Solutions of IIFT2016 held on 27.11.2016 (Booklet Code: C)

SECTION – 1(Part – 1)

Directions for questions 1-16: Read the following passages carefully and answer the questions given at the end of each passage.

PASSAGE 1

In a study of 150 emerging nations looking back fifty years, it was found that the single most powerful driver of economic booms was sustained growth in exports especially of manufactured products. Exporting simple manufactured goods not only increases income and consumption at home, it generates foreign revenues that follow the country to import the machinery and materials needed to improve its factories without running up huge foreign bills and debts. In short, in the case of manufacturing, one good investment leads to another. Once an economy starts down the manufacturing path, its momentum can carry it in the right direction for some time. When the ratio of investment to GDP surpasses 30 percent, it tends to stick at the level for almost nine years (on an average). The reason being that many of these nations seemed to show a strong leadership commitment to investment, particularly to investment in manufacturing. Today various international authorities have estimated that the emerging world need many trillions of dollars in investment on these kinds of transport and communication networks. The modern outlier is India where investment as a share of the economy exceeded 30 percent of GDP over the course of the 2000s, but little of that money went into factories. Indian manufacturing had been stagnant for decades at around 15 percent of GDP. The stagnation stems from the failures of the state to build functioning ports and power plants and to create an environment in which the rules governing labour, land and capital are designed and enforced in a way that encourages entrepreneurs to invest, particularly in factories. India has disappointed on both counts creating labour friendly rules and workable land acquisition norms. Between 1989 and 2010 India generated about ten million new jobs in manufacturing, but nearly all those jobs were created in enterprises that are small and informal and thus better suited to dodge India's bureaucracy and its extremely restrictive rules regarding firing workers. It is commonly said in India that the labour laws are so onerous that it is practically impossible to comply with even half of them without violating the other half. Informal shops, many of them one man operations, now account for 39 percent of India's manufacturing workforce, up from 19 percent in 1989 and they are simply too small to compete in global markets. Harvard economist Dani Rodrik calls manufacturing the "automatic escalator" of development, because once a country finds a niche in global manufacturing, productivity often seems to start rising automatically. During its boom years India was growing in large part on the strength of investment in technology service industries, not manufacturing. This was put forward as a development strategy. Instead of growing richer by exporting even more advanced manufactured products, India could grow rich by exporting the services demanded in this new information age. These arguments began to gain traction early in the 2010s. In new research on the "service escalator", a 2014 working paper from the World Bank made the case that the old growth escalator in manufacturing was already giving way to a new one in service industries. The report argued that while manufacturing is in retreat as a share of the global economy and is producing fewer jobs, services are still growing, contributing more to growth in output and jobs for nations rich and poor. However, one basic problem with the idea of the service escalator is that in the emerging world most of the new service jobs are still in very traditional ventures. A decade on, India's tech sector is still providing relatively simple IT services mainly in the same back office operations it started with and the number of new jobs it is creating is relatively small. In India only about two million people work in IT services, or less than 1 percent of the workforce. So far the rise of these service industries has not been big enough to drive the mass modernisation of rural farm economics. People can move quickly from working in the fields to working on an assembly line, because both rely for the most part on manual labour. The leap from the farm to the modern service sector is much tougher since those jobs often require advanced skills. Workers who have moved into IT service jobs have generally come from a pool of relatively better educated members of the urban middle class, who speak English and have at least some facility with computers. Finding jobs for the underemployed middle class is important but there are limits to how deeply it can transform the economy, because it is a relatively small part of the population. For now, the rule is still factories first, not services first.

1. According to the information in the above passage, manufacturing in India has been stagnant because there is

A. Lack of availability of skilled and educated manpower particularly in rural areas
B. Lack of investment in required infrastructure, labour friendly rules and land acquisition norms
C. Lack of investment in primary and higher education and women empowerment
D. Lack of investment in technology, telecommunications and IT, and service sector in general

Solution:
Refer to lines 16 to 18 of the passage -The stagnation stems from.....into factories - . It is clearly stated here that the lack of proper infrastructure, the labour friendly laws and the land acquisition norms were the factors that led to the stagnation of the manufacturing sector in India. Choice (B)

2. In India, nearly all jobs created were primarily in the small and informal sector because
   A. They are more innovative and can produce better products suited for export markets
   B. They are able to hire less number of workers and have to pay less taxes
   C. They are better suited to handle the bureaucratic procedures followed in India and the difficult labour laws with regard to dismissal of workers
   D. They do not required good infrastructure and are able to manage better in the Indian conditions

Solution:
It can be understood from lines 20 to 23 of the passage that most of the jobs created were in the small and informal sector because they were better suited to handle the bureaucratic procedures in India and the difficult labour laws with regard to firing of workers. Hence option C is the appropriate answer. Choice (C)

3. According to the opinion expressed in the above excerpt, growth in services is not as impactful on the economy as manufacturing because
   A. Companies in services sector focus only on technology and not on overall infrastructure such as power and ports
   B. Services sector an create jobs only for a small percent of the population who are English speaking and have access to better education
   C. Manufacturing leads to increase in export led income which benefits the whole economy
   D. Manufacturing leads to creation of better infrastructure, health facilities and educational institution

Solution:
Refer to the last part of the paragraph. The sentence starting with the words “So far the rise...” till the sentence ending with the words “...facility with computers”. From here it can be gathered that the service sector can create jobs for only a small English speaking minority who have better access to education. Choice (B)

4. In the passage, sustained growth in exports of manufactured products has been identified as the most powerful driver of economic boom because
   A. It leads to an increase in building of functioning ports and power plants and also improvement in mining and shipping sectors.
   B. It leads to an increase in foreign investment, domestic income generation and consumption
   C. It leads to increase in transportation and communication network and also leads to increase in education
   D. It leads to modernization of rural farm economies and also improvement of the Agriculture sector

Solution:
The second and third sentences of the passage validate option B. The remaining options cannot be inferred. Choice (B)

PASSAGE 2

The company will tackle this problem much more readily if reverse innovation is part of its repertoire. And yet until recently PepsiCo took a glocalisation approach. The company developed products for the US and then sold and distributed substantially similar products throughout the world. As a result PepsiCo's growth particularly in emerging markets hit a wall. The company's brands bumped up against local needs, tastes and habits that could not be satisfied by lowest-common-denominator global products. Under the glocalisation scenario, what first appears to be promising momentum hits a wall-often sooner than later. The renown of even the most potent global brands wear thin when the offered product is neither designed expressly for local markets nor priced for local means. These days PepsiCo is finding ways to address sharp difference across borders by designing products with local tastes and consumer needs in mind and is capturing a greater share of the opportunity in emerging economies. But that's not all. PepsiCo is finding that its innovations in emerging markets have the potential to have impact and deliver performance with purpose all over the world. For example, PepsiCo is finding that some long popular ingredients in emerging economics such as lentils in India have healthy profiles that suggest new dimensions for snacking across geographies. The company's approach to reverse innovation combines local product development efforts, strong support from global resources, plus efforts to ensure that the raw material of PepsiCo's innovations-ideas, flavours, ingredients, marketing expertise, packaging materials, manufacturing methods and so on can flow in any direction within the organisation. Concerns about childhood and adult obesity are on the rise. It's not news that snack foods are not commonly associated with health and wellness. Nonetheless, PepsiCo saw that there was enormous opportunity for impact in creating option for healthier snacking. "Consumers interact with our products on three levels; the neurological level, the gut level and the metabolic level." Traditionally food and beverage companies have focussed only on the first. The neurological level is where brands, marketing and sensory payloads operate. Looking at the problems of emerging markets it is important to also understand what PepsiCo's products do to the person's gut? What do they do to their body chemistry? If those effects are ignored then it is indulgence without any balance. As

PepsiCo geared up for its effects to develop Aliva, it wondered whether there were any examples in which PepsiCo had already practised successful reverse innovation. There was one such example in India. It was a lentil and rice based snack called Kurkure. Introduced more than a decade ago, it had grown to be Frito Lay India's top selling product. PepsiCo had learnt a lot from the Kurkure experience. Once emerging nations aspired to have access to rich world products. But these days they want rich world quality baked into products with local origins. It exemplified the idea that innovation's shouldn't simply be handed down from on high.

5. According to the above excerpt, most MNCs face problems in emerging countries because they interpret the concept of 'glocalisation' as
   A. Offering global products with minimal changes leading to a mismatch between the requirements of the local markets with regard to its usage as well as the pricing
   B. Offering global products with minimal changes that are useful for local markets but not priced appropriately
   C. Offering global products with minimal changes that are not useful for local markets but are priced appropriately
   D. Offering global products with changes leading to a match between the requirements of the local markets with regard to its utility as well as the pricing

Solution:
It can be inferred from the second and fourth sentences of the passage that glocalisation, as interpreted by the MNCs, is offering global products with minimal changes leading to a mismatch between the requirements of the local markets with regard to its usage as well as the pricing. Choice (A)

6. According to the author, snack food companies traditionally focus on the
   A. Sensory level
   B. Gut level
   C. Neurological level
   D. Digestive level

Solution:
Refer to the sentence starting with the words “Consumers interact with...” and the sentence that follows it, starting with the words “Traditionally food and beverage...”. Option C is validated by these two sentences. Choice (C)

7. The passage suggests that MNCs should replace glocalistion with
   A. Market Research
   B. Reverse Engineering
   C. Globalisation
   D. Reverse Innovation

Solution:
The very first sentence and the subsequent information provided in the passage renders option D to be true. Choice (D)

8. What is the learing for PepsiCo from India experience
   A. Innovation should be governed from the top and global quality
   B. Snack food is driven by indulgence only
   C. Snack food should use global quality and healthy local ingredients
   D. Snack food should be priced cheaply as per local affordability

Solution:
The message which can be gathered from the passage is that snack food should use local ingredients which are healthy and at the same time it should be of global quality. Choice (C)

PASSAGE 3

Typically women participate in the labour force at a very high rate in poor rural countries. The participation rate then falls as countries industrialise and move into the middle income class. Finally, if the country grows richer still, more families have the resources for higher education for women and from there they often enter the labour force in large numbers. Usually, economic growth goes hand in hand with emancipation of women. Among rich countries according to a 2015 study, female labour force participation ranges from nearly 80 percent in Switzerland to 70 percent in Germany and less than 60 percent in the United States and Japan. Only 68 percent of Canadian women participated in the workforce 1990; two decades later that increased to 74 percent largely due to reforms including tax cuts for second earners and new childcare services. In Netherlands the female labour participation rate doubled since 1980 to 74 percent as a result of expanded parental leave polices and the speared of flexible, part time working arrangements. In a 2014 survey of 143 emerging countries, the World Bank found that 90 percent have at least one law that limits the economic opportunities available to women. These laws include bans or limitations on women owning property, opening a bank account, singing a contract, entering a courtroom, travelling alone, driving or controlling family finances. Such restrictions are particularly prevalent in the Middle East and South Asia with the world’s lowest female labour force participation, 26 and 35 percent respectively. According to data available with the International Labour Organization (ILO), between 2004 and 2011, when the Indian economy grew at a healthy average of about 7 percent, there was a decline in female participation in the country’s labour force from over 35 percent to 25 percent. India also posted the lowest rate of female participation in the workforce among BRIC countries. India’s performance in female workforce

participation stood at 27 percent, significantly behind CHINA (64 percent), Brazil (59 percent), Russian Federation (57 percent), and South Africa (45 percent). The number of working women in India had climbed between 2000 and 2005, increasing from 34 percent to 37 percent, but since then the rate of women in the workforce has fallen to 27 percent as of 2014, said the report citing data from the World Bank. The gap between male and female workforce participation in urban areas in 2011 stood at 40 percent, compared to rural areas where the gap was about 30 percent. However, in certain sectors like financial services, Indian women lead the charge. While only one in 10 Indian companies are led by women, more than half of them are in the financial sector. Today, women head both the top public and private banks in India. Another example is India's aviation sector, 11.7 percent of India's 5,100 pilots are women, versus 3 percent world wide. But these successes only represent a small section of women in the country. India does poorly in comparison to its neighbours despite a more robust economic growth. In comparison to India, women in Bangladesh have increased their participation in the labour market, which is due to the growth of the ready - made garment sector and a push to rural female employment. In 2015, women comprised of 43 percent of the labour force in Bangladesh. The rate has also increased in Pakistan, albeit from a very low starting point, while participation has remained relatively stable in Sri Lanka. Myanmar with 79 percent and Malaysia with 49 percent are also way ahead of India. Lack of access to higher education, fewer job opportunities, the lack of flexibility in working conditions, as well as domestic duties are cited as factors behind the low rates. Marriage significantly reduced the probability of women working by about 8 percent in rural areas and more than twice as much in urban areas, said an Assocham report. ILO attributes this to three factors: increasing educational enrolment, improvement in earnings of male workers that discourages women's economic participation, and the lack of employment opportunities at certain levels of skills and qualifications discouraging women to seek work. The hurdles to working women often involve a combination of written laws and cultural norms. Cultures don't change overnight but laws can. The IMF says that even a small step such as countries granting women the right to open a bank account can lead to substantial increase in female labour force participation over the next seven years. According to the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), even a 10 percent increase in women participating in the workforce can boost gross domestic product (GDP) by 0.3 percent. The OECD recently estimated that eliminating the gender gap would lead to an overall increase in GDP of 12 percent in its member nations between 2015 and 2030. The GDP gains would peak close to 20 percent in both Japan and South Korea and more than 20 percent in Italy. A similar analysis by Booz and Company showed that closing the gender gap in emerging countries could yield even larger gains in GDP by 2020, ranging from a 34 percent gain in Egypt to 27 percent in India and 9 percent Brazil.

9. According to the above passage, though there are many reasons for low female labour force participation, the most important focus of the passage is on

A. Women do not like work after marriage
B. Laws and cultural norms limiting economic opportunities available to women
C. Lack of access to higher education resulting in lack of skills and qualifications
D. Preference for child rearing and household work amongst women

Solution:

Refer to the sentence starting with the words " In a 2104 survey..... " and the sentence starting with the words "The hurdles to working women...cultural norms", towards the end of the passage. From these lines it is obvious that the primary focus of the passage is on laws and cultural norms that restrict the opportunities available to women.

Choice (B)

10. Identify the sentence that accurately summarizes the message of the above excerpt

A. Compared to other countries India has the lowest female labour force participation
B. Richer the nation, higher the female labour force participation, therefore nations have to become right to increase the female labour force participation
C. Emerging countries are lagging behind developed countries with regard to the female labour force participation
D. Increasing the female labour force participation can have a positive impact on not just the social indicators but also economic growth

Solution:

It can be inferred from the passage that increasing the participation of the female labour force can have a positive impact not only on the social indicators but also on economic growth.

Choice (D)

11. According to the IMF what small step can lead to larger impact on increasing female labour force participation

A. providing access to higher education
B. Improving childcare services
C. Allowing women to open bank accounts
D. Providing a safe work environment

Solution:

Refer to the fifth sentence from the bottom - "The IMF says that..."- according to which choice C is the answer. Choice (C)

12. According to the information in the above passage between 2004 to 2011, when the Indian economy grew at a healthy average of a about 7 percent

A. There was a steady increase in female participation in the country's labour force from over 25 percent to 35 percent
B. There was no change in female participation in the country's labour force and reminded at 35 percent
C. There was a decline in female participation in the country's labour force from 35 percent to 25 percent
D. There was a similar increase in female participation in the country's labour force from 7 percent to 15 percent

Solution:

Option C is validated by the passage. Refer to the lines starting with the words "According to the data available with the International Labor Organization...35 percent to 25 percent".

Choice (C)

PASSAGE 4

The Cyclopses according to mythology were a race of bad tempered and rather stupid one eyed giants. Not perhaps a great portend for a new generation of robots. But Andrew Davison a computer scientist at Imperial College, London, thinks one eye is enough for a robot, provided its brain can think fast enough. For a robot to work autonomously it has to understand its environment. Stereoscopic vision, integrating the images from two eyes looking at the same thing from different angles is one approach to achieve this, but it involves a lot of complicated computer processing. The preferred method these days therefore is Simultaneous Localisation and Mapping (SLAM) which uses sensors such a laser based range finders that see be bouncing beams of light off their surroundings and timing the return. Dr. Davison however wants to replace the range finders which are expensive and fiddly with a digital camera, which is small, cheap and well understood. With this in mind he is developing ways to use a single moving video camera to create continually updated 3D maps that can guide even the most hyperactive robots on its explorations. His technique involves collecting and integrating images taken from different angles as the camera goes on its travels. The trick is to manage to do this in real time, at frame rates of 100-1,000 per second. The shape of the world pops out easily from laser data because it represents a direct contour map of the surrounding area. A camera captures this geometry indirectly and so needs more (and smarter) computations if it is to generate something good enough for a self-directing robot. The answer is a form of triangulation, tracking features such as points and edges from one frame to the next. With enough measurements of the same set of features from different viewpoints, it is possible if you have a fast enough computer program to estimate their positions and thus by inference the location of the moving camera. However, developing such a program is no mean feat. In the milliseconds between successive frames, relevant information from each fresh image must be extracted and fused with the current map to produce an updated version. The higher the frame rate, the less time there is to do this work.

13. What is the main message of the above passage?

A. To explain the technique of SLAM
B. To discuss techniques for increasing efficiency of self-guided robots
C. To advocated the use of digital cameras
D. To highlight the work of the scientist in the area of robotics

Solution:

The main purpose of the passage is to discuss techniques for increasing efficiency of self-guided robots. Option A, which may seem correct, can be eliminated because SLAM is not the technique preferred by Dr. Davidson because he intends to improvise on this by replacing range finders with a digital camera. The passage is not advocating the use of digital cameras, hence choice C can be ruled out. Choice D is rather far-fetched. Hence, only B is the appropriate answer to this question.

Choice (B)

14. What message is the author conveying by drawing attention to a mythical figure and a one eyed robot?

A. A robot is uglier than the mythical figure and also less efficient
B. Unlike the robot, the mythical figure is uglier but more efficient than the robot because it is one eyed
C. Unlike the mythical figure, having one eye does not affect the performance of the robot
D. Having both eyes will make the mythical figure less uglier and stupid than the robot

Solution:

The first sentence of the passage states that the cyclopses were a race of rather stupid one-eyed monsters. The second and third sentences of the passage state that unlike the mythical character, having one eye does not affect the performance of the robot.

Choice (C)

15. Laser based range finders are more effective than digital cameras because (select the right option)?

i. Laser based range finders directly capture the contour map of the surroundings which enables faster processing
ii. Digital cameras are expensive
iii Laser based range finders are easier to use
iv. Digital cameras are easy to use but require more computation

A. i & ii
B. ii & iii
C. i & iv
D. ii & iv

Solution:
Refer to lines 15 to 17 of the passage – the lines which read “The shape of the world pops out easily from laser data....” till “.....something good enough for a self-directing robot..” -. These two sentences validate both statements i and iv. Hence choice C is the answer. Choice (C)

16. It is possible to improve the performance of digital camera

A. by using images from laser based range finders along with images from digital cameras
B. by collecting images from different viewpoints and a computer program for faster processing
C. by combining the methodology of SLAM along with images from digital camera
D. by calculating the measurements of different contour points and measuring the distance

Solution:
According to lines 16 to 22 of the passage , the performance of a digital camera can be improved by collecting images from different viewpoints and a computer program for faster processing.
Choice (B)

SECTION – 1(Part – 2)

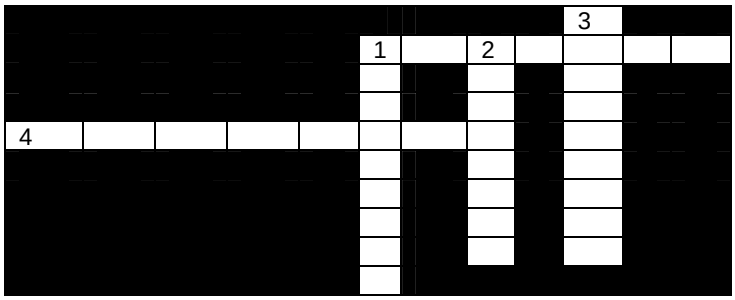
Directions for questions 17-20: Use the words in the table below to solve the questions.

i) Equipoise	ii) Assiduous	iii) Emollient	iv) Noxious	v) Nebulous	vi) Dogmatic
vii)Tedious	viii) Obviate	ix) Espouse	x) Enigmatic	xi) Soliloquy	xii) Tranquil
xiii) Militate	xiv) Tenacity	xv) Endemic	xvi) Pursuant	xvii) Encomium	xviii) Obloquy
ixx) Digitise	xx) Tousled				

17. Complete the crossword using the words from the above table. There are more words than required.

Hint:

1-Across: native to or confined to a certain region; **1 – Down:** balance of forces or interests;
2: inclined to lay down principles as undeniably true; **3:** attempting to avoid confrontation or anger, calming or conciliatory; **4:** a speech or piece of writing that praises someone or something highly



A. 1-Across-ix); 1-Down-i); 2-xvi); 3-xi);4-vi)
B. 1-Across-iv); 1-Down-v);2-xiv); 3-xi); 4-xvii)
C. 1-Across-xv); 1-Down-i); 2-vi); 3-iii); 4-xvii)
D. 1-Across-xii); 1-Down-xiv); 2-v); 3-ii); 4-xi)

Solution:
Native to confined to a certain region is ENDEMIC. Hence 1 Across is xv.
Balance of forces or interests is EQUIPOISE. Hence 1 Down is i.
Inclined to lay down principles as undeniably true is DOGMATIC. Hence 2 is vi.
Attempting to avoid confrontation, calming or conciliatory is EMOLLIENT. Hence 3 is iii.
A speech of writing that praises someone or something highly is ENCOMIUM. Hence 4 Across is xvii.
The correct matching is seen only in option C. Choice (C)

Directions for questions 18-20: Each question has explained the meaning of two words from the above table. Identify the correct matching words from the table.

18. a) A formal expression of praise
b) Take up the cause, support

A. a)-ii); b)-xvi)
B. a)-xvii); b)-ix)
C. a)-ii); b)-viii)
D. a)-iii); b)-vii)

Solution:
A formal expression of praise is an encomium. Hence a matches with xvii.
To take up the cause or support is to espouse. Hence b and ix make a pair. Choice (B)

19. a) Deviod of cheer or comfort, dreary
b) Stubbornly persevering, doggedness

A. a)-vii); b)-xiv)
B. a)-vi); b)-xiv)
C. a)-x); b)-iv)
D. None of the above

Solution:
Tedious means devoid of cheer or comfort, dreary. Hence a matches with vii.
Tenacity means stubbornly, doggedness. Hence b goes with xiv. Choice (A)

20. a) Having a softening or soothing effect
b) Verbal abuse, defamation

A. a)-xii); b)-ii)
B. a)-xvii); b)-iv)
C. a)-iii); b)-xviii)
D. a)-iii); b)-ix)

Solution:
An emollient has a calming or soothing effect. Hence a – iii.
Obloquy means verbal abuse or defamation. Hence b matches with xviii. Choice (C)

Directions for questions 21-22: Match the words in Column A with their **Antonyms** in Column B

Column A	Column B
i) Lament	a. Unique
ii) Irascible	b. Unjustified
iii) Itinerant	c. Benevolent
iv) Apogee	d. Celebrate
v) Baleful	e. Secret
vi) Vexation	f. Extrovert
vii) Warranted	g. Amiable
viii) Epiphany	h. Static
ix) Recluse	i. Happiness
x) Archetypal	j. Nadir

21. A. iv)-j; vii)-b; viii)-e; x)-a
B. i)-d; iii)-h; viii)-e; v)-f
C. vi)-i; iv)-g; iii)-b; ix)-e
D. x)-g; iii)-j; ii)-h; vii)-b

Solution:
Apogee is the highest point of something, where it is greatest or most successful. Nadir, meaning the lowest point or the point of greatest adversity or despair, is its antonym. Hence iv-j.
Unjustified is an antonym of warranted (appropriate; necessary). Hence vii-b.
Epiphany means an insight or realization. Secret is an antonym of epiphany. Hence viii-e.
Archetypal means having all the important qualities that make somebody or something a typical example of a particular kind of person or thing. The word unique is its antonym. Hence x-a.
Choice (A)

22. A. vii)-b; x)-a; iii)-j; ii)-h
B. iv)-j; i)-d; iii)-h; ix)-b
C. vi)-i; v)-c; ix)-f; iii)-h
D. viii)-e; iv)-j; vii)-b; x)-g

Solution:
Happiness is the antonym of vexation (discomfiture). Hence vi-i.
Baleful means harmful or malicious. Benevolent is its antonym. Hence v-c.
Recluse is a person who lives in seclusion or apart from society, often for religious meditation.
An extrovert is an outgoing, gregarious person. The two words have an antonymous relationship. Hence ix-f.
Itinerant means traveling from place to place. Static is an antonym of itinerant. Hence iii-h.
Choice (C)

Directions for questions 23-25: Etymological description of the 'word' is given in each question. Identify the origin/source of the 'word'

23. Debutante (noun)
The origin of the word dates back to early Nineteenth Century. The word is used to describe a female stage actor making her first public performance.

A. Portuguese
B. Italian
C. Greek
D. French

Solution:
The origin of the word (D) Debutante (noun) is indisputably French; other languages mentioned have not given rise to it. Many such French borrowings are currently used in English with anglicized spellings and pronunciations for some of the words. A couple of examples of French words borrowed into English in modern times are "coup, detente, fiancée, resume," etc. The French noun and verb related to "debutante" is "debut"; "debut" first appeared in English as a noun and later on it was turned into a verb. The answer is option (D).
Choice (D)

24. Obvious (adjective)
It means "frequently met with". The origin of the word comes from obvius "that is in the way, presenting it self readily, open, exposed, commonplace," also from obviam (adv.) "in the way", from ob "against" = viam, accusative of via "way", meaning "plain to see, evident" is first recorded in 1630.
A. Latin
B. German
C. Hebrew
D. Italian

Solution:
The origin of the adjective "obvious" is Latin, not other languages mentioned against B, C and D. The adjective has given rise to the adverb "obviously." However no verb form of the word exists. But an uncountable noun form is there, which is "obviousness." The right answer is option (A).
Choice (A)

25. Soccer (noun)

The origin of the word dates back to 1889 (socca), later 1891 (socker), 1895 (soccer); originally university slang from a shortened form off Assoc., abbreviation of Association in Football Association.

A. French
B. English
C. Arabic
D. Italian

Solution:

The word "soccer" derives from English and is a shortened form of Football Association. The noun "Association" was shortened to "socca" which was later turned into "socker" and "soccer." The right answer option is (B); other options are wrong. Choice (B)

Directions for questions 26-27: Four words are given in each question, out of which one word is correctly spelt. Find the correctly spelt word.

26. A. Danseus
B. Dansueses
C. Densuace
D. Danseuse

Solution:

The correctly spelt word is "Danseuse" which means "a female ballet dancer." Another word with similar spelling is "masseuse" which means a woman whose job is to give massages." These words too are derived from French. The right answer option is (D); options (A) to (C) are misspellings of the word. Choice (D)

27. A. Norcoctic
B. Permentant
C. Pesimist
D. Acoustic

Solution:

The word that is correctly spelt is (D) "Acoustic"; other words are wrongly spelt and are dismissed. The word "Acoustic" is an adjective which means "related to sound or sense of hearing."

Choice (D)

Directions for questions 28-31: In the following passage, fill in the blank spaces with the most appropriate word from the options provided.

Come October and you are burnt by the mid-day Sun. The storm and the sizzle is particularly **(28)** as it comes after the relatively cool monsoon months. Though it is hot and muggy, that does not prevent people from coming out on the streets to **(29)** the traditional festivals. And it must be shopping time also, colourfully decorated showrooms are **(30)** the passerby to let his hair down, splurge and take a **(31)** of gifts home for family. After all, the New Year is just around.

28. A. traumatic
B. pleasant
C. sultry
D. fantastic

Solution:

The appropriate word for the first blank is (C) "sultry" which means "very hot and humid."

Choice (C)

29. A. herald
B. moot
C. invite
D. boycott

Solution:

The second blank takes the verb (A) "herald" which in the context means "to greet something or someone with enthusiasm." "Herald" is both a noun and a verb; it is used as a verb in the blank.

Choice (A)

30. A. drawing
B. exhorting
C. fascinating
D. pursuing

Solution:

The correct verb used in the present participial form for the blank is (B) "exhorting." The meaning of the verb "exhort" is "to try to influence someone by words or advice." Other options do not fit the blank. Choice (B)

31. A. token
B. list
C. bagful
D. placement

Solution:

The right word for the blank is (C) "bagful" which means "the amount that a bag can hold." Some more words on this pattern are "mouthful, roomful handful, etc. Other words don't suit or fit the blank. Choice (C)

Directions for questions 32-33: In the following questions some parts of the sentence have been jumbled up. Re-arrange these parts which are labeled as (a), (b), (c) and (d) to produce the correct sequence in completing the sentence.

32. Nelson Mandela modern country in a modern (a)
way and could run a new shifted the beliefs of the (b) (c)
people so they could heal the racial conflict. (d)

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

Solution:

The correct sequence of the parts is (B) and the reordered sentence would read "Nelson Mandela shifted the beliefs of the people so they could heal the racial conflict and could run a new modern country in a modern way." Choice (B)

33. The difference and development on the other (a)
affects in the relationship between death and (b)
birth-rates on the one hand but the age structure (c)
of the population not just the rate of population (d)
growth.
A. (d), (c), (b), (a)
B. (b), (d), (a), (c)
C. (b), (a), (d), (c)
D. (d), (a), (b), (c)

Solution:
The right sequence of parts for the jumbled sentence is option (C). The reordered sentence now reads "The difference in the relationship between death and birth-rates on the one hand and development on the other affects not just the rate of population growth but the age structure of the population." Choice (C)

Directions for questions 34-36: Fill up the blanks appropriate word (idiom/colloquial) given in the options.

34. Mark is always eager to argue about how this business should be run. He seems to have a real _____ on his shoulder about it.
A. Head
B. Score
C. Chip
D. Bluebird

Solution:
The appropriate word to fit the blank is (C) "Chip." .... He seems to have a real chip on his shoulder about it." The idiom in question is "have a chip on one's shoulder." The meaning of the idiom is "to have an aggressive attitude and act as if everyone is going to insult or ill-treat one, often because one feels inferior. Example sentence: He has a chip on his shoulder about his lack of education and is always belligerent towards academics. Choice (C)

35. Vishnu thought the last problem on the test was a real _____. It was much harder and more complex than any of the previous problems
A. Doozy
B. Whooper
C. Carp
D. Snafu

Solution:
The right word for the current blank is (A) "doozy" which means "something that is unusually good, bad, big, severe, etc. Some of her comments have been real doozies. Other options don't fit the blank. Choice (A)

36. I used to be kind of a _____ when I was little but I lost most of the weight in my teenage years.
A. Runt
B. Beanpole
C. Doughboy
D. Punk

Solution:
The right word to fit the blank is (C) "Doughboy". The meaning of "doughboy" is "a rounded mass of dough, boiled or steamed as a dumpling or deep-fried and served as a hot bread". In this context the word is used figuratively to refer to a person who is plump or fat. Other choices aren't suitable. Choice (C)

SECTION – 2

37. The Trans Pacific Partnership (TPP) or Trans Pacific Partnership Agreement (TPPA) is a trade agreement among twelve Pacific Rim countries, signed on 4 February 2016 in Auckland, New Zealand. Which of the following countries is not a member of TPP?

A. Mexico
B. United States
C. Vietnam
D. Indonesia

Choice (D)

38. Match each brand with the most appropriate Industry Type it represents:

Brands		Industry Types	
(a)	Facebook	(i)	Financial Services
(b)	Louis Vuitton	(ii)	Business Services
(c)	Visa	(iii)	Technology
(d)	UPS	(iv)	Luxury
(e)	Accenture	(v)	Transport

A. (a) – (iii), (b) – (v), (c) – (i), (d) – (iv), (e) – (ii)
B. (a) – (iii), (b) – (v), (c) – (ii), (d) – (iv), (e) – (i)
C. (a) – (iii), (b) – (iv), (c) – (i), (d) – (v), (e) – (ii)
D. (a) – (ii), (b) – (iv), (c) – (v), (d) – (iii), (e) – (i)

Choice (C)

39. Which of the following best represents baking soda?

A. Potassium Carbonate
B. Sodium Chloride
C. Potassium Hydroxide
D. Sodium Bicarbonate

Choice (D)

40. Which of the following country was not there in the UEFA Euro 2016 (Soccer Tournament) quarter-final?

France, Belgium, Wales, Germany, Italy, England, Poland, Portugal, Iceland

A. Iceland
B. Poland
C. England
D. Italy

Choice (C)

41. Alvin Toffler (October, 1928 – June, 2016) was an American writer and futurist, known for his works discussing modern technologies, including the digital revolution and the communication revolution, with emphasis on their effects on cultures worldwide. Toffler was an associate editor of Fortune magazine. Identify the book authored by Alvin Toffler from the following list

A. Previews and Premises
B. The Fourth Protocol
C. The End of Eternity
D. The Time Machine

Choice (A)

42. Which of the following Indian states share border with multiple countries?

a) Manipur b) Mizoram c) Tripura d) Bihar
e) Sikkim f) West Bengal g) Assam

A. (f), (e), (a) and (g)
B. (b), (f), (g) and (e)
C. (a), (f), (b) and (c)
D. (f), (c), (e) and (a)

Choice (B)

43. General elections were held in Myanmar on 8th November 2015. This has been the first openly-contested election held in the country since 1990. Which political party received the highest number of seats?

A. National League for Democracy
B. United Socialist Party
C. Union Solidarity and Development Party
D. National Peoples Party

Choice (A)

44. Sustainable Development Goals have replaced

A. Millennium Environment Goals
B. Sustainable Environment Goals
C. Millennium Development Goals
D. Sustainable Triple Bottom Line Goals

Choice (C)

45. Match the Organisation with the location of its Headquarter

Organisations		Headquarters	
(a)	World Bank	(i)	Brussels
(b)	North Atlantic Treaty Organisation	(ii)	Washington
(c)	Amnesty International	(iii)	Frankfurt
(d)	Food and Agricultural Organisation	(iv)	London
(e)	European Central Bank	(v)	Rome
(f)	Organization for Economic Cooperation and Development	(vi)	Paris

A. (a)-(ii), (b)-(i), (c)-(v), (d)-(iv), (e)-(iii), (f)-(vi)
B. (a)-(vi), (b)-(iii), (c)-(iv), (d)-(v), (e)-(i), (f)-(ii)
C. (a)-(i), (b)-(iii), (c)-(v), (d)-(iv), (e)-(vi), (f)-(ii)
D. (a)-(ii), (b)-(i), (c)-(iv), (d)-(v), (e)-(iii), (f)-(vi)

Choice (D)

46. What was the theme of the 2016 National Youth Festival of India?

A. Youth For Better India
B. Celebrating Diversity in Unity
C. India Youth for Skill, Development and Harmony
D. Youth For Drugs Free World

Choice (C)

47. Which Indian player has created junior world record in "Javelin throw" in July 2016?
A. Neeraj Chopra
B. Annu Rani
C. Rajesh Bind
D. Devendra Jhajharia

Choice (A)

48. Which global credit information company is associated with Credit Information Bureau (India) Limited (CIBIL)?
A. Moody
B. Standard and Poor
C. American Express
D. TransUnion

Choice (D)

49. Match the famous personality in Column II from the information given in Column I.

Column – I	Column – II
a. He was born in 1966 in New York. He won his first title of the World Boxing Council (WBC), heavyweight championship in 1986. He virtually remained at the top of the world for next few years. However, his professional career was in chaos in early 1990s and he was sentenced to jail for a grave crime in 1992. Later, he was diagnosed with bipolar disorder. Who is this famous person?	i. Rocky Marciano ii. Shraddha Kapoor iii. Sonakshi Sinha iv. George Foreman v. Alia Bhatt vi. DilipDoshi vii. Bishan Singh Bedi viii. Kareena Kapoor ix. Srinivas Venkataraghavan x. Mike Tyson xi. Muhammud Ali
b. He was India's spin bowler. He had test debut in 1979 and total wicket taken was 136 (Test + One day). He had immaculate control on flight and has been one of India's finest left arm spinner. Who is this cricketer?	
c. She was born in 1989 in Mumbai and daughter of a famous Bollywood actor. She had her first presence in Hindi film in 2010. Who is she?	

(A) a-x, b-ix, c-iii (B) a-xi, b-vi, c-ii (C) a-x, b-vi, c-ii (D) a-x, b-vii, c-ii

Choice (C)

50. What is the Currency of Bulgaria?
(A) Lev
(B) Lira
(C) Lek
(D) Loto

Choice (A)

51. Bharat Heavy Electricals Ltd. (BHEL) commissioned 2 units each of 14 Megawatts at the Salma Hydro Electric Project in 2016. Identify the country where this project is located.
(A) Nigeria
(B) Iran
(C) Turkmenistan
(D) Afghanistan

Choice (D)

52. "SatyamevaJayate" inscribed on one side of all Indian currency, has been derived from which of the following ancient Indian scripture?
(A) Mundaka Upanishad
(B) Rigveda
(C) Ramayana
(D) None of the above

Choice (A)

53. Which country inaugurated the first electric road in the world for hybrid heavy transports?
(A) Sweden
(B) Poland
(C) Iceland
(D) France

Choice (A)

54. The Panama Canal expansion project is also referred to
(A) Dead Locks
(B) Third Set of Locks
(C) New Horizon
(D) Cut Across the Sea

Choice (B)

55. Which of the following Company has acquired Jabong in July 2016?
(A) Shopclues
(B) Snapdeal
(C) Amazon
(D) Myntra

Choice (D)

56. Match the movie with the personality on whose life it is based

Movies	Personalities
a. The Social Network	i. Aung San SuuKyi
b. The Special Relationship	ii. Mark Zuckerberg
c. The Lady	iii. Stepher Hawking
d. The Theory of Everything	iv. Tony Blain

(A) a-iii, b-iv, c-i, d-ii (B) a-ii, b-iv, c-i, d-iii (C) a-ii, b-i, c-iv, d-iii (D) a-iv, b-iii, c-i, d-ii

Choice (B)

57. The 2016 Joint Military Exercise "Maitree" has been conducted between India and which of the following countries?

A. Indonesia B. Maldives
C. Malaysia D. Thailand

Choice (D)

58. What is the Director Identification Number (DIN)?

A. An identification number which the individual company allots to the intending director
B. A number which the Central Government allots to any individual intending to be appointed as director or to any existing director of a company
C. A number which the SEBI allots to any individual intending to be appointed as director or to any existing director or to any existing director of a company
D. A number which the Central Government allots to retried directors so to build data base

Choice (B)

59. Which of the following is not an elected post in India?

A. President B. Prime Minister
C. Governor
D. Chief Minister Choice (C)

60. Bitcoin is

A. A type of new coin introduced by the USA
B. A type of digital currency that uses cryptography
C. A type of currency used by Paytm
D. A type of commemorative coin issued by Mints Choice (B)

61. Match the Bollywood Actors with their debut Hindi Film

Actors	Films
a. Sharukh Khan	i. Aur Pyaar Ho Gaya
b. Sushmita Sen	ii. Dastak
c. Aishwarya Rai Bachchan	iii. Refugee
d. Rani Mukherjee	iv. Deewana
e. Kareena Kapoor	v. Raja ki Aayegi Barat

A. a - ii, b - iv, c-i, d-v, e-iii
B. a - ii, b - iv, c-iii, d-v, e-i
C. a - iv, b - v, c-iii, d-ii, e-i
D. a - iv, b - ii, c-i, d-v, e-iii Choice (D)

SECTION – 3

62. The smallest integer x for which the inequality $\frac{x-7}{x^2+5x-36} > 0$ is given by

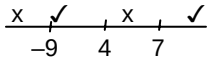
A. –12 B. 9 C. –9 D. –8

Solution:

$\frac{x-7}{(x+9)(x-4)} > 0$

$\frac{(x-7)(x+9)(x-4)}{(x+9)^2(x-4)^2} > 0$

$(x-7)(x+9)(x-4) > 0$



Range of x is $(-9, 4) \cup (7, \infty)$

Smallest integer x is –8.

Choice (D)

63. A child, playing at the balcony of his multi-storied apartment, drops a ball from a height of 350 m. Each time the ball rebounds, it rises $4/5^{th}$ of the height it has fallen through. The total distance traveled by the ball before it comes to rest is

A. 2530 m
B. 2800 m
C. 3150 m
D. 3500 m

Solution:

Distance traveled by the ball before it comes to rest = 350 + (height to which the ball rebounds the first time) + (Height from which the ball falls the second time) + ... =

$350 + H_{R1} + H_{F2} + H_{R2} + H_{F3} + \ldots\ldots$ (say)

$= 350 + 350\left(\frac{4}{5}\right) + 350\left(\frac{4}{5}\right) + 350\left(\frac{4}{5}\right)^2 + 350\left(\frac{4}{5}\right)^2 + \ldots.$

$= 350 + 2[350\left(\frac{4}{5}\right) + 350\left(\frac{4}{5}\right)^2 + \ldots..]$

$= 350 + 2\left[\frac{280}{1-\frac{4}{5}}\right]$ ($\because$ infinite G.P)

= 3150 m

Choice (C)

64. Find the value of x which satisfies the following equation $4\log_7 (x-8) = \log_3 81$

A. 8
B. 18
C 20
D. None of the above

Solution:

$4\log_7(x-8) = \log_3 81$

$4\log_7(x-8) = 4$

$\log_7 (x-8) = 1$

$x - 8 = 7$

$x = 15$

Choice (D)

65. A playschool contains 4 boys and y girls. On every Wednesday during winter, five students, of which at least three are boys, go to Zoological Garden, a different group being sent every week. At the Zoological Garden, each boy in the group is given a ball. If the total number of balls distributed is 368, then the value of y is

A. 5 B. 6 C. 7 D. 8

Solution:

Number of visits to the garden

$= {}^4C_3 . {}^yC_2 + {}^4C_4 . {}^yC_1 = V_1 + V_2$ (say)

Number of balls distributed in the visits that three boys went = $3V_1 = 3.4.\frac{y(y-1)}{2} = 6y(y-1)$

Number of balls distributed in the visits that four boys went = $4V_2 = 4({}^4C_4.{}^YC_1) = 4y$

$6y(y-1) + 4y = 368$

$6y^2 - 2y - 368 = 0$

$3y^2 - y - 184 = 0$

$(y-8)(3y+23) = 0$

$y = 8$ ($\because$ y is an integer)

Choice (D)

66. Which of the following statements regarding arrangement of the word 'RIYADH' is/are true:

(i) Two vowels can be arranged together in 120 ways
(ii) Vowels do not occur together in 240 ways

Which of the above statements are true?

A. Statement (i) only
B. Statement (ii) only
C. Both statements (i) and (ii)
D. None of the above

Solution:

i The vowels in RIYADH are I and A.
Taking the vowels together as one unit and each of the consonants as one unit, there would be 5 units.
Number of ways of arrangement = 5! (2) ($\because$ the unit of vowels can be internally arranged in 2 ways) = 240

ii Number of ways of arrangement = Total number of ways of arrangement – Number of ways of arrangement where the vowels come together
= 6! – 240 = 480

Neither (i) nor (ii) is true

Choice (D)

67. Two farmers were cultivating wheat on their respective agricultural land in a village. Farmer A had an average production of 20 bushels from a hectare. Farmer B, who had 15 hectares of more land dedicated to wheat cultivation, had an output of 30 bushels of wheat from a hectare. If farmer B harvested 530 bushels of wheat more than farmer A, how many bushels of wheat did farmer A cultivate?

A. 50 B. 80 C. 160 D. 200

Solution:

Let the number of acres of land that A had be x (for wheat cultivation)

Number of acres that B had = x + 15.

Number of bushels that A harvested cultivated = x(20)

Number of bushels that B harvested

= (x + 15) (30)

(x + 15) (30) – x(20) = 530

x = 8

Number of bushels that A cultivated = (x)(20) = 160 Choice (C)

68. Shruti and Krishna left Delhi for Noida at the same time. While Shruti was driving her car, Krishna, an environmentalist by profession, was traveling on his bicycle. Having reached Noida, Shruti truned back and met Krishna an hour after they started. Krishna continued his journey to Noida after the meeting, while Shruti turned back and also headed for Noida. Having reached Noida, Shruti again turned back and met Krishna 30 minutes after their first meeting. The time taken by Krishna to cover the distance between Delhi and Noida is

A. 2 hours
B. 2.5 hours
C. 3 hours
D. None of the above

Solution:

Let the distance from Delhi to Noida be d Km

Let the speeds of Shruti and Krishna be s Kmph and k Kmph respectively.

Let us say the first meeting ocured after Krishna covered x km

Shruti would have then covered (d + d – x) Km i.e. (2d – x)km

x = (k)(1) and 2d – x = (s) (1) i.e., x = k and

$d = \frac{s+k}{2}$

From the first meeting point, Krishna covered $\frac{k}{2}$ km before meeting Shruti the second time. In this time, Shruti covered $2(d - k - \frac{k}{2}) + \frac{k}{2}$

i.e $2d - \frac{5k}{2}$ i.e, $2\left(\frac{s+k}{2}\right) - \frac{5k}{2} = s - \frac{3k}{2}$

Shruti covered $s - \frac{3k}{2}$ in $\frac{1}{2}$ hr and hence speed is (2s – 3k) kmph. Her speed is also (2d – x) Kmph.

2s – 3k = 2d – x

2s – 3k = s + k – x

s = 3k

$d = \frac{s+k}{2} = 2k.$

Time taken by Krishna to cover the distance is 2 hours. Choice (A)

69. In a local shop, as part of promotional measures, the shop owner sells three different varieties of soap, one at a loss of 13 percent, another at a profit of 23 percent and the third one at a loss of 26 percent. Assuming that the shop owner sells all three varieties of soap at the same price, the approximate percentage by which average cost price is lower or higher than the selling price is

A. 10.5 higher
B. 12.5 lower
C 14.5 lower
D. 8.5 higher

Solution:

Let the selling price of each soap variety be ₹x

T.S.P = 3x

$T.C.P = \frac{x}{0.87} + \frac{x}{1.23} + \frac{x}{0.74} \approx 3.312x$

Average SP = x

Average CP ≃ $\frac{3.312x}{3} = 1.104\,x$

Average CP is more (i.e. higher) than average SP by ≃ 10.4%. Closest choice is 10.5% higher.

Choice (A)

70. In the marketing management course of an MBA programme, you and your roommate can complete an assignment in 30 days. If you are twice as efficient as your roommate, the time required by each to complete the assignment individually is

A. 45 days and 90 days
B. 30 days and 60 days
C. 40 days and 120 days
D. 45 days and 135 days

Solution:

Let the times taken by you and your roommate to complete the assignment be a days and b days respectively.

You are twice as efficient as your roommate.

$\frac{1}{a} = 2\left(\frac{1}{b}\right)$

$\frac{1}{a} + \frac{1}{b} = \frac{1}{30}$

$3\left(\frac{1}{b}\right) = \frac{1}{30}$

b = 90

a = 45

Choice (A)

71. Let PQRSTU be a regular hexagon. The ratio of the area of the triangle PRT to that of the hexagon PQRSTU is

A. 0.3

B. 0.5

C 1

D. None of the above

.

Solution:

PRT is a triangle formed by joining the alternate vertices of a regular hexagon. Each of the two such triangles that can be formed (PRT and QSU) has half the area of the hexagon.

Choice (B)

72. 290 students of MBA (International Business) in a reputed Business School have to study foreign language in Trimesters IV and V. Suppose the following information are given

(i) 120 students study Spanish

(ii) 100 students study Mandarin

(iii) At least 80 students, who study a foreign language, study neither Spanish nor Mandarin

Then the number of students who study Spanish but not Mandarin could be any number form

A. 80 to 170

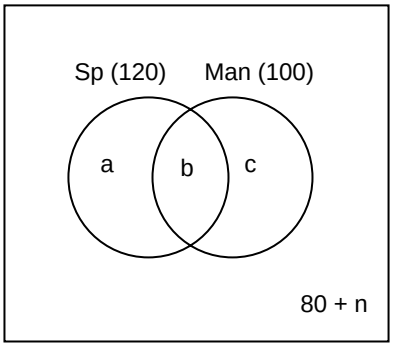
B. 80 to 100

C 50 to 50

D. 20 to 110.

Solution:

Total = 290



(a + b + c) + 80 + n = 290 (where n is ≥ 0)

(Sp + Man – b + 80 + n = 290

(220 – b) + 80 + n = 290

10 + n = b

Number of students who study Spanish but not Mandarin = a = 120 – b = 120 – (10 + n) = 110 – n, which is at most 110 and at least 20.

Choice (D)

73. A right circular cylinder has a height of 15 and a radius of 7. A rectangular solid with a height of 12 and a square base is placed in the cylinder such that each of the corners of the solid is tangent to the cylinder wall. Liquid is then poured into the cylinder such that it reaches the rim. The volume of the liquid is

A. $147(5\pi - 8)$

B. $180(\pi - 5)$

C $49(5\pi - 24)$

D. $49(15\pi - 8)$

Solution:

Volume of the liquid = Volume of the cylinder – Volume of the rectangular solid = $\pi (7)^2 (15)$ – 12 (Base area)

= 735 π – 12 (Area of the square inscribed in the circular base of the cylinder whose radius is 7)

$$= 735\pi - 12\left(\frac{\text{Diameter of circular base}}{\sqrt{2}}\right)^2$$

$$= 735\pi - 12\left(\frac{14}{\sqrt{2}}\right)^2$$

$$= 735\pi - 12\left(7\sqrt{2}\right)^2 = 147\,(5\pi - 8)$$

Choice (A)

74. A reputed paint company plans to award prizes to its top three salespersons, with the highest prize going to the top salesperson, the next highest prize to the salesperson and a smaller prize to the third-raking salesperson. If the company has 15 salespersons how many different arrangements of winners are possible (Assume there are no ties)?

A. 1728

B. 2730

C. 3856

D. 1320

Solution:

Number of different arrangements of winners = 15.14.13 = 2730 Choice (B)

75. What is the sum of the integers 54 through 196 inclusive?

A. 28,820

B. 24,535

C. 20,250

D. 17,875

Solution:

Sum of the integers 54 through 196 both inclusive = (1 + 2 +. . . + 196) – (1 + 2 . . . .+ 53)

$$= \frac{196.197}{2} - \frac{53.54}{2} = 17875$$ Choice (D)

76. The student mess committee of a reputed Engineering College has n members. Let P be the event that the Committee has students of both sexes and let Q be the event that there is at most one female student in the Committee. Assuming that each committee member has probability 0.5 of being female, the value of n for which the events A and B are independent is

A. 2
B. 3
C 4
D. None of the above

Solution:

P = (Number of ways in which the committee can have students of both sexes) $(0.5)^n$ ($\because$ prob (a student being male) = prob (a student being female) = 0.5) = $({}^nC_1 + {}^nC_2 \ldots . {}^nC_{n-1})\ (0.05)^n = (2^n - 2)\ (0.5)^n$

Q = prob (0 female) + prob (1 female) = $(0.5)^n + {}^nC_1 (0.5)^n (0.5)^n (1 + n)$

The events P and Q are independent when prob(P), prob(Q) = prob($p \cap Q$)

prob ($P \cap Q$) = prob (1 female) = ${}^nC_1 (0.5)^n$

$((2^n - 2)\ (0.5)^n)\ ((0.5)^n\ (1 + n)) = n(0.5)^n$

$\frac{2^n - 2}{2^n} = \frac{n}{1+n}$ i. e $1 - \frac{1}{2^{n-1}} = \frac{n}{1+n}$

$\frac{1}{1+n} = \frac{1}{2^{n-1}}$ i,e $2^{n-1} = 1 + n$

n = 3 is a solution of this equation.

Choice (B)

77. A multi-storied office building has a total of 17 rows of parking spaces. There are 20 parking spaces in the first row and 21 parking spaces in the second row. In each subsequent row, there are 2 more parking spaces than in the previous row. The total number of parking spaces in the office building is

A. 380 B. 464 C. 596 D. 712

Solution:

Number of parking spaces in the office building = 20 + (21 + 23 + 25 +.....16 terms) = 20 + (Sum of the 16 terms of an AP whose first term is 21 and common difference is 2) = $20 + \frac{16}{2}(2(21) + (15)(2)) = 596$.

Choice (C)

78. The highest number amongst $\sqrt{2}$, $\sqrt[3]{3}$ and $\sqrt[4]{4}$ is

A. $\sqrt{2}$ B. $\sqrt[3]{3}$

C $\sqrt[4]{4}$ D. All are equal

Solution:

$\sqrt{2} = 2^{\frac{1}{2}}$

$\sqrt[3]{3} = 3^{\frac{1}{3}}$

$\sqrt[4]{4} = 4^{\frac{1}{4}} = 2^{\frac{1}{2}}$

$2^{\frac{1}{2}} = 2^{\frac{3}{6}} = \left(2^3\right)^{\frac{1}{6}}$ and $3^{\frac{1}{3}} = 3^{\frac{2}{6}} = \left(3^2\right)^{\frac{1}{6}}$

$2^{\frac{1}{2}} = 8^{\frac{1}{6}}$ and $3^{\frac{1}{3}} = 9^{\frac{1}{6}}$

$9 > 8$

$9^{\frac{1}{6}} > 8^{\frac{1}{6}}$ i,e $3^{\frac{1}{3}} > 2^{\frac{1}{2}}$

$3^{\frac{1}{3}}$ is the greatest i.e highest.

Choice (B)

79. In an MBA entrance examination, a minimum is to be secured in each of the 6 sections to qualify the cut-offs. In how many ways can a candidate fail to secure the cut-offs?

A. 60 B. 61 C. 62 D. 63

Solution:

Let us denote the 6 sections by S1, S2, ...,S6.

Denoting F as failure of securing the minimum and S as success for the same, the outcomes in S1, S2, ... S6, can be FFFFFF, FFFFFS, FFFFSF, ...,SSSSSS.

Number of outcomes possible = 2^6 = 64. Of these, only SSSSSS would mean the cutoff is secured in each section.

$\therefore$ Number of ways in which the candidate can fail to secure the cutoffs in at least one section = 64 – 1 = 63.

Choice (D)

80. The sum of 4 + 44 + 444 + ... upto n terms is

A. $\frac{40}{81}(8^n - 1) - \frac{5n}{9}$

B. $\frac{40}{81}(8^n - 1) - \frac{4n}{9}$

C. $\frac{40}{81}(10^n - 1) - \frac{4n}{9}$

D. $\frac{40}{81}(10^n - 1) - \frac{5n}{9}$

Solution:

4 + 44 + 444 + ...upto n terms

$=4\ (1 + 11 + 111 + \ldots.)$

$=4\left(\frac{1}{9}(9 + 99 + 999 + \ldots..)\right)$

$= \frac{4}{9}(10 - 1 + 10^2 - 1 + 10^3 - 1 + \ldots..\text{upto n terms})$

$= \frac{4}{9}\left(\frac{10(10^n - 1)}{10 - 1} - n\right) = \frac{40}{81}(10^n - 1) - \frac{4}{9}n$

Choice (C)

81. Suppose the two sides of a squares are along the straight lines 6x – 8y = 15 and 4y – 3x = 2. Then the area of the square is

A. 2.52 Sq. units
B. 3.61 Sq. units
C. 4.33 Sq. units
D. None of the above

Solution:

The straight lines given are 3x – 4y = 7.5 and 4y – 3x = 2 i,e 3x – 4y = – 2.

These are parallel.

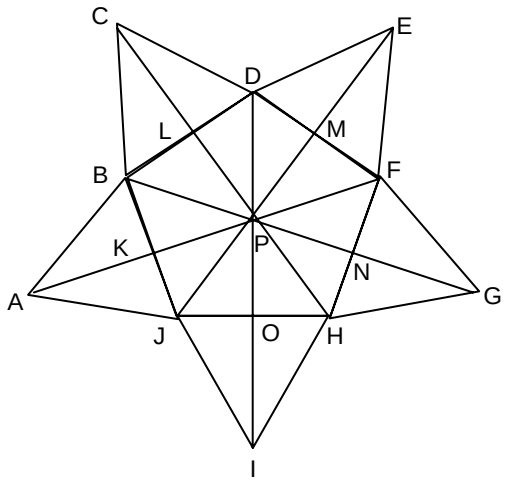
As two sides of the square are along parallel lines, the side of the square is the distance between these i.e $\frac{7.5-(-2)}{\sqrt{3^2+(-4)^2}}$ ie, 1.9 units

Area of the square = 1.9^2 = 3.61 sq units

Choice (B)

SECTION – 4 (Part -1)

Directions for questions 82-85: Based on the figure given below, the relationship of the terms to the right of : : is same as that one of the left. Find the missing terms.



82. GHF : CDB : : EFD : ?
A. ABJ B. CBD C. IJH D. AJB
Solution:
In the first pair, the line CD in second term extends to the point G of the first term. Similarly the line either IH or AB extends to the point E of the first term in second pair. Hence ABJ is the correct answer. Choice (A)

83. HNP : PDA : : DLP : ?
A. CDP B. PJG C. PHE D. PME

Solution:
All set of vertices are in relation to P, the central point in the diagram.
In the first pair: The second term is a triangle formed with the lines passing through P and the points adjacent to N and H on either side of triangle PNH, i.e. FA and ID. Hence the second term in first pair is PDA.

Similarly, point adjacent to D is M (on MJ), and that to L is B (on BG). The required triangle will be PGJ or PJG. Choice (B)

84. AKJO : IOHN : : ? : CLBK
A. LDME B. EMGH C. EMDL D. CLDM

Solution:
Is anti-clockwise next vertex to A.
O (on IP) analogous to K (on AP)
H is anti-clockwise to O analogous to J being so to K.
O is anti-clockwise to J analogous to N being so to H.

Similarly,
C is anti-clockwise next vertex to **E**.
L (on CP) analogous to **M** (on EP)
B is anti-clockwise to L analogous to **D** being so to M.
K is anti-clockwise to B analogous to **L** being so to D.

Hence, required term is EMDL. Choice (C)

85. BPM : GNJ : : ? : AKD
A. FPO B. KPD C. HPB D. FPM

Solution:
G and N are the points on the line BP extended.
J is the point on the line MP extended.
Similarly,
A and K are the points on the line FP extended.
D is the point on the line OP extended.
The required term is OPF or FPO. Choice (A)

Directions for questions 86-88: Read the information provided and answer the questions which follow.

In one of the islands of Neverland, people from two tribes exists namely A and B. On the island there is no other tribe except these two. The activities of these tribes are governed by rigid norms and are strictly obeyed for marriages. The norms are:

- The people of one tribe cannot marry any other member of their own tribe though they can marry people from other tribe.
- After being married, each male member ceases to be a member of that tribe in which he was born and becomes the member of the tribe to which his wife belongs.
- The females continue to remain members of the tribe in which they were born even after marriage.
- On birth, the child becomes the member of the mother's tribe.
- The males become members of the tribe in which they were born when they become divorcee or widower.
- As per norms, nobody can have more than one spouse at a given point of time.

86. A female in tribe B can have
a. Maternal Grandmother born in tribe A
b. Paternal Grandmother born in tribe A

A. Only a can be true
B. Only b can be true
C. Both a and b are true
D. Neither a nor b can be true

Solution:
A female (say F) born in tribe B, will have a father born in tribe A and mother born in tribe B.
Thus F's maternal grandmother will be of tribe B and paternal grandmother will be of Tribe A.
Only b is true. Choice (B)

87. A boy born in tribe B
A. Can have his daughter in tribe B
B. Can have his daughter in law in tribe A
C. Can have uncle from any tribe
D. Can have a divorced son in tribe B

Solution:
A boy born in tribe B, can only marry a girl of tribe A, his children will be of tribe A, his daughters-in-law will be of tribe B, and his son, if divorced, will belong to tribe A. Hence (A), (B) and (D) are false.

A boy born in tribe B, will have a father born in tribe A.
Any unmarried/ widower/ divorced brother of his father will belong to tribe A, and that of his mother belong to tribe B. Hence, he can have an uncle in any tribe. Choice (C)

88. Which of the following marriages are not permissible as per norms
A. Any widower marries his wife's sister
B. Any widow marries the former divorced husband of her daughter
C. Any girl of tribe B marries her mother's brother
D. Any widower born in tribe A marries his brother's widow

Solution:
Choice (A): A widower will belong to a tribe other than that of his wife, hence, he can marry his wife's sister.
Choice (B): A divorced son-in-law of a woman (say W) will belong to the other tribe, hence W can marry that person.
Choice (C): A woman cannot marry her maternal uncle because they both belong to the same tribe.
Choice (D) : A widower born in tribe A belongs to tribe A. He can marry his brother's widow who alwys belongs to tribe B.

Hence Choice (C) is not permissible.
Choice (C)

Directions for questions 89-92: On the basis of the information provided, answer the questions below.

Six friends Ana, Belle, Cinderella, Diana, Elsa and Ferida are sitting on the ground in a hexagonal shape discussing their trades i.e. cook, hairdresser, washerwoman, tailor, carpenter and plumber. All the sides of the hexagon are of the same length, The seating arrangement is subject to following conditions.

- Ana is not adjacent to the hairdresser or Cinderella
- The tailor is not adjacent to Cinderella or Elsa but adjacent to Ana
- Hairdresser and Cinderella are adjacent to each other.
- Plumber is in the middle of tailor and Cinderella in a clockwise direction.
- Cook is adjacent to the Carpenter who is adjacent to Belle in an anti-clockwise direction.
- Ferida is a plumber and Elsa is adjacent the cook.
- In a clockwise direction, the washerwoman is followed by the hairdresser.

89. Who is at the same distance from Diana as carpenter is from Diana?
A. Belle B. Cinderella
C. Tailor D. Plumber

90. If one neighbor of cook is Elsa, who is the other?
A. Cinderella B. Diana
C. Belle D. Ferida

91. What are the trades of Diana and Elsa?
A. Tailor and Carpenter
B. Cook and Carpenter
C. Tailor and Washerwoman
D. Tailor and Plumber

92. Who is sitting opposite to the plumber?
A. Ana
B. Elsa
C. Diana
D. Cinderella

Solutions to question 89-92:

Plumber (Ferida) is in the middle of the tailor and Cinderella in clockwise direction. And tailor is adjacent to Ana. Thus we get Ana opposite Cinderella.
Further given that Hairdresser is to the left of Washerwoman (clockwise direction). As Ana is not adjacent to hairdresser, hairdresser has to be second to the right of Ana, with washerwoman (Cinderella) to the right of hairdresser. Bella, the carpenter and the cook sit in the same order in anti-clockwise direction, i.e. Bella is to the right of the carpenter, who is to the right of the cook. The only possible arrangement is Ana is the cook, Elsa is the carpenter and Bella is the hairdresser.
Diana will be the tailor.
The arrangement is as follows.

89. Cinderella is two places away from Diana as is the carpenter. Choice (B)

90. Diana is the neighbour of Anna, the cook. Choice (B)

91. Diana is a tailor and Elsa is a carpenter. Choice (A)

92. Elsa, the carpenter is opposite the plumber. Choice (B)

Directions for questions 93-95: On the basis of the information provided, answer the questions below.

A, B, C, E, F, G and H are 7 employees in an organisation working in different departments of Administration, Finance and Logistics. There are at least two employees in each departments. Out of these 7, 3 are females and one is in each department. Each employee gets a different salary. F works in Administration and his only other colleague G earns the maximum. C, the least earner works in Finance. B and E are brothers and are not in the same department. A, husband of H, works in finance and earns more than F, B and E. The wife in the couple earns more than the husband.

93. In which of the departments, does a group of 3 work?
A. Logistics
B. Logistics or Administration
C. Administration or Finance
D. Finance or Logistics

94. Which of the following statement is true?
A. B earns less than A and H
B. B earns less than F and H
C. F earns more than B and E
D. B earns more than E and C

95. In descending order of income, H is at which position?
A. 2 B. 3 C. 5 D. 1

Solution for questions 93-95:

At least two out of the seven works in one of the three departments, implies that at most three work in a department.

F is in administration and **his** only other colleague is G, implies F has only one colleague. Thus Administration department comprises two persons.

A (in finance) is the husband of H.
C (lowest earner) works in finance.

B and E are brothers.
We now know, B, E, A and F are male.
=> H, C (finance) and G (administration) are females.
Thus H has to be in Logistics Dept. One of the brothers B and E works in logistics dept. The other must work in the finance department.

G is the highest earner and C is the lowest earner. H earns more than A. A earns more than F, B and E. The relation between salaries of F, B and E is not given.

Their arrangement is tabulated below:

Department	Male	Female
Administration	F	G
Finance	A and (B or E)	C
Logistics	E or B	H

Salary: G > H > A > __ > __ > __ > C.

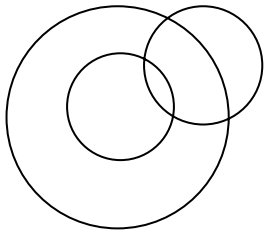
Comparison of salaries of F, B and E cannot be determined from the given data.

93. Group of three is working in the finance department. Choice (C)*

94. 'B earns less than A and H' is true. Choice (A)

95. H is in the second position. Choice (A)

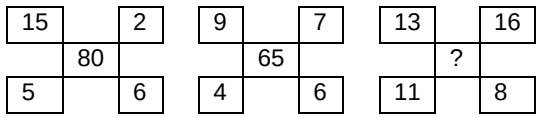
96. The diagram below, explains which of the given relationship



A. Judge, Thief, Criminal
B. Tea, Coffee, Beverages
C. Males, Fathers, Doctors
D. Cabinet, Minister, Home Minister

Solution:
All fathers are males. Some doctors are males.
Choice (C)

97. Insert the missing number



A. 35 B. 48 C. 72 D. 120

Solution:
Value in the central cell is the product of difference of the numbers in the one column and sum of the numbers in the other column.
(13 – 11) x (16 + 8) = 48.
Choice (B)

98. In the following question, one term in the number series is wrong. Find out the wrong term.
10, 26, 74, 218, 654, 1946, 5834
A. 654 B. 26 C. 1946 D. 218

Solution:
$t_{n+1} = (t_n \times 3) - 4$.
$218 \times 3 - 4 = 650$;
$650 \times 3 - 4 = 1946$.
Hence , the wrong number is 654. Choice (A)

99. In the question below, three incomplete rows of letters/numerals are given which correspond to each other in some way. Find the letters/numerals which come in the vacant places marked by "?"

_	A	D	A	C	B	_	_	B	D	C	C
1	3	_	_	1	2	4	2	_	_	_	_
a	_	_	b	_	_	c	d	?	?	?	?

A. a, c, d, d, B. d, a, c, c C. c, a, d, d D. d, c, a, a

Solution:
From the values in the columns, we can observe the following pattern.

Value in First row	C	B
Implies value in second row	1	2

Value in second row	1	2
Implies Value in third row	a	d

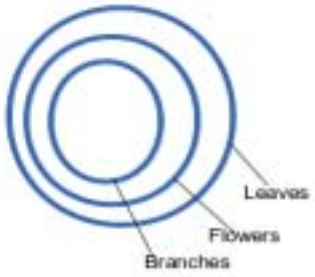
From above, if values in first row = B, C, C, then values in third row = d, a, a,.
We cannot deduce, from the given information, value in third row when value in first row is D.
Among the alternatives, only d, c, a, a, matches the above pattern Choice (D)

100. Choose the conclusion which logically follows from the given statement irrespective of commonly known facts.
Statement: All branches are flowers. All flowers are leaves

Conclusion: I. All branches are leaves
II. All leaves are branches
III. All flowers are branches
IV. Some leaves are branches

A. None follows
B. Only I and IV follow
C. Only II and III follow
D. All follow

Solution:
The given statements can be represented in the basic diagram below.



Conclusion I, affirmative follows.
Conclusion II, affirmative, does not follow.
Conclusion III, affirmative, does not follow.
Conclusion IV, affirmative, follows.
Hence only Conclusions I and IV follow. Choice (B)

Directions for questions 101-103: On the basis of the information provided, answer the question below.

Eight doctors P, Q, R, S, T, U, V, and W of the same family i.e. father, mother, father's sister, mother's brother, 2 daughter and 2 sons visit a clinic every day for one hour each except on Monday which is a holiday. The timings are 9 am to 1 pm and 2 pm to 6 pm, with lunch time from 1 pm to 2 pm. Each has different specialisation namely Cardiologist, Orthodontist, Neurologist, Paediatrician, Gynaecologist, Urologist, Radiologist and General Physician.

- No doctor visits the clinic before doctor Q and after doctor U.
- The Orthodontist visits right after lunch and is followed by R who is female.
- The mother comes in at the same place before lunch as the younger son P after lunch.
- The General Physician is the sister of Urologist's father and is last to visit before lunch.
- The Cardiologist is the first while the elder daughter is the last to visit.
- T is the mother's brother of U and visits between the father and mother.
- Before 1 pm, V comes after the Radiologist, who is second to visit during the day.
- S, the mother comes at 11 am after the father.
- The Neurologist is at the same place after lunch as the Gynaecologist before lunch and comes right after Urologist.

101. The General Physician is a _____ and comes at _____
A. Female, 11 am
B. Female, 12 noon
C. Male, 11 am
D. Male, 12 noon

102. R is a _____ by specialisation and is Cardiologist's _____
A. Orthodontist, Sister
B. Pediatrician, Daughter
C. Urologist, Mother
D. Urologist, Daughter

103. If lunch break and subsequent working hours are reduced by 15 minutes on Wednesday, then Doctor U who is _____ and Cardiologist's _____ will reach the clinic at _____
A. Radiologist, Sister, 3:15 pm
B. Urologist, Daughter, 4:15 pm
C. Paediatrician, Daughter, 5:45 pm
D. Paediatrician, Daughter, 4:15 p

Solutions for questions 101-103:

The given information can be tabulated as below:

Time	**Person - gender**		**Specialisation**
9 - 10	Q		Cardiologist
10-11	T male	Mother's brother of U	Radiologist
11-12	S female	mother	Gynaecologist
12-01	V female	Sister of Urologist's father	General Physician
01-02	LUNCH		
02-03	W		Orthodontist
03-04	R female		Urologist
04-05	P male	Younger son	Neurologist
05-06	U female	Eldest daughter	

From the above,
As T visits between the father and the mother, Q is the father.
R will be youngest daughter, while W will be he elder son.
The only specialisation left out is Paediatrician which is U.

101. V, the General Physician is a female, comes at 12 noon. Choice (B)

102. R is a Urologist and is Cardiologist's youngest daughter. Choice (D)

103. Dr U, the paediatrician comes at the last. i.e 4 pm.
Between 2 pm to 6 pm, when the timings are reduced to 45 minutes per doctor, the fourth doctor will visit at 4.15 pm. Choice (D)

SECTION - 4(Part - 2)

Directions for questions 104-108: After receiving the disturbing news of falling standards the supreme Council of Confederation of Five kingdoms is considering to conduct joint entrance examination for all students in these kingdoms for Vaidya Ratna course. As a first step, it has been decided to review the past 5 year data about the individual entrance examination of the kingdoms so that an appropriate action can be taken. Study the table given below and answer the questions.

		Anga	Banga	Chedi	Dwarka	Gandhar
2012	Appeared	3000	4000	2600	6000	4500
	Passed	850	640	468	780	765
2013	Appeared	5500	4500	2500	8000	3500
	Passed	770	810	275	1120	595
2014	Appeared	6000	6500	1900	6500	4500
	Passed	1200	1235	266	715	810
2015	Appeared	5000	5500	2500	5500	4000
	Passed	750	880	275	935	520
2016	Appeared	7000	6000	2000	7000	6000
	Passed	1190	660	400	1330	1200

104. What is the overall pass percentage from Anga kingdom for all the years together?
(A) 16.7 (B) 17.5 (C) 18.7 (D) 15.5

Solution:
Overall pass percentage

$= \frac{850+770+1200+750+1190}{5000+5500+6000+5000+7000}$

$= \frac{4760}{8500}\times 100 = 16.7\%$ Choice (A)

105. In which of the following years, total number of candidates passed from all the kingdoms is lowest?
(A) 2012 (B) 2013 (C) 2014 (D) 2015

Solution:
The total number of candidates passed from all the kingdoms in the different years are
2012 – 3503
2013 – 3570
2014 – 4226
2015 – 3360
The lowest is in 2015. Choice (D)

106. In which of the following years, Banga kingdom recorded highest pass percentage?
(A) 2012 (B) 2013 (C) 2014 (D) 2016

Solution:
The pass percentage recorded by the Banga kingdom in the different years are

2012 = $\frac{640}{4000} = 16\%$

2013= $\frac{810}{4500} = 18\%$

2014 = $\frac{1235}{6500} = 19\%$

2015 = $\frac{880}{5500} = 16\%$

The highest pass percentage was in 2014.
Choice (C)

107. What is the overall pass percentage of all the kingdoms together in the year 2013?
(A) 13.88 (B) 14.88 (C) 15.88 (D) 16.88

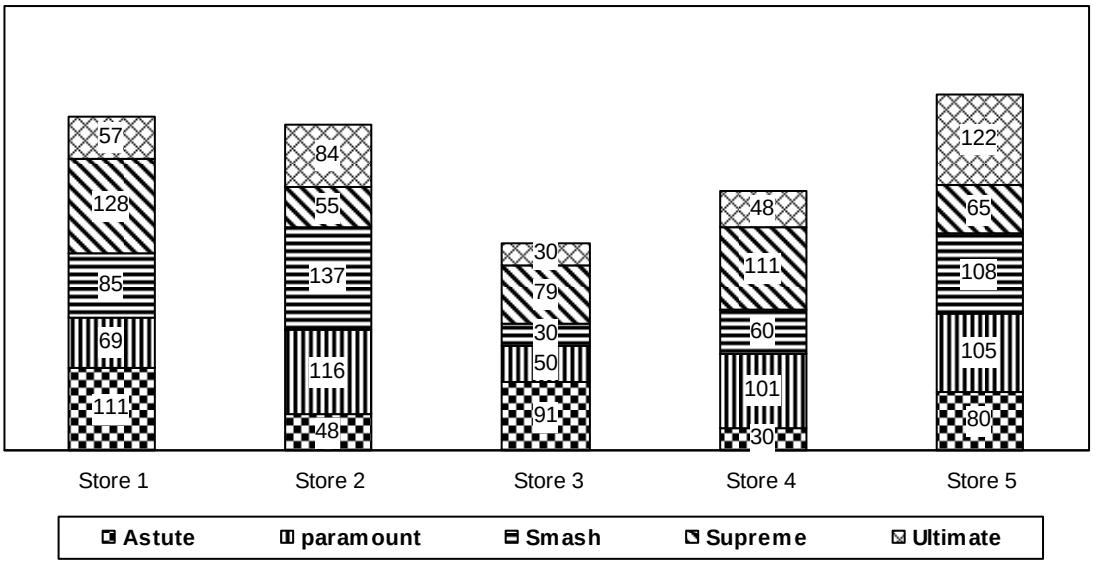
Solution:
Total passed in 2013 = 3570
Total appeared in 2013 = 24000
The pass percentage

$= \frac{3570}{24000}\times 100 = 14.87\%.$ Choice (B)

108. Highest number of candidates passed are from which of the following kingdoms for all the years together?
(A) Anga
(B) Banga
(C) Gandhar
(D) Dwarka

Solution:
The number of candidates who passed from the different kingdoms is as follows
Anga – 4760
Banga – 4225
Dwarka – 4880
Gandhar – 3890
The highest was in Dwarka.
Choice (D)

Directions for questions 109-113: T-Nations, a T-Shirt manufacturing company has unleashed 5-5-5 strategy, five brands (Ultimate, Supreme, Smash, Paramount, Astute), five sizes (S, M, L, XL, XXL), and five stores (S1, S2, S3, S4, S5) to capture New Delhi market. Number of T-Shirts in each of the store is given in the stacked bar chart below.



Note: Visibility of a brand in a store is given by number of T-Shirts of the brand in the store by total number of T-Shirts in the store. Visibility across the stores is measured by sum of the scores of visibility of a brand in a store.

109. Which brand of T-Shirt has more visibility across the stores?
(A) Astute
(B) Supreme
(C) Paramount
(D) Smash

Solution:
The visibility of different brands across stores is as follows
Astute = 0.2466 + 0.1098 + 0.325 + 0.0857 + 0.1666 = 0.9329
Supreme = 0.2844 + 0.125 + 0.2821 + 0.3171 + 0.1354 = 1.144
Paramount = 0.1533 + 0.2636 + 0.1785 + 0.2885 + 0.2187 = 1.1026
Smash = 0.1888 + 0.3113 + 0.1071 + 0.1714 + 0.225 = 1.0036
The highest is for Supreme.

Choice (B)

110. Which brand has lowest visibility score in any of the stores?
(A) Astute
(B) Smash
(C) Paramount
(D) Ultimate

Solution:
Astute in store 4 had a visibility of 0.0857, which is the lowest in any of the stores.

Choice (A)

111. Suppose, size M constitutes 22% of all T-Shirts owned by T-nation. It is also given that 'size M T-Shirts' in stores 1, 2 and 5 are 10% of the total T-Shirts in these stores. Then, the total number of T-Shirts of size M in store 4 cannot be less than
(A) 23 (B) 28 (C) 32 (D) 44

Solution:
10% of T-Shirts in stores 1, 2 and 5 would be 137 T-Shirts .
As total size M T-Shirts is $\frac{22}{100}\times 2000 = 440$, even if all the T-Shirts in store 3 (280) are of size M, at least 440 – (280 + 137) = 23 T-Shirts in store 4 must be size M.

Choice (A)

112. What is the approximate share of Supreme brand in all stores together?
(A) 19 (B) 22 (C) 18 (D) 20

Solution:
Total T-Shirts of Supreme brand = 438
Total T-Shirts in all the stores together = 2000.
The required share = $\frac{438}{2000}\times 100 = 22\%$.

Choice (B)

113. Approximately, by what percentage are Smash T-Shirts greater than Ultimate T-Shirts in all the stores together?
(A) 79 (B) 50 (C) 35 (D) 23

Solution:
Total number of Smash T-Shirts = 420
Total number of Ultimate T-Shirts = 341
The required percentage = $\frac{79}{341} \times 100 = 23.1\%$
Choice (D)

Directions for questions 114-118: Given below is the data about Domestic Investment (DI) and foreign Investment (FI) in 9 different sectors over 5 year period.

(In Rs. Crores)

Sectors	2009		2010		2011		2012		2013	
	DI	FI	DI	FI	DI	FI	DI	FI	DI	FI
Basic Materials	1500	800	1500	1300	2500	1400	2000	900	2500	800
Communication services	2000	1400	1200	1000	1600	1100	1000	300	500	1200
Consumer Cyclical	1000	1500	1200	1500	1100	3000	500	700	900	1900
Consumer Defensive	1300	1000	700	1600	1500	800	2000	500	1800	1600
Energy	800	1200	500	1400	700	2500	600	1000	1100	500
Financial Services	1800	500	400	2000	1200	1600	1000	1500	700	1400
Healthcare	2000	3000	600	3000	400	6000	1000	1500	3500	600
Real Estate	500	2000	1000	1500	4000	3000	6000	1500	2000	2100
Technology	1500	2500	1000	2800	1500	5000	1200	2000	3000	4000

Note: DI = Domestic Investment; FI = Foreign Investment

114. What is the approximate ratio of the total investment in Energy sector to that of Financial services sector?
(A) 1 : 1.2 (B) 3 : 4.5 (C) 1 : 0.5 (D) 2 : 3.8

Solution:
The total investments in Energy sector = 10, 300 crores
The total investments in Financial sector = 12,100 crores.
The required ratio = 1 : 1.2 Choice (A)

115. Absolute difference between the Total DI and Total FI is highest for which sector?
(A) Technology (C) HealthCare
(C) Basic Material (D) None of the above

Solution:
The total DI and total FI for the different sectors are

Sector	DI	FI
Basic material	10.0	5.2
Consumer Services	6.3	5.0
Consumer Cyclical	4.7	8.6
Consumer Durables	7.3	5.5
Energy	3.7	6.6
Financial Services	5.1	70.
Healthcare	7.5	14.1
Real Estate	13.5	10.1
Technology	8.2	16.3

The highest is for Technology. Choice (A)

116. In which year the average DI is the highest?
(A) 2013 (B) 2011 (C) 2010 (D) 2009

Solution:
The total DI (in thousand crores) in the different years are as follows
2009 – 12.4
2010 – 8.1
2011 – 14.5
2012 – 15.3
2013 – 16.0
As the total is highest in 2013, the average would be highest in that year. Choice (A)

117. Which Sector has received the 2nd lowest investment from DI for the total period?
(A) Consumer cyclical
(B) Consumer durable
(C) Energy
(D) None of the above

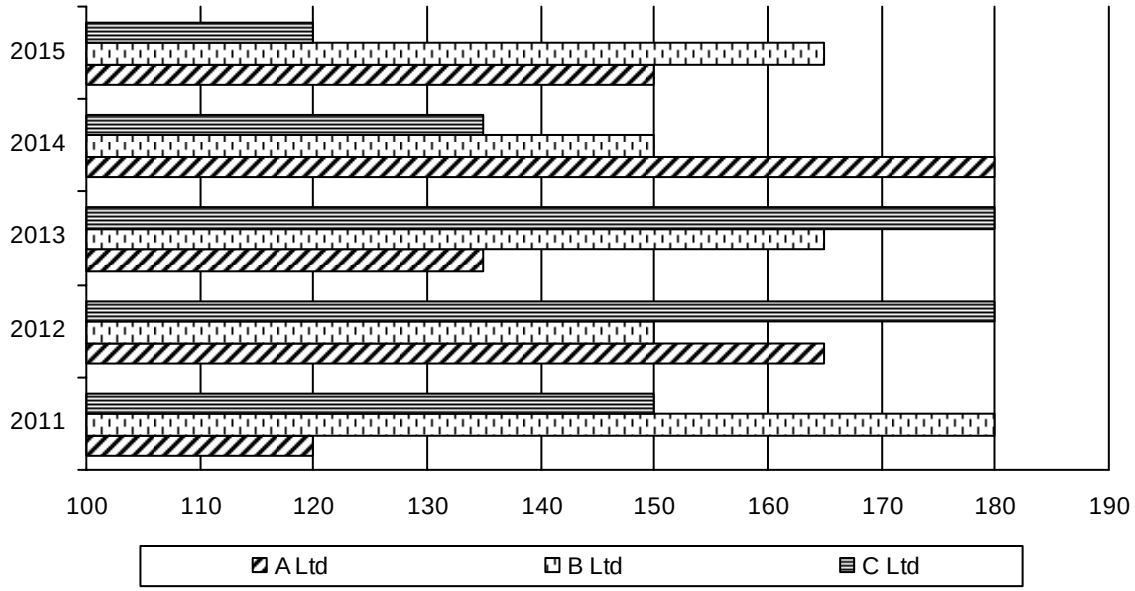
Solution:
As seen in the table in Q.115, the second lowest investment from DI was in Consumer Cyclical. Choice (A)

118. What is the approximate ratio of total DI to total FI
(A) 1 : 1.10 (B) 2 : 2.36
(C) 0.75 : 1 (D) 0.75 : 1.5

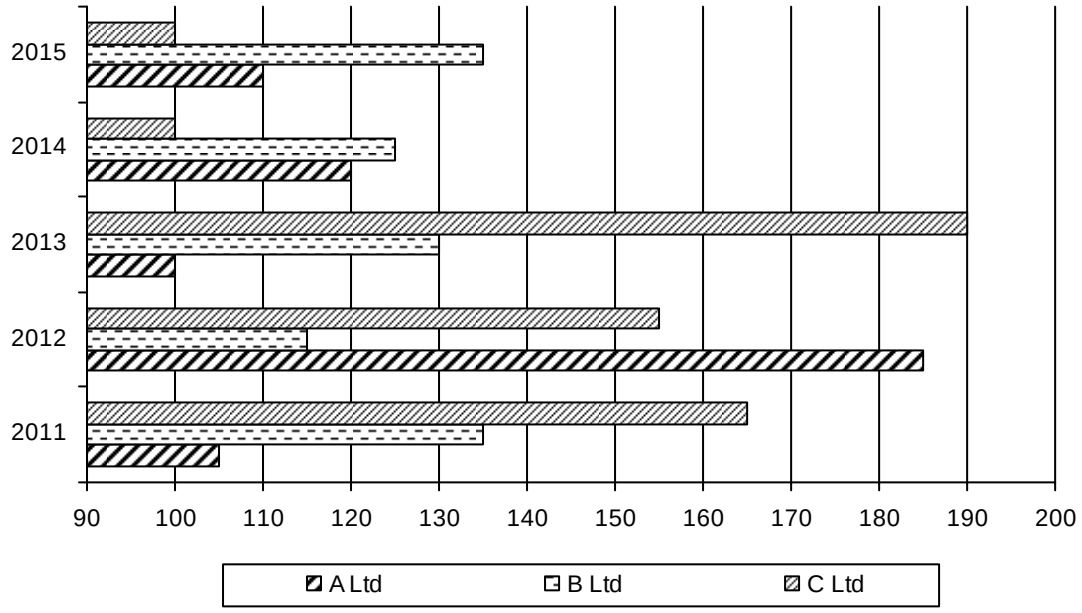
Solution:
The total DI = 66.3 (thousand crores)
The total FI = 78.4 (thousand crores)
The approximate ratio = 2 : 2.36.
Choice (B)

Directions for questions 119-123*:* The following 2 bar charts represent revenues and expenses (in thousands) of A Ltd, B Ltd, and C Ltd over a period of five years.

Revenues of A Ltd, B Ltd, C Ltd for the period 2011-2015



Expenses of A Ltd, B Ltd, C Ltd for the period 2011-2015



Profit = Revenues – Expenses

119. For which company, the average annual expenses were maximum in the given period?
(A) A Ltd
(B) B Ltd
(C) C Ltd
(D) Both A Ltd and B Ltd

Solution:
The total expenses of the companies in the given period are
A - 620
B - 640
C - 710
The highest is for company C. Choice (C)

120. For which year, the average annual revenue (considering all three companies) was the maximum?
(A) 2011 (B) 2012 (C) 2013 (D) 2014

Solution:
The total revenue of all the three companies in the different years are as follows
2011 – 450
2012 – 495
2013 – 480
2014 – 465
The highest is in 2012. Choice (B)

121. What was the approximate percentage decline in the revenue of C Ltd in 2015 as compared to the revenue in 2012?
(A) 16 (B) 25 (C) 33 (D) 40

Solution:
The revenue of C Ltd in 2015 = 180
The revenue of C Ltd in 2012 = 120
The decline = $\frac{60}{180} \times 100 = 33\%$
Choice (C)

122. What was the approximate absolute difference between the average revenue of A Ltd in 2011, 2012 and 2013 and the average revenue of B Ltd in 2013, 2014 and 2015?
(A) 20 (B) 160 (C) 20000 (D) 26000

Solution:
The revenue of A Ltd in 2011, 2012 and 2013 together = 120 + 165 + 135 = 420 (thousand)
The revenue of B Ltd in 2013, 2014 and 2015 together = 165 + 150 + 165 = 480 (thousand)
The difference in average revenue
$= \frac{480 - 420}{3} = 20$ (thousand)
Choice (C)

123. For which of the following years the percentage of rise/fall in profit from the previous year was the maximum for A Ltd?
(A) 2012 (B) 2013 (C) 2014 (D) 2015

Solution:
The profit/loss of A Ltd for the different years are as follows
2011 – 15 thousand
2012 – (– 20) thousand
2013 – 35 thousand
2014 – 60 thousand
2015 – 40 thousand
The percentage rise/fall in the absolute value was maximum in 2013. Choice (B)