MBA 2021 – EXAMINATION PAPER

PART I

Directions : This section comprises two passages. After each passage questions consisting of items relating to the preceding passage are given. Evaluate each item separately in terms of the respective passage and choose your answer as per the following guidelines :

a) If the item is a MAJOR OBJECTIVE in making the decision; that is, the outcome or result sought by the decision maker.

b) If the item is a MAJOR FACTOR in arriving at the decision; that is basic in determining the decision.

c) If the item is a MINOR FACTOR in making the decision; a less important element bearing the decision.

d) If the item is a MAJOR ASSUMPTION made deliberately; that is a supposition or projection made by the decision maker before considering the factors and alternatives.

PASSAGE - I

On 24 January, DuPont's 150 acre campus style Experimental station in Wilmington, Delaware hosted US President George Bush he stopped by at the high-Tech R & D Centre to follow up on his state of the Union address, in which he set the country an aggressive goal of 20 Billion Gallon of Bio fuel production by 2020, to learn how the US might go about achieving the stiff target.

Everyone at DuPont was pleasantly surprised. Though set up over 200 years ago, this DuPont's first Presidential visit. And yet, as his motor car drove out of Wilmington, that afternoon, It was Bush who was perhaps more moved than any other on that campus . At the experimental station (ES), Bush met the head and chief science and technology officer of the world's largest chemical maker, 59 Year Old Uma Choudhary. The first women ever to first occupy that position.

As she took him through the rehearsed tour of the facility, Bush asked Choudhary when she came to US. "I came to US in 1968 with 8 Dollars in my pocket", she replied. "He immediately want to put his arms around me have a picture taken of the two of us". Choudharys' is the classic Cinderella story -swap magic with hard work and nerve and Fairy godmother with uncle Sam. S Growing up in the middle class family she learnt to aim high at young age.

Her stock broker father wanted to be Doctor but could not because he had to support his family. He drove Choudhary the youngest of the three children to excel at school, insisted that she "Go and get the best education the world has to offer". A few years later in 1968, a saree clad, 20 years old physics graduate from the Indian Institute of Science had set out the "land of opportunity" where she could materialize a dream of becoming nuclear physicist.

It was a courageous decision when few women left Indian shores to get a career in science in the 1960s. "It changed my life hopes and aspirations,". Says the Janky, bespectacled executive. Somewhere down the line, the sarees gave way to American business suits and mandarin collars.

WONDER YEARS

Coming to the US and discovering a world of excellence in science that she had not experienced before, became the turning point in Choudhary's life. The entrepreneurial mindset, the can-d attitude, and diligent application of minds she met fascinated her. Professors at the universities became role models for life. Impressing her with their ability to motivate people to achieve their goals and instilling in her a deep desire to remain as knowledgeable about science. Decades later, at DuPont, she would combine both to command the regard of her team of over 5,000 scientists across 75 R & D centers' worldwide.

Choudhary had met her prince Charming, Vinay, during her college years in Mumbai. He followed her to the US two years after she had left. The two were married there. After Choudhary received her M.S in engineering science from Caltech, California in 1970, the couple moved to Cambridge, Massachusetts as Vinay wanted to study at

Harvard. She got a PhD in material science from MIT in 1976. A year later both joined DuPont, where Vinay went on to become CEO and founder of Qualicon, a DuPont subsidiary into food safety testing. After 23 years in DuPont, Vinay retired to consult will bio tech start ups.

Choudhary had started out as a research scientist at the ES (Experimental Station) she now heads. There went hardly any women from India at DuPont then. It took her about ten years to became the lead researcher in developing ceramic super conducting materials. DuPont get 20 different patent for products based on her research in this field, turning it into what her peers can a niche for the company.

It was not smooth sailing all along - the apparel market shifted to Asia by the time Choudhary got on stem DuPont's European plant for intermediates to its non divested Lycra business- but setbacks did not get her way.

LAUNCHING INTO LEADERSHIP

Established over hundred years ago in 1903, the ES was designed to diversify DuPont from explosives into new industries through research. It has now become the Company's lifeline. Like for DuPont, the ES (Experimental Station) became a launch pad for Choudhary's transition too - to management. She took charge of the ES in June 2000. Since then, she has been piloting the 1.4 billion dollars a year R 7 D undertaken at DuPont. Today, she supervising projects that could lead to foods that help prevent cancer and smart materials. She gave the big push to new technology and biotechnology platforms. "Under her DuPont broadened its nano products spectrum--, said the company executive vice president and chair innovation officer Thomas M. Connelly.

Over the years, Choudhary has gained access to high power offices in the US Government and academic networks across top American Universities. Her inputs are sought by the hydrogen fuel cell committee of US Secretary of energy, of which she is a member. Scientists and technicians, that too Indians, especially women, rarely make it to leadership roles.

Certainly the western hemisphere, Choudhary is a rare example. Many in the company put her in the list of contenders for the CEOs chair due to fall vacant on the incumbents retirement in 2011, though age may not be on her side.

To DuPonters Choudhary is "very visible, highly approachable, purposeful and exceptionally good listener with ability to make people comfortable". The one insight, subordinate and the six sigma champion, Lourdes Puig says he has gathered from her is to never let "Superficial organizational boundaries come in his way of reaching out to the needed resources. Choudhary's favorite compliment came from DuPont's' CEO Chad Helliday who told a corporate gathering. "Uma is a person who tells it like it is, Not shy to speak her mind". At a global conference in Delaware last month, Holliday told journalist from 60 countries, despite being a scientist Choudhary has successfully put science to work. "You can't leave science in the laboratory. It has to move into the market place in the hands of customers to create valuation", she says.

The scientist - turned manager - leader has now steered DuPont to set up a 15-acre knowledge centre for nano tech under global hub for rice-hybrid related research at Hyderabad. Her thoughts on India, "Its wonderful to go back and see the 'can -do 'attitude and the commitment to open market".

(QUESTIONS 1 - 10)

1. United States achieving a 20 billion gallons of biofuel production by 2020.

2. Uma choudhary deciding to go over to US and her career success.

3. Entrepreneurial mindset, the can-do attitude, and deligent applications of minds, Uma met and her rise in career and results produced.

4. Dupont getting 20 different patents for products based on research of Uma Choudhary and success of the company.

5. Choudhary is very visible, highly approachable, purposeful and exceptionally good listener with ability to make people comfortable.

6. Uma gaining access to high = power offices in US government and successes Dupont had.

7. Uma's passion about Dupont's upcoming R & D Centre in Hyderabad and commitment to open market.

8. Dupont's reputation - performance of Experimental Station headed by Uma Choudhary.

9. The visit of the US President to the ES - motivation of scientists.

10. Setting up of a 15 acre nano tech knowledge centre for rice-hybrid research at Hyderabad.

PASSAGE - II

When global business process outsourcing, (BPO), company WNS (holdings), acquired a Bangalore - based analytics and data management firm, marketics, for dollar 65 Million (INR. 266.5 crores), one of the biggest gainers from the deal was K Ganesh, the non-executive chairman of the acquired company and an angel investor. Ganesh, who was instrumental in arranging the WNS deal, had joined marketics. just three months after its creation in 2003 and had personally met virtually all its funding needs. So, when WNS agreed to the price Ganesh sought, it was a culmination of an angel investment successfully realised.

ENTREPRENEURS TO ANGELS

Ganesh is only one among a new and growing breed of angel capitalists who are ploughing the money, they made from previous investments from cash-hungry, promising start-ups.

Leading this breed are people such as, Raman Roy, the founder and the former head of BPO firm. Spectramind (Now part of Wipro group), Jerry Rao, founder and former head of BPO Firm, Mphasis (sold later to EDS) Rajesh Jain, founder of a clutch of web portals under the India world umbrella , Suvir sujan and Avnish Bajaj, co-founders of Bazee.com, The Auction website acquired by ebay, and Alok Mittal who founded Jobsahead.com.

Unlike the largely expartiate angels who came to India in the late 1990s and invested in companies with a global focus, these new angels are lending a helping hand to fledgling enterprises that have their Indian market as its primary focus (atleast for now). In doing so, they are removing a lacunae that has long been the bane of many new entrepreneurs. Though the money sloshing around in India-focused venture capital (VC) funds is more than dollars 1-2 billion that means (4100 to 8200 crores). A very little of it is available to start ups with funding needs of 1 million dollar (rupees 4.1 crore) are less. This is because VC Firms with fund sizes of dollar 100 million - plan. Are hamstrung by limited management bandwidth and typically look for investments larger than 1 million dollar.

That make the new angels, who give fledgling companies as little as 10 Lakhs, indispensable to entrepreneurs looking for bridge capital to tide over their limited needs in the early stage (Typically a couple of years). This has allowed, nascent companies such as Guruji (a local search engine) Novartium (a net work computing specialist) and Knowcross (an IT solutions firm) to raise money that would otherwise not have been forthcoming.

In terms of volume of deals, it is these India-Based angels that now dominate angel investing, with the number of the more serious players estimated yet around 400. That is still peanuts compared to the US, which had 234,000 active registered angel investors in 2006, as per the University of New Hampshire centre for venture research.

Even among the original group of NRI Angels such as Sameer Bhatia, Kanval Rekie and Ram Sriram (as well as non-Indians like anlog devises Chairman Ray Stata and European serial entrepreneur Christophe F Maire), there is a subtleship in emphasis towards tapping the opportunities the Indian Market presence. Maire, who built his last company Gate 5 to Nokia, has invested in the Bangalore based social business networking company New shop.

While the new angels all fund companies at the early stage and have a common India focus, they operate on differing investment philosophies . There are the solo operators - Ganesh, Bajaj, Sujan and Jain whose stout, invest, mentor start-ups on a one-to-one basis. Then, there is a second group of Angels that has centered formal networks and works through platforms such as the band of angels (GOA) the indus entrepreneurs group, and Nadathur Holdings, a company belonging co-found NS Ragavan.

Another group comprises of professionals who are using the proceeds of their lucrative jobs to dabble with the angel investing. According to Sahha Mirchandani a cofounder of the Mumbai edition of band of angels (BOA), this group includes High Networth Individuals as well those whose overall net worth may be just a few Lakh rupees. What all this amounts to, as Sujan points out, is that, "Angel investment have become an acceptable asset clause for professionals with even modest amounts of money to invest".

There are differences among these groupings of angel investors as well. For instance, while Ganesh Focuses on all his energies on promoting start-ups at any stage in their life cycle, others , such a Jain, have a much wider field of play. Indeed, Jain himself lays headlines in November 1999, when he sold his 5 crore rupees. Twenty man operation, India Bulls to Sify for close to 5000 crore rupees. Now with investments

in 13 companies spread across industries as diverse as mobile payments (mCHEK), Broadband content, (Rajasri Media) local language, internet portal (GREYNIUM), healthcare (YOS), Jain has comfortably recast himself in the role of venture capitalist. Jain himself insist that all his diverse holding fit-in quite well with his core philosophy of promoting world changing innovation like Pangea 3, pinstorm, orbit, indus biotech and cleartrip. His investments range from 10 lakh rupees to 20 lakh rupees. "As a rule, I will not touch anything where I do not get between 0.5 percent to 1.5 percent of the stake", says Bajaj. He and his peers also say they realise the main reason their expatriates predecessors failed was that they were hamstrung by the fact that they were largely absentee-investors, who nearly introduced Indian Start-ups to clients in the US.

Hence, Bajaj and the new angels say that they are taking on a more strategic role in their companies, and helping them tap the potential of the domestic market so they can achieve critical mass before thinking of going global. This fits in well a shift in focus of global IT, BPO and Biotech companies, who are all looking at India as the next big growth market.

THE INWARD TURN

This radical shift in focus, has lent the second wave of angel investors a new halo, especially since most have themselves built up and operated successful businesses. For young companies, having angels who can mentor and mould them through the growth pangs can make the difference between survival and falling by the way side. "Angel investors with an entrepreurial background can help start ups avoid repeating their own mistakes, thereby helping the company grow faster than it would have otherwise", points out Ganesh.

For example, the Marketics team had initially wanted to go after low-end data processing and analytics work, which would have got them revenues faster, but at lower margins. But Ganesh suggested that the company go after high end KPO Work from the US, even though sales for this segment were longer, promising help with operating expenses in the interim. The intervention proved to be crucial for the companies' later success. Ganesh also assisted Marketics in getting a couple of major clients in the US.

The homegrown angel investors operate on a different plane that the earlier NRI Investors, "points out Bajaj,

who has invested in companies like Pangea 3, (Legal Process Outsourcing), Pinstorm (Search Marketing) Orbit (real estate) Indus biotech (Biotech) and Cleartrip (Online travel). They bring first hand experience to the table , which makes all the difference. And, of course, the first choice of most Indian entrepreneurs is someone who has already built businesses locally. "That is borne out in the case of Guruji.com, a local search engine company in Bangalore. The company had a choice of funders but chose to go with baazee's co-founder Sujan, because of his expertise in building an India focused auction business. "Having Suvir as a mentor akin to obtaining invaluable theoretical knowledge to a crash MBA Course that would otherwise still be elusive even if someone spent ten years working on the ground, "says gurji's Chief Executive Officer Anurag Dod. His choice was spot on: Sujan anchored new business product development and marketing strategies as well as helped it forge new alliances . Even more importantly, he helped Guruji sew up it first round of funding with the Silicon Valley based venture capital firm Sequoia Capital. Nearly being on board improved the ventures funding prospects and valuations.

Since most angels still hale from the technology sector, their first impulse is to invest start-ups in the internet, BPO, pure research, biotech, mobile and semi-conductor domains. But even this is changing. "The opportunity is broader: in health care, travel, entertainment, hospitality," agrees Bajaj. "Take the case of YO! China. It was funded by angels outside India, as Indian investors were not interested." Mital had invested in a high-end chain of restaurants through Delhi's BOA.

Alternate, or renewable energy, has become another hot favorite with angel investors in the US and this trend is catching on in India too. For example, Rajesh Jain has left the comfort of his first love, web portals, to venture into alternative energy by investing in the firm Intellizon. But this expansion of horizons also requires that entrepreneurs and professionals from different backgrounds, cultures and industries begin to join the angel world. This, is not happening in a significant way as it should.

The main reason the average person is somewhat skeptical of angel investing is that , in India it is still not a proven model, not well understood, not too maturing and without deep networks. Unlike the VC industry,

which has been tried and tested, there have very few know angel exists. "Exists will attract more entrepreneurs and professionals/' adds Ganesh.

While Ganesh is not keen on talking about on how much he invested in Marketics and the return he pocketed, the industry rule of the thumb-in Silicon valley an angel investor gets a stake that is anywhere between 10% and 30% for investments that range between $ 1 Lakh and $ 2 Million - would indicate that he could have come out richer by $ 6.5 Million to $ 19.5 Million on the day. That's a cool return by any yardstick but because Ganesh will not talk about it. He and angel investing win none of the public accolades that fall upon venture capital firms.

Still, the angel ecosystem is evolving and word of successful exists are likely to attract other high net worth individuals. This will only deepen the pool of India focuses angel capital, and help more aspiring businesses bloom.

PASSAGE II (QUESTIONS 11-20)

11. **Ganesh suggesting Marketics entering high end KPO work and the success of the company.**

12. **Choice of Indian entrepreneurs on someone who has proved locally.**

13. **Guruji.com approaching Baazee's co-founder for funds and its success.**

14. **Investing in alternative energy sources like Intellizon for getting improved profits.**

15. **WNS Holdings acquiring Marketics.**

16. **NRI Entrepreneurs shifting towards tapping Indian market for amassing more profits.**

17. **Jain promoting disruptive world change innovations.**

18. **Ganesh promoting start-ups.**

19. **Exit wall attract more entrepreneurs- Ganesh.**

20. **Sajan on the board for Guruji.com and Sequois Capital investing in it.**

PART II
PASSAGE I

The establishment of the third Reich influenced events in American history by starting a chain of events which culminated in war between Germany and the United States. The complete destruction of democracy, the persecution of laws, the war on religion, the cruelty and barbarism of the Nazis and especially, the plans of Germany and her allies, Italy and Japan, for world conquest caused great indignation in this country and brought on fear of another world war. While speaking out against Hitler's atrocities, the American profile generally favored isolationist policies, and neutrality. The neutrality acts of 1935 and 1936 prohibited trade with any belligerents or loans to them. In 1937 the president was empowered to declare an arms embargo in wars between nations at his discretion American opinion began to change somewhat after President Roosevelt's quarantine the aggvessor speech at Chicago (1937) in which he severely criticized Hitler's policies. Germany's seizure of Austria and Munich pact for the partition of Czechoslovakia (1938) also around the American people. The conquest of Czechoslovakia in March 1939 was another rude awakening to the menace of the third Reich. In August, 1939, came the shock of the Nazi - Soviet pact and in September the attack on Poland and the outbreak of European war. The United States attempt to maintain neutrality in spite of sympathy for the democracies arranged against the Third Reich. The Neutrality act of 1939 repeated the arms embargo and permitted 'cash' and 'carry' exports of arms to belligerent nations. A strong national defense program was begun. A draft act was passed (1940) to strengthen the military services. A Lend - Lease Act (1940) authorized the president to sell, exchange or lend materials to any country deemed necessary by him for the defense of the United States. Help was given to Britain territory in the western Hemisphere. In August 1941, President Roosevelt and prime minister Churchill met and issued the Atlantic Charter which proclaimed the kind of a world which should be established after the war. In December 1941, Japan launched the unprovoked attack on the United States at Pearl harbor, immediately thereafter Germany declared war on the united states.

21. **USA entered the war against Germany**
    a) because Pearl Harbor was attacked
    b) after peaceful efforts had failed
    c) because Germany declare war against it
    d) because Japan was an ally of Germany

22. **The Neutrality Act of 1939 favored Great Britain because**
    a) the British had command of the sea
    b) the law permitted U.S.A. to trade only with the allies.
    c) it antagonized Japan
    d) it led to the Land - Lease Act

23. **An event that did not occur in 1939 was the**
    a) invasion of Poland
    b) invasion of Czechoslovakia
    c) passing of the Neutrality Act
    d) passing of the Land - Lease act

24. **One item occurring 1937 that the author does not mention in the list of actions that alienated the American Public was**
    a) The persecution of religious groups
    b) Nazi barbarism
    c) The pacts with Italy
    d) The burning of the Reich tag.

25. **The Land - Lease Act has designed to**
    a) Strengthen USA's national defense
    b) Provide battle shit to the Allies
    c) Help the British
    d) the Atlantic Charter

26. **The Neutrality Act of 1939**
    a) restated America's isolationist policies
    b) proclaimed American neutrality
    c) permitted the selling of arms to belligerent nation
    d) was cause of USA's entrances in to WORLD WAR II

27. **During the years 1933-36, American policy may be described as having been**
    a) watchful   b) isolationist
    c) pacific   d) incorrect

PASSAGE II

The Working Group on Minorities at its Geneva session in May 2002 highlighted that constructive resolution of tensions involving minorities is by way of "integrating diversity". This means that persons belonging to minorities acting alone or in community should be given adequate opportunity to maintain and develop their distinct identities while at the same time participating in and making a contribution to the wider society and respecting the territorial integrity of the State.

Integrating diversity goes hand in hand with governance which is firmly grounded in international human rights law. This requires that States protect the rights of all those residing within their jurisdiction without distinction of any kind. It is immaterial whether these persons are recognized by the State as a national minority.

The Human Rights Committee functioning under the International Covenant on Civil and Political Rights, 1966 has expressed the view that to secure State protection, members of the minority community need not be citizens of the country nor its permanent residents. The protection extends to migrant workers who constitute a minority.

In order to accord this protection, States should take special measures to ensure the existence of conditions for minorities to maintain and develop their own distinct cultural identities. More specifically, what is required is: (A) sensitivity to the needs, especially linguistic and educational, of persons belonging to minorities so as to enable each individual to develop his/ her identity; (B) allowing minorities the opportunity to participate effectively in public life, including the political decision- making process; and (C) providing minorities with access to a fair share of public goods, including economic opportunity.

Such measures do not constitute preferential treatment. Their aim is to achieve equal and meaningful enjoyment of above rights in order to ensure de facto equality.

28. **What is the meaning of the term "integrating diversity" as used in the passage?**
    a) abandoning the minorities
    b) achieving the objectives of Human Rights Committee
    c) giving linguistic and educational independence to backward communities by making them empowered and bringing them into the national mainstream
    d) giving minorities sufficient chances to maintain and develop their distinct identities

29. **With which of the following does "integrating diversity" go well?**
   a) proper distribution of wealth
   b) secularism as a political creed
   c) observance of political and social morality
   d) providing educational opportunities to all

30. **Choose the word which is most opposite in meaning of the word "accord" as used in the passage.**
   a) constitute   b) withdraw
   c) precipitate   d) suppress

31. **Which of the following statements is/are true in the context of the passage?**
   a) the Working Group on Minorities had met at Geneva in May 2002
   b) integrating diversity means national solidarity and secularism
   c) integrating diversity and good governance are the two sides of the same coin
   d) all the above

32. **Which of the following statements is not true in the context of the passage?**
   a) linguistic and educational needs of minorities should be recognized
   b) minorities should be allowed to participate effectively in public life
   c) minorities should be involved in political decision making process
   d) minorities should be given preferential treatment

PASSAGE III

Should we really care for the greatest actors of the past could we have them before us? Should we find them too different from our accent of thought, of feeling, of speech, in a thousand minute particulars which are of the essence of all three? Dr. Doran's long and interesting records of the triumphs of Garrick, and other less familiar, but in their day hardly less astonishing, players, do not relieve one of the doubt. Garrick himself, as sometimes happens with people who have been the subject of much anecdote and other conversation, here as elsewhere, bears no very distinct figure. One hardly sees the wood for the trees. On the other hand, the account of Betterton, "perhaps the greatest of English actors," is delightfully fresh. That intimate friend of

Dryden, Tillatson, Pope, who executed a copy of the actor's portrait by Kneller which is still extant, was worthy of their friendship; his career brings out the best elements in stage life. The stage in these volumes presents itself indeed not merely as a mirror of life, but as an illustration of the utmost intensity of life, in the fortunes and characters of the players. Ups and downs, generosity, dark fates, the most delicate goodness, have nowhere been more prominent than in the private existence of those devoted to the public mimicry of men and women. Contact with the stage, almost throughout its history, presents itself as a kind of touchstone, to bring out the bizarrerie, the theatrical tricks and contrasts, of the actual world.

33. **In the expression 'One hardly sees the wood for the trees', the author apparently intends the word trees to be analogous to**
   a) features of Doran's language style
   b) details learned from oral sources
   c) personality of a famous actor
   d) detail's of Garrick's life

34. **The doubt referred to in line 7 concerns whether**
   a) the stage personalities of the past would appeal on a personal level to people like the author
   b) their contemporaries would have understood famous actors
   c) the acting of famous stage personalities would appeal to us today
   d) Garrick was as great as he is portrayed

35. **Information supplied in the passage is sufficient to answer which of the following questions?**
   I. Who did Doran think was probably the best English actor?
   II. What did Doran think of Garrick?
   III. Would the author give a definite answer to the first question posed in the passage?
   a) I only   b) II only
   c) I and III only   d) II and III only

PASSAGE IV

The World Conservation Congress, a summit for governments and civil society, has got under way in Bangkok at a time when competitive pressures on

natural resources are at a new high and biodiversity is under unprecedented threat. The conclave is held every four years by the IUCN-World Conservation Union (earlier known as the International Union for Conservation of Nature) to frame guidelines for sustainable development and protection of natural heritage. India, a member state of the world body, stands to benefit from the wealth of experience being presented by nearly 5000 delegates at the nine-day Congress. The assembly in Bangkok could not be held at a better time for India: it can provide critical inputs for the ongoing debate on the draft National Environment Policy (NEP). The NEP, to be debated by NGOs and other stakeholders in coming weeks, has been criticised for its controversial proposals that will enable speedy environmental clearances for projects and withdrawal of full protection for endangered flora and fauna citing public or national interest.

The pointers provided by the World Conservation Union (WCU) constitute a good framework for evaluation of India's approach to environmental issues in the 21st century, as outlined in the NEP. Sustainable development envisages that economic gains and the fruits of progress are equitably distributed in society. But experience has shown that these are invariably weighed against the environment and the poor who depend on it. The use of water would clearly top such a list of priorities in this country. The case for preserving mountain systems for water security cannot be overstressed: half of all humanity depends on hill ranges to access safe water to produce electricity, sustain industry and agriculture, and for drinking. Equally significantly, half the wetlands have disappeared over the last century, which should be sufficient reason for the NEP to adopt the expert recommendations on wetlands that were submitted to the Environment Ministry after considerable field research. The Bangkok Congress, the third such event held by the WCU, also draws attention to the loss or degradation of 80 per cent of global forest cover. Again, this assessment matches the NEP estimate that India's forest cover has dwindled to a worrying 23 per cent. The only way forward would, therefore, be to reverse the damage from exploitative mining, logging, and unsound agriculture in the remaining forests and afford them absolute protection.

Can economic progress and environmental conservation find an acceptable median? The discussions at the WCU Congress are centred on the universal value that people's welfare should guide all environmental policies. It follows that protection of incomparable natural resources is a prerequisite for such well being. The familiar example is that of the rivers and seas: if they are polluted, fish stocks decline and water security is also lost. As the WCU has emphasised, the priorities must, therefore, be protection of biodiversity and endangered species, pollution control, efficient management of renewable resources, and promotion of organic agriculture. There is considerable interest among consumers and governments in some countries in products manufactured through sustainable methods. Given the intricacies of global trade agreements today, new standards to identify such goods and services may be necessary. Such green certification methods can be built into international treaties and agreements to facilitate positive action by importing countries without risk of litigation under trade laws. The withdrawal of import restrictions on timber by some European countries owing to trade obligations is an example of the distortions that are created by such pacts, which could be used to interpret environmental safeguards as unfair barriers.

36. **According to the passage, the norms of sustainable development favour that**
   a) the poor should be given special treatment
   b) the poor should be special beneficiaries of economic development
   c) environment should be valued more than social development
   d) benefits of development should reach to all equally

37. **In the light of the passage, NEP is in controversy for which of the following reason(s)?**
   a) it has given national development a precedence over environment
   b) it proposes summary environmental viability study of the projects
   c) only (a) and (b)
   d) in it the norms of environmental safeguard is half-measured

38. According to the passage, forest conservation cannot be promoted by preventing
   a) wanton felling of trees
   b) excessive mineral digging
   c) wrong cultivation practices
   d) water harvesting

39. In trade and commerce, environmental norms could be made effective by which of the following methods?
   a) strengthening punitive measures in the event of violations
   b) identifying environmentally viable modes of production
   c) framing new methods of measurement of environment friendly methods
   d) all the above

40. Find the word that is the most appropriate synonym of the word 'dwindle ' as used in the passage
   a) Diminish
   b) Mitigate
   c) Worn
   d) Wane

PART III

41. Find the greatest number, which will divide 215, 167 and 135 so as to leave the same reminder in each case.
   a) 64
   b) 32
   c) 24
   d) 16

42. What is the smallest number which when increased by 6 is divisible by 36, 63, and 108?
   a) 750
   b) 752
   c) 754
   d) 756

43. The Average age of 24 students and the Prncipal is 15 years. When the Principal's age is excluded, the average age decreases by 1 year. What is the age of the Principal?
   a) 38
   b) 40
   c) 39
   d) 37

44. Three years ago, the average age of A, B and C was 27 Years and that of B and C, 5 years ago 20 years. A's present age is
   a) 30 years
   b) 35 years
   c) 40 years
   d) 48 years

45. The Average of 3 numbers is 17 and that of the first two is 16. Find the third number.
   a) 15
   b) 16
   c) 17
   d) 19

46. In a mixture of 80 litres of milk and water, 25% of the mixture is milk. How much water should be added to the mixture so that milk becomes 20% of the mixture?
   a) 20 litres
   b) 15 litres
   c) 25 litres
   d) 24 litres

47. Which of the following is the largest number?
   a) 20% of 200
   b) 7% of 500
   c) 1300% of 3
   d) 700% of 9

48. The population of village is 1,00,000. Increase rate per annum is 10%. Find the population at the starting point of the fourth year.
   a) 1,33,100
   b) 1,21,000
   c) 1,33,000
   d) None of these

49. If A and B are two events, and they happen to be mutually exclusive events then $P(AB)=$
   a) 1
   b) $P(A)-P(B)$
   c) 0
   d) $P(A)+P(B)$

50. If A and B are two mutually exclusive events then
   a) $P(A \text{ or } B) = P(A) \cup P(B)$
   b) $P(A \text{ or } B) = P(A)+P(B)$
   c) $P(A \text{ or } B) = P(A)+P(B)-P(AB)$
   d) $P(A \text{ or } B) = P(A).P(B)$

51. If A and B are two non-mutually exclusive events then
   a) $P(A \text{ or } B) = P(A)+P(B)$
   b) $P(A \text{ or } B) = P(A)+P(B)-P(AB)$
   c) $P(A \text{ or } B) = P(A).P(B)$
   d) $P(A \text{ or } B) = 0$

52. Rs. 1200 is lent out at 5% per annum simple interest for 3 years. Find the amount after 3 years.
   a) Rs. 1380
   b) Rs. 1290
   c) Rs. 1470
   d) Rs. 1200

53. Interest obtained on a sum of Rs.5000 for 3 years is Rs.1500. Find the rate percent.
   a) 8%
   b) 9%
   c) 10%
   d) 11%

54. Rs. 2100 is lent at compound interest of 5% per annum for 2 years. Find the amount after 2 years.
   a) Rs. 2300
   b) Rs. 2315.25
   c) Rs. 2310
   d) Rs. 2320

55. If a, b, c, d are proportional, then $(a-b)(a-c)/a$ =
   a) a+c+d
   b) a+d-b-c
   c) a+b+c+d
   d) a+c-b-d

56. If three numbers are in the ratio of 1 : 2 : 3 and half the sum is 18, then the ratio of squares of the numbers is
   a) 6 : 12 : 13
   b) 1 : 2 : 4
   c) 36 : 144 : 324
   d) 3 : 5 : 7

57. A and B are two alloys of argentum and brass prepared by mixing metals in proportions 7:2 and 7:11 respectively. If equal quantities of the two alloys are melted to form a third alloy C, the porportion of argentum and brass in C will be :
   a) 5 : 9
   b) 5 : 7
   c) 7 : 5
   d) 9 : 5

58. Raju can do 25% of a piece of work in 5 days. How many days will he take to complete the work ten times?
   a) 150 days
   b) 250 days
   c) 200 days
   d) 180 days

59. 6 men can do a piece of work in 12 days. How many men are needed to do the work in 18 days.
   a) 3 men
   b) 6 men
   c) 4 men
   d) 2 men

60. Nisha and Archana can do a piece of work in 10 days and Nisha alone can do it in 12 days. In how many days can do it alone?
   a) 60 days
   b) 30 days
   c) 50 days
   d) 45 days

PART IV

DIRECTIONS : Data sufficiency problems consist of a question and two statements, labelled (I) and (II), in which certain data are given. You have to decide whether the data given in the statements is sufficient for answering the question. Use the data given, plus your knowledge of mathematics and every day facts, to mark your answer as

a) If the question can be answered with the help of statement I alone.

b) If the question can be answered with the help of statement II, alone.

c) If both, statement I and statement II are needed to answer the question, and

d) If the question cannot be answered even with the help of both the statements.

61. A, B, C together can complete the work in 8 days. In how many days C can do the work alone?
   I) A can do the work alone in 15 days and B in 30 days.
   II) A can do the work in 10 days.

62. x is a multiple of 12 that is less than 100. What is x?
   I) x is a multiple of 4.
   II) x is a multiple of 15.

63. Given that X and Y are non-negative. What is the value of X?
   I) $2X - 2Y \leq 40$
   II) $X - 2Y \geq 20$

64. What is the radius of the circle?
   I) Ratio of its area to circumference is > 7.
   II) Diameter of the circle is ≤ 32

65. A tractor travelled a distance 5 m. What is the radius of the rear wheel?
   I) The front wheel rotates 'N' times more than the rear wheel over this distance.
   II) The circumference of the rear wheel is 't' times that of the front wheel.

66. On a given day a boat ferried 1500 passengers in 12 hours. How many round trips did the boat make?
   I) The boat can carry 200 passengers at any time.
   II) The boat takes 40 minutes each way with a 20 minute waiting time at the terminal

67. What is the average daily wages of a worker who works for five days; he made Rs. 80 the first, day?
   I) The worker made a total of Rs. 400 for the first four days of work.
   II) The worker made 20% more each day than he did on the previous day

68. What is the difference between the shares of profits of Riya and Navin out of a profit of Rs. 6,000 at the end of the year?
    I) Riya invested Rs. 50,000 and withdrew Rs. 1000 after 4 months
    II) For the last 8 months, Navin's capital was 125% of Riya's

69. Is the average of three consecutive integers a whole number?
    I) At least one of the three integers is non-negative
    II) The average of the integers taken two at a time is always negative.

70. What is the cost of laying the carpet in a rectangular hall?
    I) Cost of the carpet is Rs. 450 per square metre
    II) Perimeter of the hall is 50 meters.

71. What is the height of a right-angled triangle?
    I) The area of the right-angled triangle is equal to area of a rectangle whose breadth is 15 m
    II) The length of the rectangle is 12 m

72. M is Yellow, if N is Green. Is N green?
    I) M is not Green
    II) M is Yellow

73. If both x and y are non-zero numbers, what is the value of x/y?
    I) $x^2 = y^2$
    II) $x = 3$

74. How much time is required for downloading the software?
    I) The data transfer rate is 6 kilobytes per second.
    II) The size of the software is 4.5 megabytes

75. What are the values of m and n?
    I) n is an even integer and rn is odd; m > n
    II) The product of m and n is 30

76. A piece of wood is cut into three pieces that have lengths in the ratio $x : y : z = 1 : 2 : 3$. What is the length $x+y+z$?
    I) $x+z = 16$
    II) $x<y<z$

77. What is the value of x^3+y^3 ?
    I) $x+y = 12$
    II) $x-y = 8$

78. Two types of widgets, namely type A and type B, are produced on a machine. The number of machine hours available per week is 80. How many widgets of type A must be produced?
    I) One unit of type A widget requires 2 machine hours and one unit of type B widget requires 4 machine hours.
    II) The widget dealer wants supply of at least 10 units of type A widget per week and he would not accept less than 15 units of type B widget.

79. If $w=3x-4y^2$, what is w?
    I) $x=324$
    II) $y^2 > 4$

80. What is the value of x?
    I) x and y are unequal even integers, x/y is an odd integer.
    II) x and y are both even integers, each is less than 10 and the product of x and y is 12.

PART V

(Questions 81–85) Choose the word from among the options that is closest in meaning to

81. Cupid
    a) Stupid   b) Greed
    c) Tread   d) Dread

82. Implicit
    a) Absolute   b) Resolute
    c) Desolate   d) Destitute

83. Melagne
    a) Crumble   b) Rumble
    c) Jumble   d) Tumble

84. Precept
    a) Overrule   b) Under-rule
    c) Rule   d) Ruler

85. Legion
    a) Solitude   b) Aptitude
    c) Tide   d) Multitude

(Questions 86–90) Choose the best way of stating the one-word opposite of :

86. Probable
    a) Non-probable   b) Not-probable
    c) Inprobable   d) Improbable

87. **Noble**
   a) Non-Noble
   b) Ignoble
   c) Innoble
   d) Imnoble

88. **Mobile**
   a) Non-mobile
   b) Inmobile
   c) No mobile
   d) Immobile

89. **Manage**
   a) Inmanage
   b) Mismanage
   c) Unmanage
   d) Immanage

90. **Elastic**
   a) Non-elastic
   b) Imelastic
   c) Inelastic
   d) Not-probable

(Questions 91–95) Fill the following sentences with the most appropriate proposition :

91. **Arun was called _____ an interview.**
   a) to
   b) for
   c) of
   d) by

92. **He came _____ a cab to the interview venue.**
   a) to
   b) for
   c) of
   d) by

93. **The doorman stopped him _____ the entrance.**
   a) as
   b) for
   c) at
   d) by

94. **The doorman asked _____ the call letter.**
   a) as
   b) for
   c) at
   d) by

95. **The doorman examined the letter _____ diligence.**
   a) until
   b) with
   c) at
   d) by

(Questions 96–100) Fill in the blanks with the appropriate word.

96. **An abnormal accumulation is _____**
   a) dynamism
   b) stringent
   c) congestion
   d) core

97. **To consider before hand is to _____**
   a) collate
   b) reciprocate
   c) participate
   d) anticipate

98. **To return a greeting is _____**
   a) collation
   b) reciprocation
   c) participation
   d) anticipation

99. **To join an event is _____**
   a) collation
   b) reciprocation
   c) participation
   d) anticipation

100. **To increase rapidly in number is _____**
   a) collation
   b) profiloration
   c) filtration
   d) proliferation

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

83. (c*) ...Melange

41. (d)
Required number
= HCF of {215–167, 167–135, 215–135}
= HCF of {48, 32, 80}
$48 = 2^4 \times 3$
$32 = 2^5$
$80 = 2^4 \times 5$
HCF of {48, 32, 80}
$= 2^4 = 16$

42. (a)
Required number
= GCD of {36, 63, 108}–6

```
9 | 36, 63, 108
4 |  4,  7,  12
  |  1,  7,   3
```

GCD $= 9 \times 4 \times 7 \times 3 = 756$
∴ Required number = 756–6 = 750

43. (c)
Total age of 24 Students and Principal
$= 25 \times$ Average
$= 25 \times 15 = 375$
Average age of 24 Students
$= 15–1 = 14$
Total age of 24 Students
$= 24 \times 14 = 336$
∴ Age of the Principal = 375–336 = 39 years

44. (c)
Three years ago total age of A, B and C
$= 3 \times 27 = 81$
Present total age of A, B and C
$= 81+(3 \times 3) = 90$
Five years ago total age of B and C
$= 2 \times 20 = 40$
Present total age of B and C
$= 40+(2 \times 5) = 50$
∴ A's present age = 90–50 = 40 years

45. (d)
Total sum of 3 numbers $= 3 \times$ average
$= 3 \times 17 = 51$
Total sum of first two numbers
$= 2 \times$ average
$= 2 \times 16 = 32$
∴ Third number = 51–32 = 19

46. (a)
Milk in the mixture $= 80 \times \dfrac{25}{100} = 20$ litres
Let x litres of water is added in the mixture to make 20% milk in the new mixture
20% of (80+x) = 20
$\Rightarrow (80+x) \times \dfrac{20}{100} = 20$
$80+x = 100$
∴ $x = 100–80 = 20$ litres

47. (d)
20% of 200 $= \dfrac{20}{100} \times 200 = 40$
7% of 500 $= \dfrac{7}{100} \times 500 = 35$
1300% of 3 $= \dfrac{1300}{100} \times 3 = 39$
700% of 9 $= \dfrac{700}{100} \times 9 = 63$
∴ Largest number = 63

48. (a)
Population at the starting point of fourth year
$= \left(1+\dfrac{10}{100}\right)^3 \times 100000$
$= \left(\dfrac{11}{10}\right)^3 \times 100000$
$= \dfrac{1331}{1000} \times 100000$
= Rs. 133100

49. (c)
If A and B are mutually exclusive events then
$P(AB)=0$

50. (b)
If A and B are two mutually exclusive events then
$P(A \text{ or } B) = P(A \cup B) = P(A)+P(B)$

51. (b)
If A and B are non-mutually exclusive events then
$P(A \text{ or } B) = P(A \cup B)$
$= P(A)+P(B)–P(AB)$

52. **(a)**

p = Rs. 1200, n = 3 years, r = 5%

$$\text{Simple interest} = \frac{pnr}{100}$$

$$= \frac{1200 \times 3 \times 5}{100} = 180$$

Amount After 3 years = P+Simple Interest
$$= 1200 + 180 = Rs. 1380$$

53. **(c)**

p = Rs. 5000, n = 3 years, S.I. = 1500

$$\text{Rate of interest} = \frac{S.I \times 100}{p \times n}$$

$$= \frac{1500 \times 100}{5000 \times 3} = 10\%$$

54. **(b)**

Let Principal = p, Rate = r%, Time = n years

The amount after n years $= p\left(1 + \frac{r}{100}\right)^n$

In this problem,

p = Rs. 2100, n = 2 years, r = 5%

$$\therefore \text{Amount after 2 years} = 2100\left(1 + \frac{5}{100}\right)^2$$

$$= 2100 \times \left(\frac{21}{20}\right)^2$$

$$= \frac{2100 \times 21 \times 21}{20 \times 20}$$

$$= Rs. 2315.25$$

55. **(b)**

a, b, c, d are proportional

$$\Rightarrow \frac{a}{b} = \frac{c}{d}$$

$$\Rightarrow ad = bc \qquad \dots (1)$$

Now,

$$(a-b)(a-c) = a^2 - ac - ba + bc \quad \dots (2)$$

By (1) $ad = bc$

$\therefore$ (2) $\Rightarrow$

$$(a-b)(a-c) = a^2 - ac - ab + ad$$

$$= a(a - c - b + d)$$

$$\therefore \frac{(a-b)(a-c)}{a} = \frac{a(a-c-b+d)}{a}$$

$$= a + d - c - b$$

56. **(c)**

Let the three numbers be x, 2x, 3x.

$$\text{Half sum} = \frac{x \times 2x + 3x}{2} = 18$$

$$3x = 18$$

$$\therefore x = 6$$

$\therefore$ Three numbers 6, 12, 18

Ratio of their squares $= 6^2 : 12^2 : 18^2$

$$= 36 : 144 : 324$$

57. **(c)**

LCM of 7+2 and 7+11

$$= \text{lcm of 9 and 18}$$

$$= 18$$

Let us take 18 units of A and B

$$\text{Argentum in A} = \frac{7}{9} \times 18 = 14 \text{ units}$$

$$\text{Brass in A} = 18 - 14 = 4 \text{ units}$$

$$\text{Argentum in B} = \frac{7}{18} \times 18 = 7 \text{ units}$$

$$\text{Brass in B} = 18 - 7 = 11 \text{ units}$$

$\therefore$ Ratio of Argentum and Brass in C

$$= (14+7) : (4+11)$$

$$= 21 : 15$$

$$= 7 : 5$$

58. **(c)**

Let the work can be done in x days. Then

$$25\% \text{ of } x = 5$$

$$\Rightarrow \frac{25}{100} \times x = 5$$

$$x = \frac{5 \times 100}{25} = 20 \text{ days}$$

Number of days to complete the work ten times
$$= 10 \times 20 = 200 \text{ days}$$

59. **(c)**

$M_1 = 6$, $D_1 = 12$ days, $D_2 = 18$ days, $M_2 = ?$

Formula:

$$M_1 D_1 = M_2 D_2$$

$$6 \times 12 = M_2 \times 18$$

$$\therefore M_2 = \frac{6 \times 12}{18} = 4$$

60. **(a)**

Nisha and Archana's one day's work $= \frac{1}{10}$

Nisha's one day's worm $= \frac{1}{12}$

$\therefore$ Archana's one days work $= \frac{1}{10} - \frac{1}{12}$

$$= \frac{6-5}{60} = \frac{1}{60}$$

$\therefore$ Archana alone can complete the work in 60 days

61. (a)

A, B, C one day's work $= \dfrac{1}{8}$

By Statement I

A and B one day's work $= \dfrac{1}{15} + \dfrac{1}{30}$

$= \dfrac{2+1}{30} = \dfrac{3}{30} = \dfrac{1}{10}$

∴ C's one days work $= \dfrac{1}{8} - \dfrac{1}{10} = \dfrac{5-4}{40} = \dfrac{1}{40}$

∴ C can do the work alone in 40 days.

∴ Statement I alone is sufficient
Statement II alone is not sufficient

62. (c)

From statements I and II

$x = \text{lcm}(4, 15) = 4 \times 15 = 60$

Clearly 60 is multiple of 12 less than 100.

∴ Both are required to answer the question.

63. (d)

By Statement I

$2X + 2Y \le 40$

$\Rightarrow X + Y \le 20$

By Statement II

$X - 2Y \ge 20$

This cannot be solved even with the help of both statements.

64. (d)

Radius cannot be derived even with the help of both the statements.

65. (d)

In either statements the numerical values are not given with given statements we can find radius in terms of N and t. Hence exact value of radius cannot be determined with both statments.

66. (b)

The question about the number of round trips made in 12 hrs. This can be answered if we know the time of travel and waiting time.

∴ Statement II alone is sufficient.
Statement I alone is not sufficient.

67. (b)

By Statement II

Day 1 : Rs. 80

Day 2 : $8 \times \dfrac{120}{100} = 96$

Day 3 : $96 \times \dfrac{120}{100} = 115.2$

Day 4 : $115.2 \times \dfrac{120}{100} = 138.24$

Day 5 : $138.24 \times \dfrac{120}{100} = 165.83$

Average income

$= \dfrac{80 + 96 + 115.2 + 138.24 + 165.83}{5}$

$= \dfrac{595.27}{5} = \text{Rs. } 119.054$

Statement II alone is sufficient.

68. (d)

From statements I and II
Navin's capital for first four months not known.
Therefore both statements not sufficient.

69. (b)

Let the three integers be a, b, c
By Statement II

$\dfrac{a+b}{2} = \text{negative}$

$\Rightarrow a+b = \text{negative}$

Similarly $\quad b+c = \text{negative}$

$\quad c+a = \text{negative}$

Add

$\Rightarrow 2(a+b+c) = \text{negative}$

$a+b+c = \text{negative}$

$\Rightarrow \dfrac{a+b+c}{3} = \text{negative}$

∴ Average of a, b and c is negative.
and not a whole number.

∴ The question can be answered using statement II alone.

70. (d)

Total cost = Area of floor × Cost of carpet per square meter

Since length (or) breadth is not given in both statements Area cannot be derived using both statements.

∴ The question cannot be answered with the help of both statements.

71. (d)

From both Statements

Area of right – Angled triangle

$= 15 \times 12 = 180 \text{ m}^2$

Since breadth of the triangle is not given, height of the right-angled triangle cannot be derived.

72. (d)
Both not sufficient.

73. (d)
From both Statements
$$x = 3$$
$$y^2 = x^2 = 9$$
$$y = \pm 3$$
$$\Rightarrow y = 3 \text{ (or) } -3 \text{ (two different values)}$$
Since exact value of y is not known question cannot be answered using both statements.

74. (c)
From Statement II
$$\text{Size} = 4.5 \times 1024$$
$$= 4608 \text{ kilobites}$$
From Statement I
$$\text{Downloaded time} = \frac{4608}{6} = 768 \text{ seconds}$$
∴ Both Statements are required to answer the question.

75. (c)
From both Statements
$$15 \times 2 = 30$$
$$15 \text{ odd} \; ; \; 2 \text{ is even}$$
$$15 > 2$$
∴ Both Statements are required to answer the question.

76. (a)
$$\text{Let the lengths } x = k$$
$$y = 2k$$
$$z = 3k$$
By Statement I
$$x + z = 16$$
$$\Rightarrow k + 3k = 16 \Rightarrow 4k = 16 \therefore k = 4$$
$$\therefore x + y + z = k + 2k + 3k = 6k = 6 \times 4 = 24$$
Statement I alone is sufficient
Statement II alone is not sufficient

77. (c)
From both statements
$$x + y = 12$$
$$x - y = 8$$
Adding
$$2x = 20 \Rightarrow x = 10$$
$$\therefore y = 12 - 10 = 2$$
$$\text{Now } x^3 + y^3 = 10^3 + 2^3$$
$$= 1008$$
∴ Both statements needed to answer the question.

78. (c)
From both statements
$$2A + 4B \le 80$$
$$A + 2B \le 40 \qquad \cdots (1)$$
and
$$A \ge 10 \qquad \cdots (2)$$
$$B \ge 15 \qquad \cdots (3)$$
Solving (1), (2) and (3)
$$A = 10$$
$$B = 15$$
Both Statements are required to answer the question.

79. (d)
Since exact value of y is not given both statements are not sufficient to answer the question

80. (c)
From both statements
$$x = 6 \; ; \; y = 2 \quad \text{(Both are even)}$$
$$\frac{x}{y} = \frac{6}{2} = 3 \text{ (odd integer)}$$
$$\therefore x = 6$$