac{1}{2} + \dfrac{\pi}{4}\right)$ sq.cm

(C) $750\sqrt{2} - 625\left(\dfrac{1}{2} + \dfrac{\pi}{4}\right)$ sq.cm

(D) None

Solution:
PA = QB and ∠A = ∠B = 90°
∴ PQBA is rectangle.
Area of the shaded region = Area of PQBA – (Area of the segment PRQ)
PQ = AB = $25\sqrt{5}$.
PO = QO = Radius of the circle = $\dfrac{PQ}{\sqrt{2}} = 25$

The perpendicular from O to PQ is $\dfrac{25}{\sqrt{2}}$ ($\because$ Equating the two expressions for the area of ΔPOQ)

Distance from the foot of the perpendicular to AB
$= 30 - \dfrac{25}{\sqrt{2}}$

Area of PQBA = $(25\sqrt{2})\left(30 - \dfrac{25}{\sqrt{2}}\right) = 750\sqrt{2} - 625$

Area of the segment PRQ = Area of the sector OPRQ – Area of the triangle OPQ
$= \dfrac{90°}{360°}\pi (25)^2 - \dfrac{1}{2}(25)^2$

Area of the shaded region
$(750\sqrt{2} - 625) - \left(\dfrac{90}{360}\pi(25)^2 - \dfrac{1}{2}(25)^2\right)$
$= 750\sqrt{2} - 625\left(\dfrac{1}{2} + \dfrac{\pi}{4}\right)$ sq. cm.   Choice (C)

61. The roots of quadratic equation $y^2 - 8y + 14 = 0$ are α and β. Find the value of $(1 + \alpha + \beta^2)$ $(1 + \beta + \alpha^2)$
(A) 419
(B) 431
(C) $485 + 3\sqrt{22}$
(D) $453 + \sqrt{22}$

Solution:
$(1 + \alpha + \beta^2)(1 + \beta + \alpha^2) = 1 + (\alpha + \beta^2) + (\beta + \alpha^2) + (\alpha + \beta^2) + (\beta + \alpha^2)$

$= 1 + \alpha + \beta + \beta^2 + \alpha^2 + (\alpha\beta + \alpha^3 + \beta^3 + (\alpha\beta)^2)$
$\alpha + \beta = 8$ and $\alpha\beta = 14$
$(1 + \alpha + \beta^2)(1 + \beta + \alpha^2) = 1 + 8 + (\beta + \alpha)^2 - 2\alpha\beta + (\alpha\beta + (\alpha + \beta)^3 - 3\alpha\beta + (\alpha + \beta) + (\alpha\beta)^2)$
$= 1 + 8 + 8^2 - 2(14) + (14 + 8^3 - 3(14)(8) + 14^2)$
$= 73 - 28 + 386 = 431$

Choice (B)

62. $\dfrac{1}{\log_x yz + 1} + \dfrac{1}{\log_y xz + 1} + \dfrac{1}{\log_z xy + 1} = ?$

(A) 0
(B) 1
(C) xyz

(D) $\dfrac{\log xyz}{\log x\, yz + 1}$

Solution:
$\dfrac{1}{\log_x^{yz}+1} = \dfrac{1}{\log_x^{yz} + \log_x^{x}} = \dfrac{1}{\log_x^{xyz}}$
$= \log_{xyz}^{x}$

Similarly, $\dfrac{1}{\log_y^{xz}+1} = \dfrac{1}{\log_{xyz}^{y}}$ and $\dfrac{1}{\log_z^{xy}+1} = \log_{xyz}^{z}$

$\dfrac{1}{\log_x^{yz}+1} + \dfrac{1}{\log_y^{xz}+1} + \dfrac{1}{\log_z^{xy}+1}$
$= \log_{xyz}^{x} + \log_{xyz}^{y} + \log_{xyz}^{z} = \log_{xyz}^{xyz} = 1$

Choice (B)

63. Ram, Ravi and Ratan can alone finish an assignment in 9 days, 12 days and 15 days respectively. They decide to complete a work by working in turns. Ram works alone on Monday, Ravi does the work alone on Tuesday, followed by Ratan working alone on Wednesday & so on. What proportion of the complete work is done by Ravi?
(A) 2/9
(B) 12/47
(C) 1/3
(D) 4/9

Solution:
Part of the work completed on Monday, Tuesday and Wednesday $= \dfrac{1}{9} + \dfrac{1}{12} + \dfrac{1}{15} = \dfrac{47}{180}$
 Part of the work completed at the end of 9 days of work $= \dfrac{47}{180}(3) = \dfrac{47}{60}$
 Remaining part of the work $= \dfrac{13}{60} = \dfrac{39}{180}$
 Part of the work completed by Ram on the 10th day $= \dfrac{1}{9} = \dfrac{20}{180}$
 Part of the work completed by Ravi on the 11th day $= \dfrac{1}{12} = \dfrac{15}{180}$
 Remaining part of the work $= \dfrac{4}{180}$
 Ratan can do $\dfrac{12}{180}$ th of the work on the 12th day. He can complete the remaining part in $\dfrac{1}{3}$ rd of the 12th day.
Proportion of the completed work done by Ravi
$= (3)\left(\dfrac{1}{12}\right) + \dfrac{15}{180} = \dfrac{1}{3}$

Choice (C)

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64. Let S_1 be a square of side 4 cm. Circle C_1 circumscribes the square S_1 such that all its corners are on C_1. Another square S_2 circumscribes the circle C_1. Circle C_2 circumscribes the square S_2, and square S_3 circumscribes circle C_2, & so on. If A_N is the area between the square S_N and the circle C_N, where N is the natural number, then the ratio of sum of all A_N to A_1 is

(A) 1

(B) $\frac{\pi}{2} - 1$

(C) Can't be determined

(D) None of the above

Solution:
Let the side of the square x be denoted by s_x.
Let the radius of the circle₁ y be denoted by r_y and its diameter by d_y
$s_{s1} = 4$
$r_{c1} = \frac{d_{c1}}{2} = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$
$s_{s2} = d_{c1} = 4\sqrt{2}$
$r_{c2} = 4$
$s_{s3} = d_{c2} = 8$
$r_{c3} = 4\sqrt{2}$
.
.
.
.
$A_1 = \pi\, r_{c1}^2 - s_{s1}^2 = 8\pi - 16$
$A_2 = \pi\, r_{c2}^2 - s_{s2}^2 = 16\pi - 32$
$A_3 = \pi\, r_{c3}^2 - s_{s3}^2 = 32\pi - 64$
Sum of all A_N Since $A_1, A_2, \ldots\ldots A_n$ (say)
$= \frac{(8\pi - 16)\,(2^n - 1)}{2 - 1} = (8\pi - 16)\,(2^n - 1)$
Ratio of the sum of all A_N to A_1
$= \frac{(8\pi - 16)(2^n - 1)}{2 - 1} = 2^n - 1$
Since we don't know anything about the value of N, the ratio can be infinity or cannot be determined. **Choice (C/D)**

65. Joseph diametrically crosses a semi-circular playground and takes 48 seconds less than if he crosses the playground along the semi-circular path. If he walks 50 metres in one mimute, the diameter of playground is

(A) 54 metres

(B) 70 metres

(C) 85 metres

(D) 35 metres

Solution:
Let the radius of the semi-circular playground be r
To cover 2r, Joseph takes 48 seconds less time than he took to cover πr.
$\frac{\pi r - 2r}{\frac{50\,m}{60\,sec}} = 48$
$r(\pi - 2) = 40$
$r(\frac{22}{7} - 2) = 40$
$r(\frac{8}{7}) = 40$
$r = 35$

Diameter of playground = 2r = 70 m **Choice (B)**

66. Garima had only ₹200, ₹500 and ₹2000 notes in her wallet. She goes to Shoppers Stop, purchases some dresses and gives half of her ₹2000 notes & in turn receives same number of ₹200 notes. She then goes to a restaurant and gives all her ₹500 notes and receives thirty ₹2000 notes, which increases the number of ₹2000 notes she had by 75%. If now she has fifty ₹200 notes, what were the original number of ₹2000 and ₹200 notes she had at the start?

(A) 60, 10 (B) 60, 15 (C) 80, 10 (D) 80, 15

Solution:
Let the numbers of ₹200, ₹500 and ₹2000 notes with Garima initially be x, y and z respectively.
After purchasing some dresses, she had $\frac{z}{2}$ ₹2000 notes and $x + \frac{z}{2}$ ₹200 notes. She then goes to a restaurant and gives all ₹500 notes with her and receives 30 ₹2000 notes, which increases the number of ₹2000 notes she had by 75% and she now has fifty ₹200 notes.
$\frac{z}{2} + 30 = \frac{z}{2}\left(1 + \frac{75}{100}\right)$ and $x + \frac{z}{2} = 50$
$z = 80$ and $x + \frac{z}{2} = 50$
$z = 80$ and $x = 10$ **Choice (C)**

67. A metallic solid is made up of a solid cylindrical base with a solid cone on its top. The radius of the base of the cone is 5 cm. and the ratio of the height of the cylinder and the cone is 3 : 2. A cylindrical hole is drilled through the solid with height equal to 2/3ʳᵈ of the height of solid. What should be the radius (in cm) of the hole so that the volume of the hole is 1/3ʳᵈ of the volume of the metallic solid after drilling?
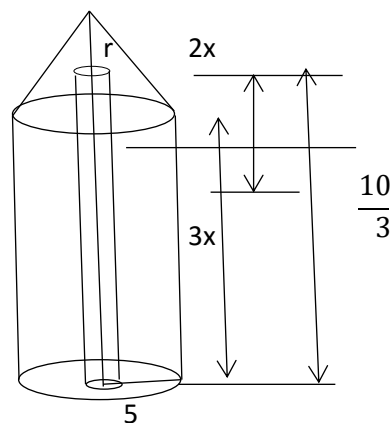
(A) $\sqrt{\frac{45}{8}}$ (B) $\sqrt{\frac{35}{8}}$

(C) $\sqrt{\frac{65}{8}}$ (D) $\sqrt{\frac{55}{8}}$

Solution:

Let the height of the cylinder and cone be 3x and 2x respectively.

The height till which the cylindrical hole is drilled is $\frac{2}{3}$ (5x).

i.e., $\frac{10x}{3}$.

Volume of the solid before drilling = π (5)^2 × 3x + $\frac{1}{3}$ π (5)^2 × 2x

= 25πx × $\frac{1}{3}$

Volume of the hole = $\pi r^2 \left(\frac{10x}{3}\right)$

$$\frac{Volume\ of\ the\ hole}{volume\ of\ the\ metallic\ solid\ after\ drilling} = \frac{\pi r^2\left(\frac{10x}{3}\right)}{\frac{2754x}{3} - \frac{10r^2 4x}{3}}$$

$$\frac{1}{3} = \frac{10r^2}{275 - 10r^2}$$

$$275 = 40r^2$$

$$r = \sqrt{\frac{55}{8}}$$ Choice (D)

68. Nitin installed an overhead tank on the roof of his newly constructed house. Three taps are connected to the tank: 2 taps A and B to fill the tank and one tap C to empty it. Tap A alone can fill the tank in 12 hours, while tap B alone takes one and a half times more time than tap A to fill the tank completely. Tap C alone can empty a completely filled tank in 36 hours. Yesterday, to fill the tank, Nitin First opened tap A, and then after 2 hours opened tap B also. However after 6 hours he realized that tap C was open from the very beginning. He quickly closes tap C. What will be the total time required to fill the tank?
(A) 8 hours 48 minutes
(B) 8 hours 30 minutes
(C) 9 hours 12 minutes
(D) 9 hours 36 minutes

Solution:
Time taken by A alone to fill the tank = 12 hours

Time taken by B alone to fill the tank = $\frac{3}{2} \times 12 = 18$ hours

Time taken by C alone to empty the tank = 36 hours

Let tap A work for x hours.

$\Rightarrow \frac{x}{12} + \frac{x-2}{18} - \frac{6}{36} = 1$

$\frac{x}{12} + \frac{x}{18} = 1 + \frac{1}{6} + \frac{1}{9}$

$x \times \frac{5}{18 \times 2} = \frac{23}{18}$

$x = \frac{46}{5}$

x = 9.2 hrs

x = 9 hrs 12 minutes   Choice (C)

69. At the foot of the mountain, the angle of elevation of the summit at the top of the mountain is 45°. After ascending 100 metres, at a slope of 30° up the mountain towards the summit, the angle of elevation of the summit is 60°. Find the height of the summit.
(A) 50 ($\sqrt{3}$ + 1) metres
(B) 50 ($\sqrt{5}$ + 1) metres

(C) 50 ($\sqrt{3}$ + 2) metres
(D) 50$\sqrt{3}$ metres

Solution:
. Let BC = x
Given AD = 100 m
From Δ ADE,
DE = AD sin30°
DE = 100 x $\frac{1}{2}$
DE = 50
$\frac{AE}{AD}$ = cos30°
AE = 50$\sqrt{3}$
From Δ ABC,
tan45° = $\frac{BC}{AB}$
BC = AB = x
DF = AB – AE
   = x –50$\sqrt{3}$
CF = CB – DE
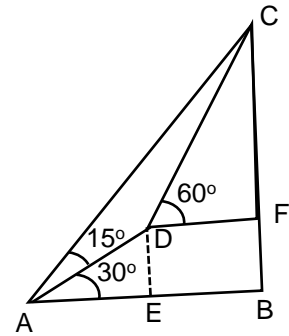   = x – 50
From Δ DFC,
tan60° = $\frac{FC}{DF}$
FC = $\sqrt{3}$DF
x – 50 = $\sqrt{3}$(x – 50$\sqrt{3}$)
100 = x($\sqrt{3}$ – 1)
x = $\frac{100(\sqrt{3}+1)}{2}$
x = 50($\sqrt{3}$ + 1)m   Choice (A)

70. Land Cruiser Prado, the latest SUV from Toyota Motors, consumes diesel at the rate of $\frac{1}{400}\left\{\frac{1000}{x} + x\right\}$ litres per Km, when travelling at the speed of x km/hr. The diesel costs ₹65 per litre and the driver is paid ₹50 per hour. Find the steady speed that will minimize the total cost of a 1000 km trip?
(A) 33 km/hr
(B) 36 km/hr
(C) 39 km/hr
(D) 52 km/hr

Solution:
Diesel consumed for one km travelling at x km/hr
= $\frac{1}{400}\left\{\frac{1000}{x} + x\right\}$

For 1000 km, diesel consumed = $\frac{1000}{400}\left\{\frac{1000}{x} + x\right\}$ liters

Time taken to travel 1000 km = $\frac{1000}{x}$ hrs

Total cost of travelling 1000 km
= $\frac{1000}{400}\left\{\frac{1000}{x} + x\right\}$ × 65 + $\frac{1000}{x}$ × 50
= $\frac{162500}{x}$ +162.5x + $\frac{50000}{x}$
= $\frac{212500}{x}$ +162.5x

To get the minimum value of the total cost, both the terms has to be equal

$\Rightarrow \frac{212500}{x}$ =162.5x

$x^2 \simeq \sqrt{1308}$

$x^2 \simeq$ 36 km/hr

Choice (B)

71. In a survey on the viewership of the TV channels, 73% of those surveyed viewed at least one of the three Channels: Star Plus, Sab TV, and Sony. 38% of those surveyed viewed Star Plus, 39% viewed Sony, and 23% viewed Sab TV. 11% of all those surveyed viewed all the three channels. What percentage of those surveyed, viewed more than one of the three TV channels?
(A) 16
(B) 38
(C) 27
(D) Data Inadequate

Solution:

Star plus = 38%   Sony = 39%

Sab TV = 23%
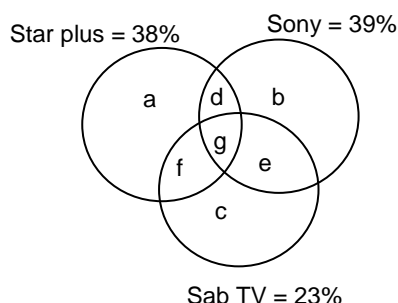
Given,
a + b + c + d + e + f + g = 73%
g = 11%
a + b + c + 2{d + e + f}+ 3g = 100%.
73% + d + e + f + 2(11%) = 100%.
d + e + f = 5%
d + e + f + g = 16%   Choice (A)

72. A physical therapist of Russian football team knows that the team will play 40% of its matches on artificial turf, this season. Because of his vast experience, he knows that a football player's chances of incurring a knee injury is 50% higher if he is playing on artificial turf instead of grass. If the player's chances of a knee injury on artificial turf is 0.42, what is the probability that a football player with knee injury, incurred the injury while playing on grass?
(A) 0.28
(B) 0.336
(C) 0.5
(D) None of the above

Solution:
Probability of playing on grass = 0.6
Probability of playing on artificial turf = 0.4

$P\left(\dfrac{\text{Injury}}{\text{Artificial turf}}\right) = 0.42$

$P\left(\dfrac{\text{Injury}}{\text{Artificial turf}}\right) = \dfrac{3}{2}\,P\left(\dfrac{\text{Injury}}{\text{Grass}}\right)$

$P\left(\dfrac{\text{Injury}}{\text{Grass}}\right) = 0.28$

Applying Baye's theorem
$P\left(\dfrac{\text{Grass}}{\text{Injury}}\right)$

$= \dfrac{P\left(\frac{\text{Injury}}{\text{Grass}}\right).P(\text{Grass})}{P\left(\frac{\text{Injury}}{\text{Grass}}\right)P(\text{Grass})+P\left(\frac{\text{Injury}}{\text{Artificial turf}}\right)P(\text{Artificial turf})}$

$= \dfrac{0.28 \times 0.6}{0.28 \times 0.6+0.42 \times 0.4}$

= 0.5   Choice (C)

73. The square root of $1 + x^2 + \sqrt{1 + x^2 + x^4}$ is

(A) $\dfrac{1}{\sqrt{2}}\left[\sqrt{1 + x + x^2} + \sqrt{1 - x + x^2}\right]$

(B) $\dfrac{1}{\sqrt{2}}\left[\sqrt{1 + x + x^2} - \sqrt{1 - x + x^2}\right]$

(C) $\dfrac{1}{\sqrt{2}}\left[\sqrt{1 + x^2 + x^4} + x^8\right]$

(D) None of the above

Solution:
$1 + x^2+\sqrt{1 + x^2 + x^4}$
$= \dfrac{1}{2}\left[2 + 2x^2 + 2\sqrt{1 + x^2 + x^4}\right]$
$= \dfrac{1}{2}\left[\begin{array}{l}1 + x + x^2 + 1- x + x^2 +\\ 2\sqrt{(1 + x + x^2)(1-x + x^2)}\end{array}\right]$
$= \dfrac{1}{2}\left[\dfrac{\left(\sqrt{1 + x + x^2}\right)^2 + \left(\sqrt{1- x + x^2}\right)^2 +}{2\sqrt{(1 + x + x^2)}.\sqrt{(1-x + x^2)}}\right]$
$= \dfrac{1}{2}\left[\sqrt{1 + x + x^2} + \sqrt{1- x + x^2}\right]^2$
$\sqrt{1 + x^2 + \sqrt{1 + x^2 + x^4}}$
$= \dfrac{1}{\sqrt{2}}\left[\sqrt{(1 + x + x^2)} + \sqrt{1- x + x^2}\right]$ Choice (A)

74. $\log_2 x \cdot \log_{\frac{x}{64}} 2 = \log_{\frac{x}{16}} 2$; then x = ?
(A) 2
(B) 4
(C) 12
(D) 16

Solution:
$(\log_2 x)\left(\log_{\frac{x}{64}}2\right) = \log_{\frac{x}{16}}2$
$\dfrac{\log x}{\log 2}\cdot\dfrac{\log 2}{\log x-6\log 2} = \dfrac{\log 2}{\log x-4\log 2}$
$(\log x)^2 - 4(\log x)(\log 2) = (\log x)(\log 2) - 6(\log 2)^2$
$(\log x)^2 - 5(\log x)(\log 2) + 6(\log 2)^2 =0$
Let $\log x = a$, $\log 2 = b$
$a^2-5ab + 6b^2 = 0$
$a^2 - 3ab-2ab+6b^2 = 0$
$a(a - 3b) - 2b(a-3b) = 0$
$(a - 2b)(a - 3b) = 0$
a =2b (or) a=3b
$\log x = 2\log 2$ (or) $\log x = 3\log 2$
x= 4 (or) 8   Choice(B)

SECTION – 5

Directions (Questions 75-78): Based on the information given below, answer the questions which follow.

The data on select economic indicators for entire world comprising of 7 regions namely East Asia & pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, North America, South Asia and Sub-Saharan Africa is presented in Table-1 for the year 2017. Further, Table-2 represents the economic indicators for select countries.

GNI refers to Gross National Income (USD Billions), PPP refers to Purchasing Power parity (USD Billions), POP refers to Population (Millions) and SA refers to Surface Area (Thousands sq. km)

Table-1: Economic Indicators for Different Regions of World

Regions/Indicators	POP	SA	GNI	PPP
East Asia & Pacific	2,314	24,825	23,538	42,085
Europe & Central Asia	915.5	28,461	20,738	29,793
Latin America & Caribbean	644	20,426	5,282	9,838
Middle East & North Africa	444	11,371	3,220	8,890
North America	363	19,816	20,561	21,291
South Asia	1,788	5,135	3,118	11,693
Sub-Saharan Africa	1,061	24,291	1,543	3,908

Table-2: Economic Indicators for Select Countries

Countries/Indicators	POP	SA	GNI	PPP
India	1,339	3,287	2,430	9,449
Estonia	1.3	45	24	41
Kyrgyz Republic	6.5	200	7	22
Lao PDR	7	237	16	46
Latvia	2	65	29	53
United States	326	9,832	18,980	19,608

75. Arrange the countries in order of increasing population density (number of people per sq. kms).
   (A) Estonia, Kyrgyz Republic, Lao PDR and Latvia
   (B) Estonia, Latvia, Kyrgyz Republic and Lao PDR
   (C) Estonia, Lao PDR, Kyrgyz Republic and Latvia
   (D) Estonia, Lao PDR, Latvia and Kyrgyz Republic

Solution:
Estonia = $\frac{1.3}{45}$ = 0.028   (1)

Krygz = $\frac{6.5}{200}$ = 0.0325   (4)

Lao PDR = $\frac{7}{237}$ = 0.0295   (2)

Latvia = $\frac{2}{65}$ = 0.0307   (3)

                   Choice (D)

76. For which of the region, the 'GNI per capita' is closest to that of 'GNI per capita' of world?
   (A) East Asia & Pacific
   (B) Europe & Central Asia
   (C) Latin America & Caribbean
   (D) North America

Solution:
$\left(\frac{GNI}{POP}\right)$ world = $\frac{78000}{7529.5}$ = 10.359

(a) East Asia + Pacific = $\frac{23538}{2314}$ = 10.1719

(b) Europe + Central Asia = 31.08

(c) Latin America & Caribbean = 31.71

(d) North America → 54.589

                   Choice (A)

77. What percentage of world's GNI is represented by combined GNI of India and US?
   (A) 28.98
   (B) 28.42
   (C) 27.45
   (D) 30.19

Solution:
$\frac{(GNI)(India+US)}{(Total\ world\ GNI)} \times 100 = \frac{21410}{78000} \times 100$

              = 27.448   Choice (C)

78. Which region has third lowest difference between 'PPP per capita' and 'GNI per capita'?
   (A) Latin America & Caribbean
   (B) South Asia
   (C) Middle East & North Africa
   (D) East Asia & Pacific

Solution:
Difference

PPP per capita (x) GNI per capita(y)			
	x	y	x - y
a) Latin America & Caribbean	$\frac{9838}{644}$ = 15.27	$\frac{5282}{644}$ = 8.20	7.07
b) South Asia	$\frac{11693}{1788}$ = 6.539	$\frac{3118}{1788}$ = 1.74	4.799
c) Middle East & North Africa	$\frac{8890}{444}$ = 20.02	$\frac{3220}{444}$ = 7.25	12.7
d) East Asia & Pacific	$\frac{42085}{2314}$ = 18.187	$\frac{23538}{2314}$ = 10.17	8.01
e) Europe & Central Asia			9.89
f) North America			2.01
g) Sub-Saharan Africa			~ 2.2

Choice (B)

Directions (Questions 79-82): Based on the information given below, answer the questions which follow.

The occupancy rate of a hotel is the share of available rooms that are occupied during a given time. Figure-1 presents quarter wise average hotel occupancy in four regions (Asia-Pacific, America, Europe and Middle East & Africa) for the year 2016. Figure-2, shows the revenue of select hotel chains worldwide in 2016.

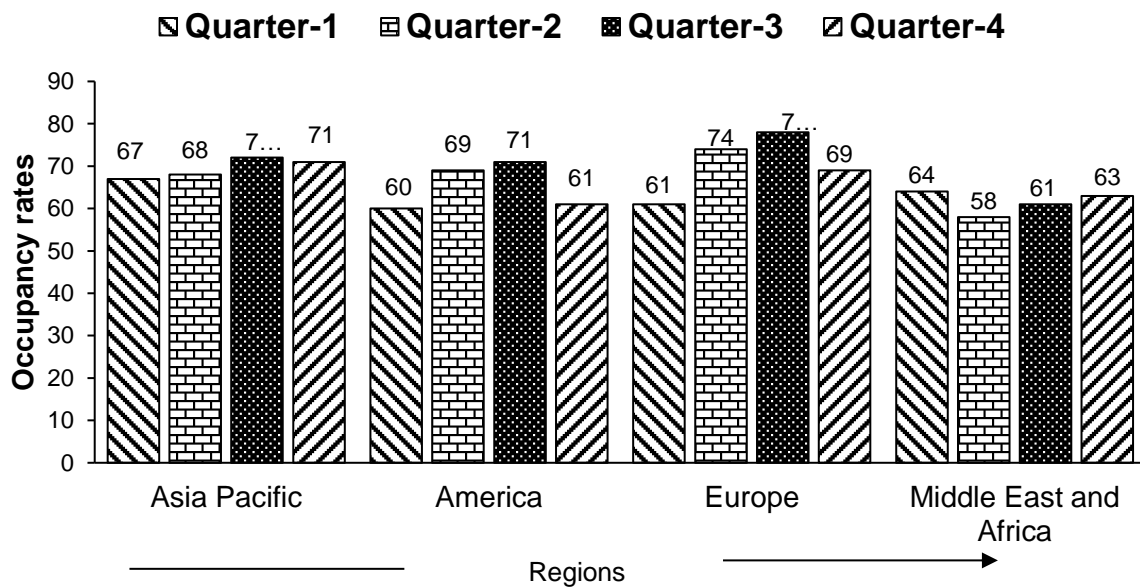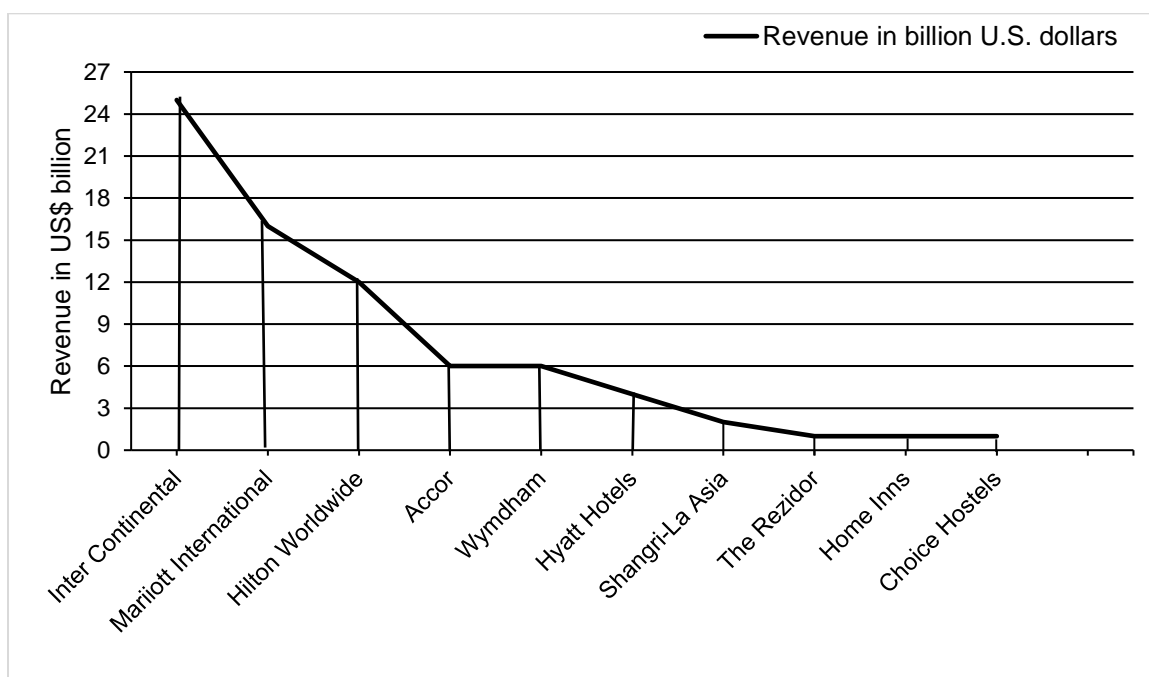**Figure – 1 Region Wise Average Hotel Occupancy Rates**

⊠ **Quarter-1**   ⊞ **Quarter-2**   ▦ **Quarter-3**   ◪ **Quarter-4**

Figure-2 Revenue of Select Hotel Chains Worldwide

79. Considering the total revenue of the hotel industry in 2016 as 495.17 billion USD, what is the percentage contribution of revenue of select hotel chains to hotel industry revenue?
(A) 13
(B) 14
(C) 15
(D) 16

Solution:
$\% = \dfrac{Renense\ Of\ select\ hotel\ chains}{Total\ \text{revenue}} \times 100$

$= \dfrac{(25+17+12+6+6+4+2+1+1+1)}{495.17} \times 100$

$= \dfrac{75}{495.17} \times 100 = 15.14$

Choice (C)

80. For Hilton Worldwide, considering 70% average occupancy rate for 365 days of operations and average room rent of 350 USD per day, the total number of rooms available (in 000's) in Hilton Worldwide per day approximately are:
(A) 150
(B) 130
(C) 160
(D) 170

Solution:
Total revenue $= \dfrac{70}{100} \times 1000x \times 350 \times 365$

$= 12 \times 100 \times 10^7$

$x = \dfrac{12 \times 10^7}{7 \times 350 \times 365} \cong 134.$ Choice (B)

81. If the number of available rooms in each of the four regions (Asia-Pacific, America, Europe and Middle East & Africa) are in the ratio 1 : 2 : 5 : 4, the average occupancy rate for Quarter-1 are:
(A) 62
(B) 66
(C) 58
(D) 60

Solution:
$\dfrac{67 \times 1 + 60 \times 2 + 61 \times 5 + 64 \times 4}{12} =$
$\dfrac{67+120+305+256}{12} = \dfrac{748}{12} = 62.33$ Choice (A)

82. Assuming that there is no change in the number of available rooms in a given year in all four regions, the correct arrangement in the increasing order of average annual occupancy rates is :
(A) Asia-Pacific, Europe, America and Middle East & Africa
(B) Middle East & Africa, America, Asia-Pacific and Europe
(C) Asia-Pacific, America, Middle East & Africa and Europe
(D) Middle East & Africa, America, Europe and Asia-Pacific

Solution:
Choice (B)

Direction (Questions 83-86): Based on the information answer the questions which follow.

IBM is one of the most valuable technology brand in the world. Visualizing the trends, IBM has added and dropped business segments across years. For example, *"Technology Services and Cloud Platforms (TSCP)"* which started in 2015 only, generated a revenue of approximately 34280 millions U.S. Dollars in 2017. Tables shows the Global Revenue generated by IBM in nine different segments of its business from 2010 to 2017 in millions USD.

IBM's Global Revenue from 2010 to 2017 (in millions U.S. Dollars)

Years	TSCP	CS	GBS	SYS	GF	Other	SOFT	GTS	S & T
2010			18,220		2,240	750	22,490	38,200	17,970
2011			19,280		2,100	720	24,940	40,880	18,990
2012			18,570		2,010	580	25,450	40,240	17,670
2013			18,400		2,020	490	25,930	38,550	14,370
2014			17,800		2,000	500	25,400	37,100	10,000
2015	35,140	17,840	17,160	9,550	1,840	210			
2016	35,340	18,190	16,700	7,710	1,690	290			
2017	34,280	18,450	16,350	8,190	1,700	170			

TSCP-Technology Services & Cloud Platforms, CS-Cognitive Solutions, GBS-Global Business Services, SYS-Systems, GF-Global Financing, Other, SOFT-Software, GTS-Global Technology Services and S&T-Systems and Technology

83. For the year 2017, if the revenue in different segments is represented on a pie-chart, what sector angle would be represented by 'Global Business Services (GBS)'?
(A) 75 Degree
(B) 85 Degree
(C) 80 Degree
(D) 70 Degree

Solution:
Total revenue = 34280 + 18450 + 16350 + 8190 + 1700 + 170 = 79140.
Angle = $\frac{16350}{79140} \times 360 = 74.37$ Choice (A)

84. Which segment has earned third highest cumulative revenue in the time period 2010-2017?
(A) Global Business Services
(B) Software
(C) Global Technology Services
(D) Systems and Technology

Solution:

	Total
TSCP =	104760
CS =	54,480
GBS =	142480 (2nd)
SYS =	25450
GF =	14000 +
Other ⇒	least
Soft =	124210 (3rd)
GTS =	194970 (1st)
S & T =	79000

Choice (B)

85. The profit booked by IBM in year 2012 is USD 49 billion. Considering equal percentage profit margins across all segments, then approximate profit made by 'Systems and Technology' in millions USD is
(A) 8200
(B) 8500
(C) 8700
(D) 8900

Solution:
Equal profit margin

$$\frac{P_1}{18570} = \frac{P_2}{2010} = \frac{P_3}{580} = \frac{P_4}{25450} = \frac{P_5}{40240} = \frac{P_6}{17670}$$

Total = 49×10^9
K(18570 + 2010 + 580 + 25458 + 40240 + 17670)
= 104520K = 49×10^9
K = 468809.
P_6 = 17670 × 468809
= 8283.85 million dollar

Choice (A)

86. By how much is ratio of percentage of 'revenue from Global Business Services' to 'Total Revenue' lower than ratio of percentage of 'revenue from Cognitive Solutions' to 'Total Revenue' for the year 2016?
(A) 1
(B) 2
(C) 3
(D) 5

Solution:
$(\text{Ratio})_I = \frac{16700}{T} \times 100$
$(\text{Ratio})_{II} = \frac{18190}{T} \times 100$
Difference = $\frac{(18190 - 16700)}{T} \times 100$
$= \frac{1490}{T} \times 100$
T = 79920
So, difference = 1.86 = 2.   Choice (B)

Directions (Questions 87-90): Based on the information answer the questions which follow.

The Logistics Performance Index (LPI) is an interactive benchmarking tool created by the World Bank to help countries identify the challenges and opportunities they face in their performance on trade logistics and what they can do to improve their performance. It is a measure of the country scores on six key indicators: Customs, Infrastructure, International Shipments, Logistics Competence, Tracking & Tracing and Timeliness. Table shows the LPI indicators (on the scale of 1 to 5) of select countries on these indicators. Figure below presents the perceived performance of these indicators (on the scale of 1 to 5) of Indian on these 6 indicators.

Table: LPI Indicators of Select Countries in 2018

Countries / Indicators	Customs	Infrastructure	International Shipments	Logistics Competence	Tracking & Tracing	Timelines
Austria	3.71	4.18	3.88	4.08	4.09	4.25
UK	3.77	4.03	3.67	4.05	4.11	4.33
USA	3.78	4.05	3.51	3.87	4.09	4.08
Switzerland	3.63	4.02	3.51	3.97	4.1	4.24
France	3.59	4.00	3.55	3.84	4.00	4.15

Figure: LPI Indicators for India
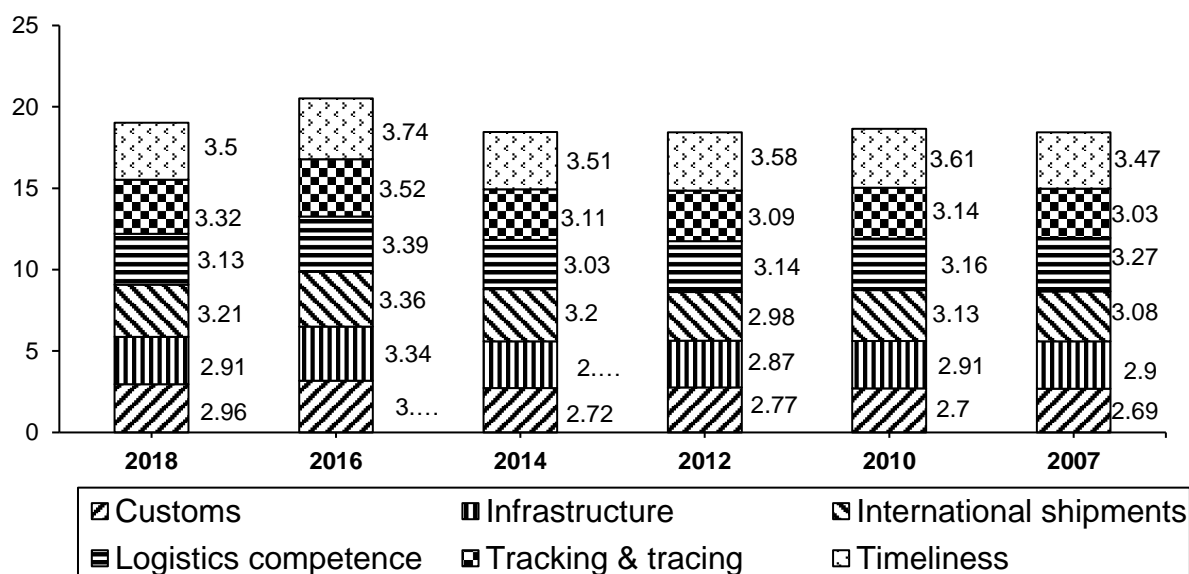
87. Considering Logistics Performance Index as the average of the scores obtained on the six parameters, the correct sequence of the countries in increasing order of LPI in the year 2018 is
(A) UK, Austria, USA, Switzerland and France
(B) Austria, UK, USA, Switzerland and France
(C) France, USA, Switzerland, UK and Austria
(D) UK, USA, Switzerland, Austria and France

Solution:
Increasing order of average
⇒ Increasing order of total
Austria → 24.19
UK → 23.96
USA → 23.38
Switz → 23.47
France → 23.13
Order : France, USA, Switz, UK, Austria.

Choice (C)

88. Arrange the countries in ascending order on the basis of score obtained on (Timeliness) – (Logistics Competence)
(A) Austria, USA, Switzerland, UK and France
(B) Austria, USA, UK Switzerland and France
(C) Austria, Switzerland, USA, UK and France
(D) Austria, USA, UK, France and Switzerland

Solution:
Austria → 4.25 – 4.08 = 0.17   (1)
UK → 4.33 – 4.05 = 0.28   (4)
USA → 4.08 – 3.87 = 0.21   (2)
Switz → 4.24 – 3.97 = 0.27   (3)
France → 4.15 – 3.84 = 0.31   (5)
Order: Austria, USA, Switz, UK, France.

Choice (A)

89. In which year the difference between the score obtained on Timeliness between Germany and India is minimum considering the score obtained on Timeliness for Germany as 4.39, 4.45, 4.36, 4.32, 4.48 and 4.33 for 2018, 2016, 2014, 2012, 2010 and 2007 respectively?
(A) 2016
(B) 2014
(C) 2012
(D) 2018

Solution:

	Difference
2016	4.45 – 3.74 = 0.71
2014	4.36 – 3.51 = 0.85
2012	4.32 – 3.58 = 0.74
2018	4.39 – 3.50 = 0.89

Choice (A)

90. The difference in performance of which indicator in 2018 as compared to that of 2007 is minimum for India?
(A) Customs
(B) International Shipments
(C) Timeliness
(D) Tracking & Tracing

Solution:

	Difference
Customs	2.96 – 2.69 = 0.27
International Ship	3.21 – 3.08 = 0.13
Timeliness	3.50 – 3.47 = 0.03
Tracing & Training	3.32 – 3.03 = 0.29

Choice (C)

Directions (Questions 91-94): Based on the information answer the questions which follow.

The data was collected for an industry in order to analyse the impact and importance of select parameters. The figure represents performance of the industry on select parameters which are Fixed Capital, Materials, Value added and Number of Factories from the Year 2008-09 to 2015-16. Total inputs = (Output – Value added). Table represents select performance indicators which are Output, Number of Workers and Emoluments from the year 2008-09 to 2015-16.
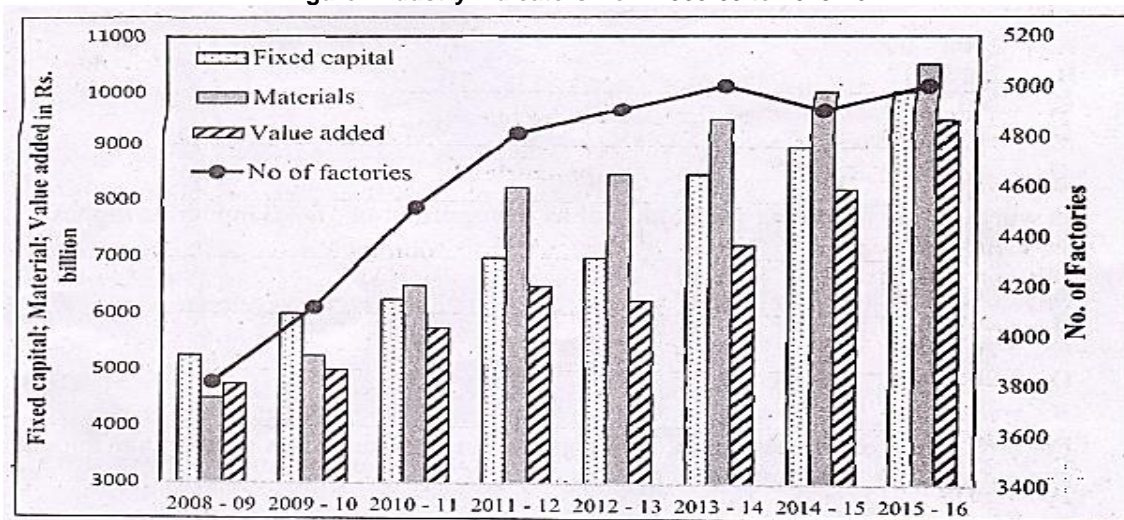
Figure: Industry Indicators from 2008-09 to 2015-16

Table: Industry Indicators from 2008-09 to 2015-16

Year	Output in Rs. Billion	No. of workers	Emoluments in Rs. billion
2008-09	11442	2,39,966	65
2009-10	12241	2,50,009	81
2010-11	14993	2,89,965	102
2011-12	18250	3,25,000	135
2012-13	19249	3,30,000	147
2013-14	21493	3,80,000	177
2014-15	23251	3,69,996	202
2015-16	25506	3,99,988	245

91. In which of the following year annual growth rate in emoluments per worker is highest?
(A) 2009-10   (B) 2011-12   (C) 2014-15   (D) 2015-16

Solution:

	Emoluments per worker	% in crease
2008-09	0.027	
2009-10	0.0324	20%
2010-11	0.03517	
2011-12	0.0415	18%
2013-14	0.0465	
2014-15	0.05459	17.39%
2015-16	0.06125	12.2%

Choice (A)

92. In which of the following year fixed capital per factory is lowest?
(A) 2008-09   (B) 2011-12   (C) 2013-14   (D) 2015-16

Solution:

year	Ratio (Fixed capital/Factors)
2008-09	5200/3800 = 1.36
2011-12	7000/4800 =1.458
2013-14	8400/5000 =1.68
2015-16	10000/5000 = 2

Choice (A)

93. In which of the following year Material as a proportion of 'Total inputs' is highest?
(A) 2008-09   (B) 2009-10   (C) 2010-11   (D) 2011-12

Solution:

	Material/Total inputs		
2008-09	45/(11442-4700)	4500/6742	0.67
2009-10	5250/(12241-5000)	5250/7241	0.725
2010-11	6500/(14993-5500)	6500/9493	0.684
2011-12	8250/(18250-6500)	8250/11750	0.702

It is highest in 2009-10.   Choice (B)

94. For how many years annual percentage growth in fixed capital is greater than annual percentage growth in number of factories?
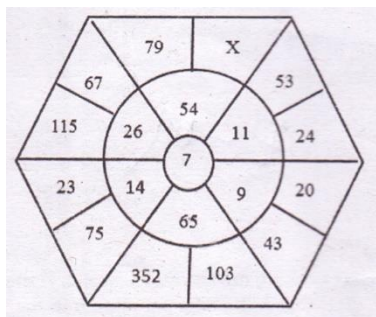(A) 3   (B) 4   (C) 5   (D) 6

Solution:
There are 5 years → 2009-10, 2011-12, 2013-14, 2014-15 and 2015-16 where condition is satisfied
Choice (C)

95. Find the value of X.

(A) 299   (B) 399   (C) 298   (D) 308

Solution:
In each sector the product of the two inner numbers is equal to the sum of the two outer numbers.
For example- $26 \times 7 = 182 = 115 + 67$
$54 \times 7 = 148 = 79 + x$
$\Rightarrow x = 378 – 9 = 299$ Choice (A)

Directions (96-99): Based on the information below, answer the questions which follow.

Six friends Albert, Betty, Claire, Daisy, Evan and Fred who are working in different organisations, are looking for a switch in their jobs. They came across an advertisement in the newspaper regarding a job fair being organized in New Delhi. After enrolling for the fair, different days are allotted to each one of them from Monday to Saturday not necessarily in the same order, starting from Monday. They also had to arrange for their stay in different hotels to concentrate well while preparing for the upcoming interviews namely Taj, Hilton, Crowne Plaza, Radisson, Hyatt and Marriott. Additional information provided is as follows:

i. Albert prefers to stay in Taj but not in Hilton. Albert does not work in Whirlpool and participates in the Job fair on Monday. The person who works in Whirlpool participates in the Job fair on Saturday.
ii. Fred does not stay in Hyatt but works in Himalaya.
iii. Betty and Daisy participate in the Job fair on consecutive days.
iv. Claire participates in the Job fair on the day before the person staying in Crowne Plaza but on the next day of Pepsi employee.
v. The person working with Nestle participates in the Job fair on Friday and does not stay in Hilton.
vi. Claire who is working with Nestle participates in the Job fair at a gap of one day prior to Evan.
vii. Daisy stays in Marriott and attends the conference on the last day of the week.
viii. The person working with Apple stays in Radisson.

96. Which of the following friend is working with Apple?
(A) Albert
(B) Daisy

(C) Evan
(D) Fred

97. Who participated in the job fair on Wednesday?
(A) Claire
(B) Daisy
(C) Fred
(D) Albert

98. If the current salary packages of the friends working in Whirlpool, Nestle, Himalaya, Pepsi, Oppo and Apple are 20, 30, 40, 50, 60 and 70 lakhs per annum in the same order, then at the time of participating in job fair find the average annual package of Albert, Betty and Fred?
(A) 30 lakhs per annum
(B) 90 lakhs per annum
(C) 20 lakhs per annum
(D) 50 lakhs per annum

99. Which of the following friend is staying in Hilton?
(A) Daisy
(B) Claire
(C) Albert
(D) Betty

Solutions for questions 96 to 99:

Let A, B, C, D, E and F denote the six friend. Let hotels be represented as T, HI, C, RY and M companies they work in – wh, opp, net, App and xim.

(i), (ii), (v), (vi), (vii) gives

Name	Day	Hotel	Company
A	Mon	T	
	Sat		Wh
F		Hy x	Him
	Fri	Hi x	opp
C	Mon/Tues/Wednes		Nest
D	Sat	M	

C attends at a gap of one day prior to Evan.
Only possibility if (C, Tuesday, E, Thursday) or (C, wed, E, Friday)
Combining (viii), we get

Name	Day	Hotel	Company
A	Mon	T	
D	Sat	M	Wh
F		Hy x	Him
B/E	Fri	Hi x	opp
C	Tues / Wed		Nest
E/B		R	App

(iii), B and D participated on consecution days.
$\Rightarrow$ B attends on Friday
$\Rightarrow$ C Tuesday and E Thursday

(iv) gives,

Name	Day	Hotel	Company
A	Mon	T	Pep
D	Sat	M	Wh
F	Wed	C	Him
B	Fri	Hy	opp
C	Tues	Hi	Nest
E	Thurs	R	App

96. Evan works with Apple.   Choice (C)

97. Fred participated on Wednesday.   Choice (C)

98. Wh – 20, Nest – 30, Him – 40, Pep – 50, Opp – 60, App – 70.
Avg. annual package of Albert (pep), Betty (opp), and Fred (Him) is $\frac{50 + 60 + 40}{3} = 50$ Choice (D)

99. Clairs is staying in Hilton.   Choice (B)

Directions (100 – 102): Based on the information below, answer the questions which follow.

Richie invites three of his friends Sunny, Pinky and Nancy for his birthday party organized at his home. As the party goes on till late in the night, Sunny, Pinky and Nancy choose to stay at Richie's house. Being good friends they usually stay back at each other's house. Each one of them including Richie stay either in the room painted blue or in the room painted purple. They have adequate number of rooms of both colours. The preferences which need to be fulfilled are:
i. If Sunny stays in the room painted purple, then Pinky and Richie stay in the same room as Nancy.
ii. If Pinky stays in the room painted purple, then Sunny stays in the room in which Nancy and Richie don't stay.
iii. If Nancy stays in the room painted blue, then Sunny and Richie stay in the room which Pinky has chosen.
iv. If Richie stays in the room painted Blue then Sunny and Pinky do not stay in the same room as Nancy.

100. Under all possible combinations which of the two friends will always have their room colours unchanged.
(A) Richie & Sunny
(B) Pinky & Richie
(C) Nancy & Sunny
(D) Nancy & Pinky

101. If Richie chose to stay in the room painted blue, then in which room does pinky stay?
(A) Purple
(B) Blue
(C) Data Inadequate
(D) None of the above

102. If Pinky does not like to stay in the blue painted room, then where will Sunny stay?
(A) Blue
(B) Purple

(C) Data Inadequate
(D) None of the above

Solutions for questions 100-102:

Let R, S, N and P denote Richie, Sunny, Pinky and Nancy respectively. Let PU and Bl denote Purple and blue respectively.

(i)   If S → Pu
      ⇒ P, R, N → Pu
      Or P, R, N → Bl
(ii) If P → Pu
      ⇒ S → Pu and N, R → Bl
      Or
      S → Bl and N, R → Pu
(iii) If N → Bl
      ⇒ S, R, P → Pu
      Or S, R, P → Bl
(iv) If R → Bl
      ⇒ S, P → Bl and N → Pu
      Or S, P → Pu and N → Bl

100. Assume N is in blue then S, R, P should stay at a place. If S, R, P are in Blue it doesn't satisfy condition (iv). If S, R, P are in Purple, then it doesn't satisfy condition (ii). Hence N can only stay in purple room. If S is in purple and as N is in purple S, P, N, R should be in purple. But this violates condition (ii). Hence S always stays in blue. Hence rooms of N and S are unchanged in all possible cases.   Choice (C)

101. If R → Bl
(condition iv),
S, P → Bl & N → Pu
          Or
S, P → Pu & N → Bl
P stays either in Pu or Bl
If P → Pu (condition ii),
S and (N, R) have different colours, which is violating condition (iv).
Hence, P stays in Blue coloured room.
                              Choice (B)

102. If P → Pu
(Condition ii),
S → Pu & N, R → Bl
          Or
S → Bl & N, R → Pu
If S → Pu (condition i))
P, R, N should stay in same coloured room, which violates condition (ii).
Hence, S stays in Blue coloured room.
                              Choice (A)

Directions (103 – 106): Based on the information answer the questions which follow.

An agent has to send a secret message to CBI office in Delhi. He needs to compile his message using following 12 code words- Scare, Logical, Mouse, Beauty, Helping, Roses, Cats, Doctor, Arguments, Crude, Ferry and Mineral. The agent compiles the

coded message and delivers it to CBI office in forms of a 4×3 matrix. Each coded word has allocated a position in the matrix (1×2 position represents row 1 and column 2). The clues to compile the secret message are:

i. The words in 2×1 and 3×1 have the same number of letters.
ii. Roses is to the immediate left of Beauty and Mineral is immediately above Roses.
iii. The word in 4×3 is shorter than the word in 1×2.
iv. Ferry is separated from Helping horizontally by only one word Logical.
v. Arguments is at position 2×3 in the matrix and the word immediately below it has odd number of letters.
vi. Crude and Doctor are in the same horizontal row and Crude is to the right of Doctor.
vii. Cats is not in the same row or column as Mouse.

103. The product of the position of a coded word is 8. Identify the word.
(A) Crude
(B) Helping
(C) Beauty
(D) Scare

104. The sum of letters of which row is 19?
(A) 1
(B) 2
(C) 3
(D) 4

105. Which word is represented in 4 × 3?
(A) Scare
(B) Crude
(C) Cats
(D) Data Inadequate

106. Which of the following are placed diagonally in the matrix?
(A) Ferry-Mineral
(B) Mineral-Mouse
(C) Beauty-Scare
(D) Arguments-Roses

Solutions for questions 103 to 106:

1 x 1	1 x 2	1 x 3
2 x 1	2 x 2	2 x 3
3 x 1	3 x 2	3 x 3
4 x 1	4 x 2	4 x 3

Let us represent the word or S5, L7, M5, B6, H7, R5, C4, D6, A9, C5, F5 and M7, where the digit represents the number of letters in the word could the letter represents the first letter of the word.

(ii)

M7	
R5	B6

(iv)

H7	L7	'Or'	F5
F5	L7	'In BETWEEN'	H7

(vi)

D6	C5	
D6		C5
	D6	C5

(V)

a		
b	c	A9
	d	S/7
	e	f

Now,

M7	
R5	B6

can be placed either at the positions a, b and c or at the positions d, e and f.
Taking it at d, e, f, we get

H7/ F5	L7	F5/ H7
5		A9
5	M7	5
	R5	B6

Hence, it is not possible to accommodate condition (iv).
Hence, this is not a valid case.

M7		
R5	B6	A9
5		S/7

If (iv) is placed in the last row, it is not possible to satisfy both the conditions (vi) and (vii) Simultaneously, Hence, (iv) will be in the third row

M7		
R5	B6	A9
F5	L7	H7

According to (iii) and (vii), we get,

M7	M5	S5
R5	B6	A9
F5	L7	H7
D6	C5	C4

103. At 4 x 2 is C5, i.e. Crude.
Crude.   Choice (A)

104. Sum of letters of 3rd row is 19.   Choice (C)

105. C4, i.e., cats is in 4 x 3   Choice (C)

106. Beauty and scare are placed diagonally in the matrix.   Choice (C)

Directions (107-110): Based on the information answer the questions which follow.

Eight officers of Indian Trade Service meet for a cup of coffee at Coffee Point. The officers P, Q, R, S, T, U, V and W are seated in a circle and discuss issues related to Trade in Services, Trade in Intellectual Property Rights, Investments, Traffics, Remedies, Standards, Trade Facilitation and Subsides not necessarily in the same order. An MBA student sitting on the next table overhears the discussion and ranks the issues as per their importance from 1 to 8. No two issues can have the same rank and no two officers can have the same position. Additional information available is:

i. P is sitting to the immediate left of S and the officer opposite to S discusses issues pertaining to Remedies.
ii. U's issue is ranked 7th and there is one officer between U and the officer whose issue is ranked 2nd.
iii. The officer whose issue is ranked 1 is not opposite to the officer whose issue is ranked 8 who represents issues related to Investments.
iv. The ranks of the issues raised by the officers sitting opposite to each other cannot be both even or both odd.
v. The officer discussing issues related to Trade in Services is sitting opposite to T. T is sitting at a gap of one place from P.
vi. R is sitting opposite to Q and represent issues related to Standards and Trade in Intellectual Property Rights not necessarily in the same order.
vii. P's issue was ranked 4th and he was discussing issues related to Tariffs and sits opposite to the officer ranked 5th who represents issues related to Subsidies.
viii. The officers representing issues related to Trade in Services and Trade Facilitation are sitting adjacent to each other.

107. Which officer discusses Remedies and what is its rank?
(A) P-4
(B) S-1
(C) U-7
(D) V-5

108. If the officers V is to the immediate right of the officer representing Trade Facilitation, then the officer 4th to the right of V discusses which issue?
(A) Tariffs
(B) Remedies
(C) Subsidies
(D) Investments

109. Which possible issues can be represented by W?
(A) Standards-Trade in Intellectual Property Rights

(B) Subsidies-Standards
(C) Trade in Services-Subsidies
(D) Trade in Services-Trade in Intellectual Property Rights-Subsidies

110. The officer to the 4th right to the officer discussing the issues related to Remedies, is discussing which issue?
(A) Trade in Intellectual Property Rights
(B) Trade Facilitation
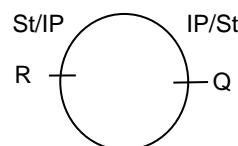(C) Investments
(D) Subsidies

Solutions for questions 107 to 110:
Let us denote the issues as Se, IP, In, Tar, Rem, St, TF and sub respectively as given.
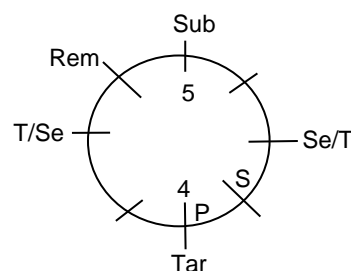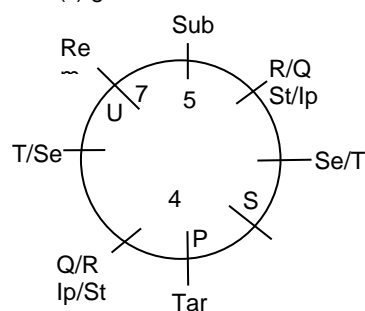
From (i) and (vii)
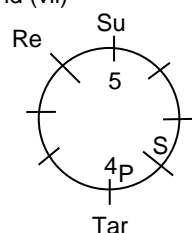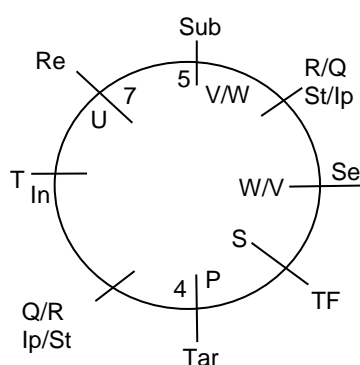

(vi)

(viii)   <u>Se</u>, <u>TF</u>

(v)

Also, (vi) and (ii) give

R/Q has rank 2

(viii)

107. U discusses remedies, whose rank is 7.

Choice (C)

108. If V is to the immediate right of S, then the officer fourth to the eight of V discusses Investments.

Choice (D)

109. W discusses either Trade in services or subsidies.

Choice (C)

110. The officer to the 4th right of U is discussing Trade Facilitation (TF).

Choice (B)

Directions (111-112): Based on the information answer the questions which follow.

A consultant to Department of Commerce, Government of Bianca has suggested 30 products which have high export potential. Dora an entrepreneur and prospective exporter notices that these products can be grouped in three ways – Machine made goods, Handmade goods and Intermediate goods. Among these 30 products some products are both machine made and intermediate goods but not handmade goods. Few products have a combination of handmade and machine made goods but not intermediate goods. Some products are handmade and intermediate goods but not machine made goods. Further it is seen that handmade-machine made goods are 1 less than machine made-intermediate goods. Similarly the total number of handmade-intermediate goods is 1 less than machine made-intermediate goods. There are just 4 products common across all product groups i.e. machine made-handmade-intermediate goods. Apart from this the number of only handmade goods is same as only machine made goods but less than only intermediate goods. Each product group/combination has at least one product.

Dora prefers to export machine made goods and avoid handmade goods. She finds out that only handmade goods are twice the machine made-intermediate goods and the number of only intermediate goods is an even number. Whereas her close friend Sara prefers to export intermediate goods followed by only handmade goods.

111. Sara and Dora prefer to export as many common products as possible in order to understand the regulatory conditions. Keeping their preferences intact, what is the maximum number of common products which can be exported by both of them?
(A) 2
(B) 4
(C) 14
(D) Data Inadequate

112. If another exporter Abeer prefers to export only intermediate goods, then the total number of products which both Abeer and Dora export are
(A) 24
(B) 20
(C) 22
(D) 21

Solutions for questions 111 and 112:
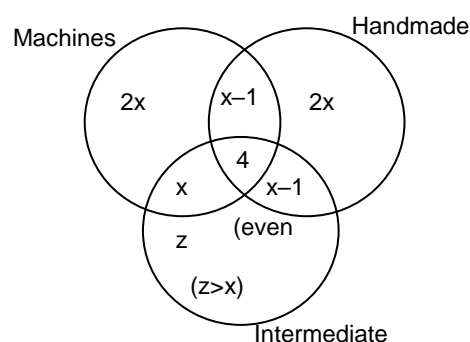
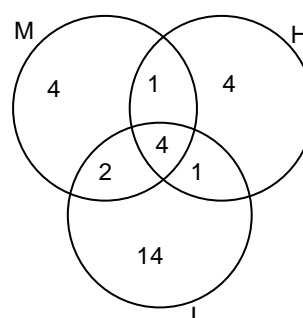
$2x + x - 1 + 2x + x + 4 + x - 1 + z = 30$
$\Rightarrow 7x + z = 28$
$7(2) + 14 = 28$
$\Rightarrow x = 2$ and $z = 14$.

111. Max number of common
Products = Products common to M & I = 2

Choice (A)

112. Total number of
Products
= (Intermediate + Machine) – Homemade
= 14 + 2 + 4 = 20

Choice (B)

Directions (113-114): Based on the information answer the questions which follow.

Nautanki a famous play group from Eastern India is playing different shows every hour starting from 10 am with a two hour lunch break from 1 pm to 3 pm after which the show resumes at 3 pm. Entry tickets for different shows are coded with 7 words each day. The same words are rearranged for different shows following a definite rule. For example:

Show 1: Banana   is   the   favourite   fruit   of   Bina
Show 2: the   is   of   favourite   Bina   fruit   Banana
Show 3: of   is   fruit   favourite   Banana   Bina   the

And so on till the last show at 9 pm.

113. If on some other day, for the fourth show the code is
'All of Delhi welcome to the show'
Then the code for entry ticket for the first show on that day is
(A)   The of all welcome to show Delhi
(B)   The of Delhi welcome all show to
(C)   The of to welcome all show Delhi
(D)   The of show welcome all to Delhi

Solution:
Timings for the shows are 10^am -11, 11^am -12, 12-1,3-4, 4-5, 5-6, 6-7 … up to 10 pm.
Given code for fourth show is

All of Delhi welcome to the show
Considering the rearrangement of words in the example, we can find the code for the second show. The code is "to of show welcome Delhi All the".
Now the code for the first show is
"The of to welcome all show Delhi".

<div align="right">Choice (C)</div>

114. If the entry code for the show at 7 pm is
'Do things to help others in difficulty'
Then the code for entry ticket for the show at 12 noon of that day was
(A)   Do things others help to in difficulty
(B)   Do things to help others in difficulty
(C)   Do things to help in difficulty others
(D)   Do things difficulty help to others in

Solution:
Given is the entry code at 7 pm.
Hence, code at 5 pm will be:
Others things difficulty help to do in
code at 4 pm will be:
in things, others help do difficulty to
code at 12 noon will be:
Do things to help others in difficulty.

<div align="right">Choice (B)</div>