

**ALL ANSWERS MUST BE GIVEN ON THE ANSWER SHEET**  
**BY CROSSING THE CORRESPONDING LETTER**  
**PART I: MATHEMATICS M.C.Q's**

Number of Math M.C. Questions: 45  
Questions on Page Numbers 1 to 9

Time Allowed: 80 minutes  
Negative Marking: No

1. If  $f(x) > 0$  for all  $x \in [a, b]$ . Then for the interval  $[a, b]$ , function  $f$  is
  - A) Concave up
  - B) Concave down
  - C) Increasing
  - D) Decreasing
2.  $\int_0^1 \int_1^0 \int_0^1 dx dy dz = ?$ 
  - A) -1
  - B) 1
  - C) 0
  - D)  $\frac{1}{2}$
3. Which of the following statement is correct?
  - A) A curve that crosses the  $x$ -axis at two different points cannot be the graph of a function.
  - B) The range of the absolute value function is all positive real numbers.
  - C) The natural domain of a real-valued function defined by a formula consists of all those real numbers for which the formula yields a real value.
  - D) Concavity of the curve is decided by the sign of first derivative of the curve.
4. Which of the following function is symmetric about origin?
  - A) Onto function (surjective)
  - B) One-to-One function (injective)
  - C) Bijective function
  - D) Odd function
5. Which of the following is correct about two lines  $y = 2x + b$  and  $y = 2x$ .
  - A) Both lines are parallel
  - B) Both lines are perpendicular
  - C) Both lines pass through the origin
  - D) They are perpendicular to each other if  $b = 0$

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6. What is the natural domain of a polynomial?
- A)  $[-\infty, +\infty]$   
B)  $(-\infty, +\infty)$   
C)  $(-\infty, 0]$   
D)  $[0, +\infty)$
7. The function  $y = \ln(1 - x)$  has domain equals
- A)  $(-\infty, 1]$   
B)  $(-\infty, +\infty)$   
C)  $(-\infty, 1)$   
D)  $[0, +\infty)$
8. The slope of the tangent line to the curve  $y = x^2 + 4x + 7$  at  $x = 1$  is
- A) -6  
B) 1  
C) -1  
D) 6
9. If for  $x > 0$  and for a real valued function, we have  $2f(x) + 3f\left(\frac{100}{x}\right) = 4x$ , then  $f(5) =$
- A) 12  
B) 10  
C) 0  
D) 1
10. If  $f''(a)$  exists and  $f$  has an inflection point at  $x = a$ , then  $f''(a)$  is
- A) Positive  
B) Negative  
C) 0  
D)  $\infty$

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11. Which of the following Measure of averages is affected by extreme values in data set?

- A) Mode
- B) Median
- C) Geometric Mean
- D) Arithmetic Mean

12. In Statistics, a population consists of:

- A) All subjects or objects whose characteristics are being studied
- B) All People living in a country
- C) All People living in the are under study
- D) None of the above

13. The data collected by NADRA to issue National Identity cards are

- A) Primary data
- B) Secondary data
- C) Official data
- D) un-official data

14. Statistic is a numerical quantity, which is calculated from

- A) Sample
- B) Population
- C) Data
- D) Observation

15. Which one is not the measure of dispersion?

- A) Range
- B) Quartile
- C) Variance
- D) Inter-quartile range

16. Let  $f$  be a function such that  $g(a+b) = g(a)g(b)$  for all integers  $a$  and  $b$ . If  $g(1) = 1/2$ , find the value of  $g(0) + g(1) + g(2) + g(3)$

- A)  $1/8$
- B)  $3/2$
- C)  $15/8$
- D)  $5/2$

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17. Total Area under the normal curve is

- A)  $> 1$
- B)  $< 1$
- C) 0
- D) 1

18. The standard deviation of standard normally distributive curve is

- A) 1
- B) 0
- C) 2
- D) -1

19. If  $X$  is the random variable in a binomial distribution and the probability of success is  $p$  for  $n$ -trials. Then  $E(X)$  is

- A)  $np(1 - p)$
- B)  $p(1 - p)$
- C)  $n(1 - p)$
- D)  $np$

20. The function  $f(x) = px$  satisfies the equality  $f(f(f(1))) = 27$ . What is the value of  $p$ ?

- A) 1
- B) 2
- C) 5
- D) 3

21. In a certain normal distribution the mean is 4 and standard deviation is 2 then what is mode of the the distribution?

- A) 0
- B) 1
- C) 4
- D) 2

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22. Six weeks is  $n!$  seconds. What is  $n$ ?

- A) 6
- B) 7
- C) 8
- D) 10

23. In a colony, there are 55 members. Every member posts a greeting card to all the members. How many greeting cards were posted by them?

- A) 990
- B) 890
- C) 1980
- D) 2970

24. If  ${}^{16}P_{r-1} : {}^{15}P_{r-1} = 16 : 7$  then find  $r$ .

- A) 8
- B) 7
- C) 12
- D) 10

25. If in a binomial distribution  $n = 1$  then  $E(X)$  is

- A) q
- B) p
- C) 1
- D) 0

26. In a Poisson probability distribution

- A) It always contains a contingency table
- B) The number of trials is always less than 5
- C) The probability of success is always greater than 5
- D) The mean and variance of the distribution are the same

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27. What is the probability of a type II error when  $\alpha = 0.05$  ?

- A) 0.025
- B) 0.05
- C) 0.95
- D) Cannot be determined without more information

28.  $1 - \alpha$  is the probability of

- A) Type-II Error
- B) Type-I Error
- C) Rejection Region
- D) Acceptance Region

29. Which of the following is a true statement, for comparing the t-distributions with standard normal distribution

- A) The Normal Curve is symmetrical whereas the t-distributions are slightly skewed.
- B) The proportion of area beyond a specific value of t is less than the proportion of normal curve.
- C) Greater the degree of freedom, the more the t-distribution resembles the standard normal distribution.
- D) The standard deviation is the same for both distributions

30. Which of the following test use Rank Sums

- A) F-test
- B) Wilcoxon test
- C) Runs test
- D) Chi-Square

31. In statistical hypothesis test of equality of means, such as  $H_0 : \mu = 10$ , if  $\alpha = 5\%$

- A) 95% of the time we will make an incorrect inference
- B) 95% of the time the null hypothesis will be correct
- C) 5% of the time we will say that there is a real difference when there is no difference (Type I error)
- D) 5% of the time we will make a correct inference

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32. There are 10 true-false questions. The number of ways in which they can be answered is

- A)  $10^2$
- B) 10
- C)  $10!$
- D)  $2^{10}$

33. If  $u = (-2, 0, 4)$ ,  $v = (3, -1, 6)$  and  $w = (2, -5, -5)$  then find  $\|u + v + w\|$

- A)  $\sqrt{70}$
- B)  $2\sqrt{70}$
- C)  $\sqrt{35}$
- D)  $2\sqrt{35}$

34. Use data of question above, then find  $u \cdot (v \times w)$

- A) 101
- B) 122
- C) -122
- D) -101

35. Find the distance between the point  $P(-3, 1, 3)$  and the plane  $5x + z = 3y - 4$

- A)  $\frac{35}{\sqrt{35}}$
- B)  $\frac{11}{\sqrt{11}}$
- C)  $\frac{11}{\sqrt{35}}$
- D)  $\frac{35}{\sqrt{11}}$

36. If a card is chosen from a standard deck of cards, what is the probability of getting a five or a seven?

- A)  $8/52$
- B)  $1/26$
- C)  $1/169$
- D)  $4/52$

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37. A five digit number is formed by the digits 1,2,3,4,5 without repetition. What is the probability that the number formed is divisible by 4?

- A)  $\frac{4}{5}$
- B)  $\frac{1}{5}$
- C)  $\frac{3}{5}$
- D)  $\frac{1}{120}$

38. Binomial distribution is negatively skewed when

- A)  $p = -1/2$
- B)  $p < 1/2$
- C)  $p = 0$
- D)  $p > 1/2$

39. Let  $A$  be an  $n \times n$  matrix, and let  $v_1, v_2, \dots, v_n$  be linearly independent vectors in  $\mathbb{R}^n$  expressed as  $n \times 1$  matrices. What must be true about  $A$  for  $Av_1, Av_2, \dots, Av_n$  to be linearly independent?

- A)  $A$  must be column matrix
- B)  $A$  must be row matrix
- C)  $A$  must be invertible matrix
- D)  $\det A=1$

40. Let  $A$  be a square matrix such that  $A^3 = A$ . What can you say about the eigenvalues of  $A$ ?

- A) All are 1
- B) 1,2,3
- C)  $0, \pm 1$
- D)  $0, 1, 1$

41. Find the gradient of a function  $V$  if  $V = xyz$ .

- A)  $y\mathbf{i} + z\mathbf{j} + x\mathbf{k}$
- B)  $xy\mathbf{i} + yz\mathbf{j} + zx\mathbf{k}$
- C)  $x\mathbf{i} + y\mathbf{j} + z\mathbf{k}$
- D)  $yzi + xzj + xyk$

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42. What is the divergence of the vector field  $\vec{f} = 3x^2\hat{i} + 5xy^2\hat{j} + xyz^3\hat{k}$  at the point (1, 2, 3).

- A) 89
- B) 100
- C) 124
- D) 80

43. Find the curl for  $\vec{r} = x^2yz\hat{i} + (3x + 2y)z\hat{j} + 21z^2x\hat{k}$ .

- A)  $\hat{i}(3x + 2y) - \hat{j}(11z^2 - x^2y) + \hat{k}(3z - x^2z)$
- B)  $\hat{i}(x + 2y) - \hat{j}(21z^2 - x^2y) + \hat{k}(3z - x^2z)$
- C)  $-\hat{i}(3x + 2y) - \hat{j}(21z^2 - x^2y) + \hat{k}(3z - x^2z)$
- D)  $\hat{i}(3x + 2y) - \hat{j}(21z^2 - x^2y) + \hat{k}(3z - x^2z)$

44. Find the value of  $\int \int xy e^{x+y} dx dy$ .

- A)  $ye^y(xe^x - e^x)$
- B)  $(ye^y - e^y)(xe^x - e^x)$
- C)  $(ye^y - e^y)xe^x$
- D)  $(ye^y - e^y)(xe^x + e^x)$

45. Find the value of  $\int \frac{\ln x}{x} dx$

- A)  $\ln x$
- B)  $\frac{1}{2} \ln^2 x$
- C)  $\frac{3}{2} \ln x$
- D)  $\ln^2 x$

Congratulations ! You've finished math MCQs.

Please cross ( $\times$ ) Option E in the answer sheet corresponding to all unanswered MCQs.

(Stop. Do not turn over the next page until you are told to do so.)

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**English M.C.Qs**

No. of Questions: 45 (from 46 to 90)

Questions on Page Numbers: 10 To 23

Time: 60 Minutes

Negative Markings: No

**Questions 46-54**

The following set of questions have paragraphs given in jumbled order.

Select the option that best represents the logical order of para.

46.

- a. In rejecting the functionalism in positivist organization theory, either wholly or partially, there is often a move towards a political model of organization theory.
- b. Thus the analysis would shift to the power resources possessed by different groups in the organization and the way they use these resources in actual power plays to shape the organizational structure.
- c. At the extreme, in one set of writings, the growth of administrators in the organization is held to be completely unrelated to the work to be done and to be caused totally by the political pursuit of self-interest.
- d. The political model holds that individual interests are pursued in organizational life through the exercise of power and influence.

- A. adbc
- B. cbad
- C. dbca
- D. abdc

47.

- a. Group decision making, however, does not necessarily fully guard against arbitrariness and anarchy, for individual capriciousness can get substituted by collusion of group members.
- b. Nature itself is an intricate system of checks and balances, meant to preserve the delicate balance between various environmental factors that affect our ecology.
- c. In institutions also, there is a need to have in place a system of checks and balances which inhibits the concentration of power in only some individuals.
- d. When human interventions alter this delicate balance, the outcomes have been seen to be disastrous.

- A. cbad
- B. bead
- C. cabd
- D. bdca

48.

- a. He was bone-weary and soul-weary, and found himself muttering, "Either I can't manage this place, or it's unmanageable."
- b. To his horror, he realized that he had become the victim of an amorphous, unwitting, unconscious conspiracy to immerse him in routine work that had no significance.
- c. It was one of those nights in the office when the office clock was moving towards four in the morning and Bennis was still not through with the incredible mass of paper stacked before him.
- d. He reached for his calendar and ran his eyes down each hour, half-hour, and quarter-hour, to see where his time had gone that day, the day before, the month before.

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- A. abcd
- B. cadb
- C. bdca
- D. dcba

49.

- a. With that, I swallowed the shampoo, and obtained most realistic results on the spot.
- b. The man shuffled away into the back regions to make up a prescription, and after a moment I got through on the shoptelephone to the Consulate, intimating my location.
- c. Then, while the pharmacist was wrapping up a six-ounce bottle of the mixture, I groaned and inquired whether he could give me something for acute gastric cramp.
- d. I intended to stage a sharp gastric attack, and entering an old-fashioned pharmacy, I asked for a popular shampoo mixture, consisting of olive and flaked soap.

- A. dcba
- B. dacb
- C. bdac
- D. bcda

50.

- a. Since then, intelligence tests have been mostly used to separate dull children in school from average or bright children, so that special education can be provided to the dull.
- b. In other words, intelligence tests give us a norm for each age.
- c. Intelligence is expressed as intelligence quotient, and tests are developed to indicate what an average child of a certain age can do: what a 5-year-old can answer, but a 4-year-old cannot, for instance.
- d. Binet developed the first set of such tests in the early 1900s to find out which children in school needed special attention.
- e. Intelligence can be measured by tests.

- A. cdabe
- B. decab
- C. edacb
- D. cbade

51.

- a. This is now orthodoxy to which I subscribe— up to a point.
- b. It emerged from the mathematics of chance and statistics
- c. Therefore the risk is measurable and manageable.
- d. The fundamental concept: Prices are not predictable, but the mathematical laws of chance can describe their fluctuations.
- e. This is how what business schools now call modern finance was born.

- A. adcbe
- B. ebdca
- C. abdce
- D. dcbea

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52.

- a. Similarly, turning to caste, even though being lower caste is undoubtedly a separate cause of disparity, its impact is all the greater when the lower-caste families also happen to be poor.
  - b. Belonging to a privileged class can help a woman to overcome many barriers that obstruct women from less thriving classes.
  - c. It is the interactive presence of these two kinds of deprivation—being low class and being female—that massively impoverishes women from the less privileged classes.
  - d. A congruence of class deprivation and gender discrimination can blight the lives of poorer women very severely.
  - e. Gender is certainly a contributor to societal inequality, but it does not act independently of class.
- A. eabdc
  - B. ebdca
  - C. daebc
  - D. becda

53.

- a. When identity is thus ‘defined by contrast’, divergence with the West becomes central.
  - b. Indian religious literature such as the Bhagavad Gita or the Tantric texts, which are identified as differing from secular writings seen as ‘western’, elicits much greater interest in the West than do other Indian writings, including India’s long history of heterodoxy.
  - c. There is a similar neglect of Indian writing on non-religious subjects, from mathematics, epistemology and natural science to economics and linguistics.
  - d. Through selective emphasis that point up differences with the West, other civilizations can, in this way, be redefined in alien terms, which can be exotic and charming, or else bizarre and terrifying, or simply strange and engaging.
  - e. The exception is the Kamasutra in which western readers have managed to cultivate an interest.
- A. bdace
  - B. deabc
  - C. bdeca
  - D. bceda

54.

- a. Luckily the tide of battle moved elsewhere after the American victory at Midway and an Australian victory over Japan at Milne Bay.
  - b. It could have been no more than a delaying tactic.
  - c. The Australian military, knowing the position was hopeless, planned to fall back to the south-east in the hope of defending the main cities.
  - d. They had captured most of the Solomon Islands and much of New Guinea, and seemed poised for an invasion.
  - e. Not many people outside Australia realize how close the Japanese got.
- A. edcba
  - B. ecdab
  - C. adcbe
  - D. cdbae

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**For questions 55-61, select the best option.**

55. We knew Jana had \_\_\_\_\_ motives for running for class president: She wanted the nearby parking space that came with the office.

- A. anterior
- B. interior
- C. posterior
- D. ulterior

56. The town board heard many outraged and \_\_\_\_\_ arguments from the citizens against the destruction of some wooded areas in order to build a new mall.

- A. tenuous
- B. vociferous
- C. vacuous
- D. egregious

57. The villainous gang's hideout was a den of \_\_\_\_\_ that no one would dare to enter.

- A. innocence
- B. habitants
- C. iniquity
- D. accolades

58. Indigestion is a common \_\_\_\_\_ of participating in a hot-dog eating contest.

- A. euphemism
- B. penchant
- C. corollary
- D. juxtaposition

59. Although it was so ridiculous that no one believed it to be true, the reporter's \_\_\_\_\_ still cost the governor his re-election.

- A. hegemony
- B. sedition
- C. compendium
- D. calumny

60. People on the street stopped to \_\_\_\_\_ over the artist's rendition of the Eiffel Tower, amazed by his ability to capture the detail.

- A. bedazzle
- B. innovate
- C. gratify
- D. objectify

61. The prime minister was admired by all, a(n) \_\_\_\_\_ even in an environment of corruption and disdain.

- A. admonishment
- B. alleviation
- C. nonpareil
- D. profanation

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For questions 67-70, select the best version (A, B, C or D) of the underlined part of the sentence.

67. Go to sleep with your blinds at least halfway open when the sun flows in your brain will slow its melatonin production and start generating adrenaline, so you'll be half-awake by the time.

- A. at least halfway open, when the sun flows in your
- B. at least halfway open. When the sun flows in, your
- C. at least halfway open: When the sun flows in, your
- D. at least halfway open when the sun flows in your

68. If you've ever dropped your iPhone in the pool, run it through the washing machine or have it slip out of your hands and into the toilet you know the meaning of the word "panic."

- A. the washing machine, or have it slip out of your hands and into the toilet, you
- B. the washing machine or have it slip out of your hands and into the toilet: you
- C. the washing machine or have it slip out of your hands and into the toilet - you
- D. the washing machine, or have it slip out of your hands and into the toilet: you

69. If you want a pedicure book the first appointment of the day when the equipment is cleaner.

- A. pedicure. Book the first appointment of the day, when
- B. pedicure, book the first appointment of the day: when
- C. pedicure- book the first appointment of the day, when
- D. pedicure, book the first appointment of the day when

70. Oprah Winfrey, TV legend and CEO of Harpo Productions told graduates to dream big and always do the right thing.

- A. Productions, told graduates to dream big and "always do the right thing."
- B. Productions, told graduates to dream big and "always do the right thing".
- C. Productions: told graduates to dream big and , always do the right thing.
- D. Productions " told graduates to dream big and "always do the right thing".

For questions 71- 75, select the best option (A,B,C or D).

71.

The novel is admittedly not the finest example of its genre, but I object to the \_\_\_\_ preface written by a supposed expert on detective fiction from whom we might have expected at least one or two perceptive comments.

- I.egregious
  - II.inane
  - III.pretentious
  - IV.subliminal
  - V.vacuous
  - VI.unexamined
- A. I &V
  - B. I & III
  - C. II & IV
  - D. III & VI

**75.**

To the layman, a philosopher who attempts to elucidate a complex moral dilemma by reducing it to a simple yet apparently ridiculous test case seems rather to \_\_\_\_\_ the issue.

- I. ridicule
  - II. obfuscate
  - III. over-simplify
  - IV. denigrate
  - V. becloud
  - VI. Attenuate
- 
- A. III & IV
  - B. III & II
  - C. V & VI
  - D. II & V

**For Questions 76-85, read the given case and answer the appended questions. Paragraphs are numbered to facilitate reading. [15 minutes]**

### **1. Introduction**

British Petroleum Plc (BP) is the world's third-largest oil and gas company headquartered in London, UK. Its mission is to be "innovative, progressive, safe and friendly for both its employees and the environment". BP tries to increase its profitability, aiming to achieve and sustain competitive advantage, through various routes, including the creation of a reputation which generates value (Porter, 1985/2004). [1]

However, BP is responsible for several oil spills since 2005 (e.g. 23 March 2005 in Texas and 2 March 2006 in Alaska) causing a number of deaths and injuries among its employees and incalculable disaster to the environment. The biggest environmental disaster in the history of the USA and the largest marine oil spill in the history of the oil industry took place on 20 April 2010, when an explosion occurred in the Deep water Horizon oil drilling rig leased by BP in the Gulf of Mexico. The result of this tragedy was the death of 11 workers and the injury of 17 out of 126 workers who were on board (Robertson and Kaufman, 2010; Chakraborty, 2011). After the tragedy in the Gulf of Mexico, BP's efforts to regain superior performance have been unsuccessful, leading to a drastic decline in its financial profitability by the end of 2010. Along with BP's history of crises, many reasons led to the Gulf of Mexico disaster, including unkempt safety issues and management failures (Qumer and Purkayastha, 2010). During this crisis another weak point in BP's management became obvious: that of effective crisis communication for the protection of its corporate image and reputation among its stakeholders. Crisis communication is a significant issue in oil industries disasters and demands strategic genius for combating emergencies. [2]

Rham Emanuel, President Obama's Chief of Staff, described BP's crisis communication strategy as "a long line of PR gaffes and mistakes" (BBC News, 2010). The purpose of the present study is to provide a detailed outline of BP's communication failures. Coomb's (2007) situational crisis communication theory (SCCT) would be the basis of analysis. The research investigates the following:

RQ1. What crisis communication measures did BP take during the Gulf of Mexico spill? Were they successful?

RQ2. What changes should BP employ, in its management, in order to lead successful communication strategies during a crisis? [3]

**2. BP's crisis communication problems during the spill**

Over the years, BP had managed to increase its reputation through successful sustainable strategies, despite its history of oil spillage crises. According to SCCT, the threat posed by the Gulf of Mexico crisis was large because it was something between an accident and an intentional event (with moderate to strong responsibility) intensified by a history of similar crises. During these crises, Coombs (2007) suggests apologetic communication strategies accepting responsibility. So, very soon after the Gulf of Mexico disaster, BP's CEO accepted responsibility saying:

[. . .] BP assumes full responsibility for the oil spill (Hichri, 2010).

BP seemed to grasp the importance of the internet by quickly setting up a special website in order to stay in touch with its stakeholders ([www.deepwaterhorizonresponse.com](http://www.deepwaterhorizonresponse.com)), while Facebook, Twitter, YouTube, and Flickr accounts were swiftly created in order to function as reminders and ingratiation strategies supplementing its operational response, engaging the public as well in the communication process. [4]

**BP's communication failure with the public, the US Government and its employees**

In spite of BP's seemingly effective initial crisis communication strategies, it did not maintain its credibility, establishing a dishonest, unreliable and inconsistent profile through their later statements that contradicted the initial position. [5]

Also, Hayward's scapegoat strategies appeared too obvious and seemed as denying responsibility when he said on 25 May 2010: "The spill wasn't really BP's fault, since another company entirely owned and staffed the rig. Transocean, the operator of the rig, has the blame for the mess" (Reguly, 2010). Ironically though he concluded: "This is not our accident, but it's our responsibility" (Adubato, 2010). Stakeholders were left with the question: how can BP assume responsibility of an accident not theirs? Clearly their statements did not show a staid approach and were not treated with a planned PR strategy. Svanberg's mistakes were not less important, especially when he said: "I hear comments sometimes that large oil industries are greedy companies and don't care, but that is not the case with BP. We care about the small people" (Clark, 2010). [6]

Five major gaffes were identified in Hayward's communication with the media, the US government and the public:

1. The fake image. Although BP was promoting its intense operational responses, everything collapsed when BP supplied fake images to the press. Scott Dean, a spokesman for BP, responded: "There was nothing ominous in the photo. A photographer working for the company had inserted the three images in spots where the video screens were blank" (Mufson, 2010). BP quickly supplied the original image, but this was the first serious crack in BP's image. [7]

2. Hayward "wants his life back". The second communication mistake came from Hayward on 31 May 2010 when he said on live TV "I want my life back". Many journalists, PR consultants and even President Obama himself mocked this statement, delivering a significant hit to the company's reputation (BBC News US and Canada, 2010). [8]

3. The incident with the yacht. Oil was still gushing into the Gulf when Hayward took time off so he could watch his yacht "Bob" compete in J.P. Morgan's Asset Management Round the Island Race at the Isle of Wight, England (Loki, 2011). [9]

4. BP had not been fully prepared for a deep-water oil leak. When speaking to the Financial Times in Houston, Hayward said: "What is undoubtedly true is that we did not have the tools you would want in your toolkit" (Crooks, 2010), creating a sense of insecurity to the public and doubts for BP's performance to deal with the oil spill. [10]

5. Hayward's self-interest. Hayward showed that he was only concerned for his position during the hearing with US Cabinet members, saying that: "I haven't watched the television or read a newspaper for two weeks because I don't want my judgment clouded by what's being written about either me or the company" (Quinn, 2010), adding that "I don't feel my job to be under threat at the moment. That of course may change. I will be judged by the nature of the response" (Webb, 2010). BP's general communication also with the US government was not as good as BP would have wanted. Hayward was criticised by President Obama for spending \$50 million on radio, TV and online advertising campaigns, stating that BP should spend its money on resolving the crisis rather than on financing advertisements (Sherwell, 2010). BP later clarified by ironically saying "not a cent" had been diverted from the oil spill response to pay for the advertising campaign (Pitney, 2010). The importance of monitoring media contents and avoiding advertising campaigns during a crisis is discussed in the recommendations section. BP also failed to communicate effectively with their employees when Hayward was noted diminishing oil-related health symptoms among employees working in the oil spillage cleanup, despite stressing how safe they should feel working at BP (Korosec, 2010). During their effort to clean up the Gulf, many employees had to be hospitalized for dizziness, headaches, nasal irritation and other respiratory symptoms. Hayward's obvious disinterest for his employees became apparent when he said: I'm sure they were genuinely ill, but [I don't know] whether it had anything to do with dispersants and oil. You know, food poisoning is a really big issue when you've got a concentration of this many people (Martel, 2010). [11]

A journalist sarcastically commented on this saying: "Apparently in Tony Hayward Land, food poisoning of cleanup crews is a big issue just like the Gulf of Mexico is a very big ocean" (Martel, 2010). [12]

#### **BP's communication with shareholders: an opposite strategy**

BP's communication strategies with its shareholders were completely different from its communication with the public and employees. The obvious reasons are financial interests intertwining BP with its shareholders and BP's constant desire to keep a competitive advantage through stable investors. Remarkably, BP's response strategy was to remind them the past good deeds of the company. This was a crucial tactic from BP because shareholders can be affected by the organization's reputational change (Agle et al., 1999).[13]

Also, BP's strategy to blame other companies for the disaster was essential for ingratiating communication with its shareholders, since they would only become more dissatisfied if BP was deemed fully responsible.(Coombs, 2007). On June 4, Svanberg said to BP's shareholders: "I am keenly aware of the gravity of the disaster in which 11 people died [...] We deeply regret, and are sorry, for this tragic accident and the aftermath". He also ensured BP's long-term presence in the business world, commenting on the matter of dividend: "We know how important the dividend to shareholders is [...] We will meet our obligations to[ward them]" (Wearden, 2010).[14]

#### **3. Causes of BP's crisis communication failure**

The root cause in the Gulf of Mexico oil spill was "management failure". Cherry Murray, Harvard School of Engineering (Ireland, 2013) Bad communication leadership Hayward's failure in leadership started with his delay during the initial weeks of the spill to address the severity of the problem (Chen, 2010). Although BP had issued a crisis response strategy involving a public information officer who would be responsible for developing and releasing information about the incident and managing personnel issues due to accidents/injuries, in practice things took a different path. [15]

Research shows that in crises the most important *populaces* to be addressed are employees/members of the company followed by the mass media and the most effective PR tools to do so are personal media interviews (Nikolaev, 2010). [16]

Trained spokesmen and authority figures (e.g. CEO or Chairman) usually undertake these tasks. In BP's case, it was clear that Hayward was not only trained, but in many instances cynical and passed the opposite messages across. Culture BP's mechanistic corporate culture – a result of BP's previous CEO John Browne – did not allow employees lower in hierarchy to express their concerns, suggestions, and even medical symptoms. Although Hayward promised to provide a more organic culture with his appointment, things proved different:

When Tony Hayward came in as CEO, improving the health and safety record was [promoted as a value] but so was rooting out inefficiency, which rooted out a lot of costs that were related to improving the safety culture says Wayne Cascio of the University of Colorado-Denver (Ciccarelli, 2011). BP's consideration of national culture matters was also defective. Hence, BP suffered hugely because it had too few Americans leading its communication strategy, signifying the importance to employ more Americans into PR for damage control. [17]

#### **4. Solutions and strategic recommendations**

Although BP swiftly understood the importance of internet crisis communication, and followed compensation, apology and ingratiation response strategies, BP's communication strategies proved insufficient or better inappropriate, resulting in Hayward's replacement by Robert Dudley on 1 October 2010 (The Guardian, 2010). This was a positive sign showing that BP cares for having the right people in the right positions. We describe below certain communication strategies BP should apply to rebuild positive relationships with its stakeholders and execute successful future crisis communication plans. [18]

##### **Pre-crisis strategies**

1. Change in organizational culture. This can be done through empowerment strategies, teambuilding and team-working workshops within the company.
2. Creation of a pre-crisis communication plan. This must be tested at least once a year. Employees and managers should undergo preparedness programmes. BP should immediately appoint at least two spokespersons. BP's communication with its stakeholders must be done from experienced and responsible spokespersons. [19]

##### **During- and after-crisis strategies**

1. BP should attempt direct and sincere communication with the media.
2. Do not run an advertising campaign; it is not a good time to promote your image.
3. Close monitoring of media content. Monitoring news allows for immediate response and clarification of any unclear point or comment on BP's crisis response operations. [20]

#### **5. Conclusion**

It has clearly been shown that BP's crisis communication – especially with the public, the US government and its employees – was a weak link in its crisis management strategy; CEO Tony Hayward was largely responsible for this. There was a slight differentiation in communication with shareholders, most possibly due to financial interests with them, but at the end Hayward's mistakes were too serious for him to remain as CEO. The lessons to learn are various, both for practitioners and researchers. Practitioners should learn from the leadership, culture and PR mistakes made by BP and avoid them in a crisis of their organisation. They should select those strategies that foster their organization's strengths and correct its weaknesses in order to take advantage of external opportunities and counter external threats (Porter, 1985/2004). For researchers, there is a need to study the role of the company's CEO in crisis communication and the development of theoretical

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frameworks with philosophies and guidelines for CEOs to effectively address communication without cynicism but with empathy. [21]

76. “ Companies have to develop effective and efficient crisis communication strategies dealing with the complexity of the crisis” . Which of the following is true for the given statement:

- A. Stated and implied
- B. Neither stated nor implied
- C. Implied but not stated
- D. Stated but rejected

77. What is not a key aspect of the case

- A. crisis communication
- B. strategic failure
- C. ethical dilemma
- D. legislation

78. CEO’s attempt to blame others was an attempt to:

- A. Denial
- B. Scapegoating
- C. Self-Actualization
- D. Sublimation

79. The passage suggests that BP was at its best in crisis communication with the shareholders. Decide who could be the least affected by this strategy:

- A. Shareholders
- B. Employees
- C. US government
- D. Environmentalists

80. SCCT core components are Crisis Responsibility and Understanding the Threat. Which of the following denote that the management failed in both.

- A. Shareholder management
- B. Media management
- C. Asset management
- D. Human Resources Management

81. BP’s stocks are likely to be effected by the aftermaths of the tragedy. Which of the following could be the least effective strategy to counter falling shares:

- A. working on the confidence building of the shareholders.
- B. avoiding the controversy in public discourse
- C. winning the confidence of the employees
- D. overhauling the management team

82. unkempt [paragraph 1] is nearest in meaning to :

- A. cumbersome
- B. gruesome
- C. neglected
- D. conscientious

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83. staid [paragraph 6] is nearest in meaning to :

- A. grim
- B. calm
- C. threatening
- D. serious

84. ominous [paragraph 7] is nearest in meaning to :

- A. preposterous
- B. solemn
- C. sinister
- D. amiable

85. Populaces [paragraph 16] is nearest in meaning to :

- A. publics
- B. commoners
- C. poor
- D. bourgeoisies

**For questions 86-90, select the best option (A, B, C or D).**

86.

The success of the business venture \_\_\_\_\_ his expectations; he never thought that the firm would prosper.

- A. confirmed
- B. belied
- C. nullified
- D. fulfilled

87.

The journalist (i) \_\_\_\_\_ the efforts of the drug squad to control drug peddling, claiming that they had actually (ii) \_\_\_\_\_ the problem.

Blank (i)	Blank (ii)
I. commended	IV. delineated
II. deprecated	V. mollified
III. Noted	VI. exacerbated

- A. I & III
- B. II & V
- C. II & VI
- D. III & V

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88.

To Simon, not usually so (i)\_\_\_\_\_, their bantering talk seemed (ii)\_\_\_\_\_. Actually their exchanges masked underlying (iii)\_\_\_\_\_.

Blank (i) I. inscrutable II. unperceptive III. Perspicacious	Blank (ii) IV. amicable V. exasperating VI. Hostile	Blank (iii) VII. antagonism VIII. assumptions IX. geniality
-----------------------------------------------------------------------	--------------------------------------------------------------	----------------------------------------------------------------------

- A. I, V & VII  
B. II, IV & VII  
C. III, IV & VIII  
D. I, VI & IX

89.

The new systematic nomenclature was so (i)\_\_\_\_ that many chemists preferred to (ii)\_\_\_\_ the older trivial names that were at least shorter. At least, that is the ostensible reason. Actually, tradition seems to carry more weight than (iii)\_\_\_\_ with some scientists.

Blank (i) I. succinct II. cumbersome III. Irrational	Blank (ii) IV. revert to V. adopt VI. suspend	Blank (iii) VII. chronology VIII. longevity IX. System
---------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------

- A. I, V & VII  
B. II, IV & VII  
C. II, IV & IX  
D. I, VI & IX

90.

He was normally entirely (i)\_\_\_\_\_, but in the embarrassing situation in which he found himself he felt compelled to (ii)\_\_\_\_.

Blank (i) I. equable II. considerate III. Forthright	Blank (ii) IV. concede V. prevaricate VI. capitulate
---------------------------------------------------------------	---------------------------------------------------------------

- A. III & V  
B. I & VI  
C. III & IV  
D. None of the above

**If you finish before time is called, you may check your work on this section only.**

This is the end of English MCQs. Next section is DS MCQs.

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**Data Science M.C.Qs**

No. of Questions: 45 (from 91 to 135)  
Questions on Page Numbers: 24 To 31

Time: 45 Minutes  
Negative Markings: No

91. The purpose of the following program fragment

$b = s + b;$

$s = b - s;$

$b = b - s;$

where s, b are two integers is to

- A. transfer the contents of s to b
- B. transfer the contents of b to s
- C. exchange (swap) the contents of s and b
- D. negate the contents of b and s

92. If y is of integer type then the expressions

$3 * (y - 8) / 9$  and  $(y - 8) / 9 * 3$

- A. Must yield the same value
- B. Must yield different values
- C. May or may not yield the same value
- D. None of the above

93. Problems that can be solved with one processor in polynomial time are called \_\_\_\_\_.

- A. NP-Complete problems
- B. Class NP problems
- C. Class P problems
- D. NP-Hard problems

94. Which of the following statements contains an error?

- A. Select \* from customer where customerid = 10003;
- B. Select customerid from customer where customerid = "10006";
- C. Select customerid from customer;
- D. Select customerid where customerid = 1009 and first\_name = 'Abdullah';

95. In the given query which of the keyword has to be inserted?

INSERT INTO employee \_\_\_\_\_ (2012,Ahmed,3000);

- A. Table
- B. Values
- C. Relation
- D. Column

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96. In a \_\_\_\_\_, each node is capable of having two child nodes and in which a unique path exists from the root to every other node.

- A. graph
- B. search tree
- C. binary tree
- D. data structure

97. If an entity set does not have sufficient attributes to form a primary key, it is called a \_\_\_\_\_

- A. Strong entity set
- B. Weak relationship set
- C. Weak entity set
- D. Variable set

98. An entity in X is associated with at most one entity in Y. An entity in Y can be associated with any number (zero or more) of entities in X.

- A. One-to-many
- B. One-to-one
- C. Many-to-many
- D. Many-to-one

99. A system is in a \_\_\_\_\_ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.

- A. Idle
- B. Waiting
- C. Deadlock
- D. Ready

100. MongoDB is an example of a \_\_\_\_\_ database.

- A. relational
- B. distributed
- C. Object-oriented
- D. document-oriented

101. In contrast to CPUs which have only few cores, normal GPUs have \_\_\_\_\_ cores.

- A. one
- B. hundreds of
- C. millions of
- D. billions of

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102. A NoSQL database provided support to store and retrieve \_\_\_\_\_.  
A. Tabular data  
B. Non-tabular data  
C. Both (a) and (b)  
D. None of the above
103. Compiler implementations usually use \_\_\_\_\_ to look up identifiers  
A. hash tables  
B. B-trees  
C. Neural networks  
D. All of the above
104. A parameter (of a function) that accepts the address of its argument passed by the calling unit is called \_\_\_\_\_.  
A. polymorphism  
B. Inheritance  
C. reference parameter  
D. procedure
105. The maximum number of elements that must be examined to complete a binary search in an array of 200 elements is \_\_\_\_\_.  
A. 200  
B. 8  
C. 1  
D. 3
106. Which of the following is not the required condition for binary search algorithm?  
A. the list must be sorted  
B. there should be the direct access to the middle element in any sublist  
C. there must be mechanism to delete and/or insert elements in list  
D. none of above
107. *class Dog : public X, public Y*  
is an example of  
A. Multiple inheritance  
B. Repeated inheritance  
C. Linear inheritance  
D. Super inheritance

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108. In Java language, which of the following can be declared final  
A. A class  
B. A method  
C. A member variable  
D. All of the above
109. Which of the following are true of abstract classes/methods  
A. You cannot create an object of an abstract class  
B. A class that has a method that is declared abstract, must itself be declared abstract  
C. Static methods cannot be abstract  
D. All of the above
110. A sorting technique that guarantees that records with the same primary key occurs in the same order in the sorted list as in the original unsorted list is said to be  
A. stable  
B. consistent  
C. external  
D. linear
111. In linked lists there are no NULL links in:  
A. single linked list  
B. doubly linked list  
C. circular linked list  
D. none of the above
112. What is a full binary tree?  
A. Each node has exactly zero or two children  
B. Each node has exactly two children  
C. All the leaves are at the same level  
D. Each node has exactly one or two children
113. If binary trees are represented in arrays, what formula can be used to locate a left child, if the node has an index  $i$ ?  
A.  $2i+1$   
B.  $2i+2$   
C.  $2i$   
D.  $4i$
114. Which one of the following is a procedural language?  
A. Relational algebra  
B. Tuple relational calculus  
C. Domain relational calculus  
D. Both b) and c)

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115. Which of the following operation will give a result that contains all pairs of tuples from the two relations, regardless of whether their attribute values match.

- A. Join
- B. Cartesian product
- C. Intersection
- D. Set difference

116. Which one of the following is used to define the structure of the relation, deleting relations and relating schemas?

- A. DML(Data Manipulation Langauge)
- B. DDL(Data Definition Langauge)
- C. Query
- D. Both a) and b)

117. A thread is a \_\_\_\_\_ process.

- A. heavy weight
- B. multi-process
- C. light weight
- D. inter-thread

118. \_\_\_\_\_ programming language has full support for both object-orientation and functional programming?

- A. Scala
- B. C
- C. Fortran
- D. Visual Basic

119. `DELETE FROM a; //a is a relation`

This command performs which of the following action?

- A. Remove relation a
- B. Delete the data entries of the relation a
- C. Delete fields of a
- D. none of the above

120. Which join refers to join tuples from the right table that have no matching key in the left table, and are included in the result set:

- A. Left outer join
- B. Right outer join
- C. Right inner join
- D. Full outer join

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121. The entity relationship set is represented in E-R diagram as  
A. Double diamonds  
B. Undivided rectangles  
C. Dashed lines  
D. Diamond
122. An attribute X of datatype varchar(10) has the value "CLI". The attribute Y of datatype char(10) has value "shop". Here attribute X has \_\_\_\_ spaces and attribute Y has \_\_\_\_ spaces.  
A. 3, 4  
B. 10, 4  
C. 10, 10  
D. 3, 10
123. Consider the following program fragment  
if (a > b)  
if (b > c)  
s1;  
else s2;  
s2 will be executed if  
A. a <= b  
B. b > c  
C. b <= c and a <= b  
D. a > b and b <= c
124. The expression  $4 + 6 / 3 * 2 - 2 + 7 \% 3$  evaluates to  
A. 3  
B. 4  
C. 6  
D. 7
125. (95) Let x be an array (in C/C++ language). Which of the following operations are legal?  
A.  $++x$   
B.  $x+1$   
C.  $x++$   
D.  $x*2$
126. Choose the correct statements regarding *inline* functions.  
A. It speeds up execution and increases the code size  
B. It slows down execution and increases the code size  
C. It speeds up execution and decreases the code size  
D. It slows down execution and decreases the code size

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127. In OOP languages, a constructor is called whenever.

- A. An object is declared
- B. An object is used
- C. A class is declared
- D. A class is used

128. The running time of an algorithm is given by

$$T(n) = T(n - 1) + T(n - 2) - T(n - 3), \text{ if } n > 3 \\ n, \text{ otherwise}$$

The order of this algorithm is

- A.  $n$
- B.  $\log n$
- C.  $n^n$
- D.  $n^2$

129. You want to check whether a given set of items is sorted. Which of the following sorting methods will be the most efficient if it is already in sorted order?

- A. Bubble sort
- B. Selection sort
- C. Insertion sort
- D. Merge sort

130. What data structure can be used to check if a syntax has balanced parenthesis?

- A. Queue
- B. Tree
- C. List
- D. Stack

131. Following sequence of operation is performed on a stack. Push(1), Push(2), Pop, Push(1), Push(2), Pop, Pop, Pop, Push(2), Pop. The sequences of popped out values are

- A. 2,2,1,2,2
- B. 2,2,1,1,2
- C. 2,1,2,2,1
- D. 2,1,2,2,2

132. Sparse matrices have

- A. Many zero entries
- B. Many non-zero entries
- C. Higher dimension
- D. None of the above

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**BY CROSSING THE CORRESPONDING LETTER**

133. The Worst case occur in linear search algorithm when
- A. item is somewhere in the middle of the array
  - B. item is in the beginning of the array
  - C. item is the largest element in the array
  - D. item is the last element in the array or is not there at all
134. If several elements are competing for the same bucket in the hash table, what is it called?
- A. Diffusion
  - B. Replication
  - C. Collision
  - D. Duplication
135. Consider a directed line ( $\rightarrow$ ) from the relationship set supervisor to both entity sets employee and laborer. This indicates \_\_\_\_\_ cardinality
- A. One to many
  - B. Many to one
  - C. Many to many
  - D. One to one

This is the end of DS MCQs.

**If you finish before time is called, you may check your work on this section only.**

THE END