IIITH UGEE 2018 Question Paper PDF

International Institute of Information Technology Undergraduate Entrance Examination (IIITH UGEE)

UGEE 2018 MEMORY BASED PAPER

UGEE 2018 Paper Pattern

PAPER	No. of Que	Time	Marking	Total Marks	Negative Marking
UGEE 2018	100	3 hr		150	
SUPR	50	1 hr	+1	50	0
REAP	50	2 hr	+2	100	-0.5

TIME : 3 HRS   TOTAL MARKS : 150

SUPR (SUBJECT PROFICIENCY TEST)

Physics

1. A metal surface is illuminated by light of given intensity and frequency to cause photoemission. If the intensity of illumination is reduced to one fourth of its original value then the maximum KE of the emitted photoelectrons would be
(a) twice the original value
(b) four times the original value
(c) one fourth of the original value
(d) unchanged

2. Torque acting on a rectangular coil carrying current 'I' situated parallel to magnetic field of induction 'B', having number of turns 'n' and area 'A' is
(a) $ni(\hat{\mathbf{A}} \cdot \hat{\mathbf{B}})$ (b) $\dfrac{nBA}{i}$ (c) $ni\,(\mathbf{A} \times \mathbf{B})$ (d) $\dfrac{iBA}{n}$

3. A force $(\mathbf{F}) = -5\hat{i} - 7\hat{j} + 3\hat{k}$ acting on a particle causes a displacement $(s) = 3\hat{i} - 2\hat{j} + a\hat{k}$ in its own direction. If the work done is 14 J, then the value of 'a' is
(a) 0   (b) 5   (c) 15   (d) 1

4. When the electron in hydrogen atom jumps from fourth Bohr orbit to second Bohr orbit, one gets the
(a) second line of Balmer series
(b) first line of Balmer series
(c) first line of Pfund series
(d) second line of Paschen series

5. Light of wavelength 'λ' is incident on a single slit of width 'a' and the distance between slit and screen is 'D'. In diffraction pattern, if slit width is equal to the width of the central maximum then 'D' is equal to
(a) $\dfrac{a}{2\lambda}$ (b) $\dfrac{a^2}{2\lambda}$ (c) $\dfrac{a}{\lambda}$ (d) $\dfrac{a^2}{\lambda}$

6. In U.C.M., when time interval $\delta t \to 0$, the angle between change in velocity $(\delta\mathbf{v})$ and linear velocity $(\mathbf{v})$ will be
(a) $0°$ (b) $90°$ (c) $180°$ (d) $45°$

7. A stretched string fixed at both ends has 'm' nodes, then the length of the string will be
(a) $(m-1)\dfrac{\lambda}{2}$ (b) $\dfrac{(m+1)\lambda}{2}$
(c) $\dfrac{m\lambda}{2}$ (d) $(m-2)\dfrac{\lambda}{2}$

8. A particle is performing a linear simple harmonic motion of amplitude 'A'. When it is midway between its mean and extreme position, the magnitudes of its velocity and acceleration are equal. What is the periodic time of the motion?
(a) $\dfrac{2\pi}{\sqrt{3}}$ s   (b) $\dfrac{\sqrt{3}}{2\pi}$ s
(c) $2\pi\sqrt{3}$ s   (d) $\dfrac{1}{2\pi\sqrt{3}}$ s

9. Three identical rods each of mass 'M' and length 'L' are joined to form a symbol 'H'. The moment of inertia of the system about one of the sides of 'H' is

   (a) $\dfrac{2ML^2}{3}$
   (b) $\dfrac{ML^2}{2}$
   (c) $\dfrac{ML^2}{6}$
   (d) $\dfrac{4ML^2}{3}$

10. The luminous border that surrounds the profile of a mountain just before sun rises behind it, is an example of
    (a) dispersion
    (b) total internal reflection
    (c) interference
    (d) diffraction

11. A block of mass 'm' moving on a frictionless surface at speed 'v' collides elastically with a block of same mass, initially at rest. Now the first block moves at an angle 'θ' with its initial direction and has speed 'v_1'. The speed of the second block after collision is

    (a) $\sqrt{v_1^2 - v^2}$
    (b) $\sqrt{v^2 - v_1^2}$
    (c) $\sqrt{v^2 + v_1^2}$
    (d) $\sqrt{v - v_1}$

12. Three point masses each of mass 'm' are kept at the corners of an equilateral triangle of side 'L'. The system rotates about the center of the triangle without any change in the separation of masses during rotation. The period of rotation is directly proportional to

    ($\cos 30° = \sin 60° = \dfrac{\sqrt{3}}{2}$)

    (a) $\sqrt{L}$
    (b) $L^{3/2}$
    (c) L
    (d) L^{-2}

13. Two pendulums begin to swing simultaneously. The first pendulum makes nine full oscillations when the other makes seven. The ratio of the lengths of the two pendulums is

    (a) $\dfrac{49}{81}$
    (b) $\dfrac{64}{81}$
    (c) $\dfrac{8}{9}$
    (d) $\dfrac{7}{9}$

14. When light enters glass from vacuum, then the wavelength of light
    (a) decreases
    (b) becomes zero
    (c) remains same
    (d) increases

15. Which one of the following statement is correct?
    (a) Surface energy is potential energy per unit length
    (b) Surface tension is work done per unit area
    (c) Surface tension is work done per unit length
    (d) Surface energy is work done per unit force

16. What is the minimum energy required to launch a satellite of mass 'm' from the surface of the earth of mass 'M' and radius 'R' at an altitude 2R ?

    (a) $\dfrac{GMm}{2R}$
    (b) $\dfrac{2GMm}{3R}$
    (c) $\dfrac{GMm}{3R}$
    (d) $\dfrac{5\,GMm}{6R}$

17. A wire of length 'L' and area of cross section 'A' is made of material of Young's modulus 'Y'. It is stretched by an amount 'x'. The work done in stretching the wire is

    (a) $\dfrac{Y x^2 A}{2L}$
    (b) $\dfrac{2Y x^2 A}{L}$
    (c) $\dfrac{Y x A}{2L}$
    (d) $\dfrac{Y x^2 A}{2}$

18. In a parallel plate air capacitor the distance between plates is reduced to one fourth and the space between them is filled with a dielectric medium of constant 2. If the initial capacity of the capacitor is 4μF. then its new capacity is
    (a) 32 μF
    (b) 18 μF
    (c) 8 μF
    (d) 44 μF

19. An aircraft is moving with uniform velocity 150 m/s in the space. If all the forces acting on it are balanced, then it will
    (a) keep moving with same velocity
    (b) remain floating at its place
    (c) escape in space
    (d) fall down on earth

20. In case of p-n junction diode, the width of depletion region is
    (a) decreased with heavy doping
    (b) increased by reverse biasing
    (c) decreased with light doping
    (d) increased by forward biasing

21. In the study of transistor as an amplifier, the ratio of collector current to emitter current is 0.98 then the ratio of collector current to base current will be
    (a) 99
    (b) 49
    (c) 50
    (d) 98

22. In a bionomial distribution, mean is 18 and variance is 12 then $p = $ ......

    (a) $\dfrac{2}{3}$ (b) $\dfrac{1}{3}$ (c) $\dfrac{3}{4}$ (d) $\dfrac{1}{2}$

23. If lines $\dfrac{x-1}{2} = \dfrac{y+1}{3} = \dfrac{z-1}{4}$ and $\dfrac{x-3}{1} = \dfrac{y-\lambda}{2} = \dfrac{z}{1}$ intersect each other, then $\lambda = $ ......

    (a) $\dfrac{7}{2}$ (b) $\dfrac{3}{2}$ (c) $\dfrac{9}{2}$ (d) $\dfrac{5}{2}$

24. The particular solution of the differential equation $\log\left(\dfrac{dy}{dx}\right) = x$, when $x = 0$, $y = 1$ is ......

    (a) $y = e^x + 2$ (b) $y = -e^x$

    (c) $y = -e^x + 2$ (d) $y = e^x$

25. The p.d.f of a random variable x is given by
    $$f(x) = \dfrac{1}{4a}, \quad 0 < x < 4a, (a > 0)$$
    $$= 0, \qquad \text{otherwise}$$
    and $P\left(x < \dfrac{3a}{2}\right) = kP\left(x > \dfrac{5a}{2}\right)$ then $k = $ ......

    (a) 1   (b) $\dfrac{1}{4}$

    (c) $\dfrac{1}{8}$ (d) $\dfrac{1}{2}$

26. If the function $f(x) = \dfrac{(e^{kx} - 1)\tan kx}{4x^2}, \quad x \neq 0$
    $$= 16 \qquad x = 0$$
    is continuous at $x = 0$, then $k = $ ......

    (a) $\pm\dfrac{1}{8}$ (b) ± 4 (c) ± 2 (d) ± 8

27. The solution of the differential equation $y\, dx - x\, dy = xy\, dx$ is ......

    (a) $x^2 = e^x y^2$ (b) $x = ye^x$

    (c) $xy = e^x$ (d) $x^2 y^2 = \log x$

28. The maximum value of $z = 6x + 8y$ subject to $x - y \geq 0$, $x + 3y \leq 12$, $x \geq 0$, $y \geq 0$ is ......

    (a) 72   (b) 42   (c) 96   (d) 24

29. If $\sum_{r=1}^{n} (2r + 1) = 440$, then $n = $ ......

    (a) 20   (b) 22   (c) 21   (d) 19

30. If p and q are true and r and s are false statements, then which of the following is true?

    (a) $(q \wedge r) \vee (\sim p \wedge s)$

    (b) $(\sim p \to q) \leftrightarrow (r \wedge s)$

    (c) $(p \to q) \vee (r \leftrightarrow s)$

    (d) $(p \wedge \sim r) \wedge (\sim q \vee s)$

31. If the standard deviation of the random variable X is $\sqrt{3pq}$ and mean is $3p$ then $E(x^2) = $ ......

    (a) $3pq + 3q^2$ (b) $3p(1 + 2p)$

    (c) $3pq + 3p^2$ (d) $3q(1 + 2q)$

32. If $f(x) = [x]$, where $[x]$ is the greatest integer not greater than x, then $f'(1^+) = $ ......

    (a) 1   (b) 2

    (c) 0   (d) -1

33. If lines represented by $(1 + \sin^2 \theta)x^2 + 2hxy + 2\sin\theta y^2 = 0$, $\theta \in [0, 2\pi]$ are perpendicular to each other then $\theta = $ ......

    (a) $\dfrac{\pi}{2}$ (b) π

    (c) $\dfrac{3\pi}{2}$ (d) $\dfrac{\pi}{6}$

34. If $A = \{x \mid x \in N, x$ is a prime number less than $12\}$ and $B = \{x \mid x \in N, x$ is a factor of $10\}$, then $A \cap B = $ ......

    (a) $\{2\}$

    (b) $\{2, 5\}$

    (c) $\{2, 5, 10\}$

    (d) $\{1, 2, 5, 10\}$

35. If R is the circum radius of $\triangle ABC$, then $A(\triangle ABC) = $ ......

    (a) $\dfrac{abc}{R}$ (b) $\dfrac{abc}{4R}$

    (c) $\dfrac{abc}{3R}$ (d) $\dfrac{abc}{2R}$

36. If A, B, C and D are $(3, 7, 4)$, $(5, -2, -3)$, $(-4, 5, 6)$ and $(1, 2, 3)$ respectively, then the volume of the parallelopiped with AB, AC and AD as the co-terminus edges, is ...... cubic units.

    (a) 91   (b) 94

    (c) 92   (d) 93

37. If $(-\sqrt{2}, \sqrt{2})$ are cartesian co-ordinates of the point, then its polar co-ordinates are ......

(a) $\left(1, \frac{4\pi}{3}\right)$ (b) $\left(2, \frac{3\pi}{4}\right)$ (c) $\left(3, \frac{7\pi}{4}\right)$ (d) $\left(4, \frac{5\pi}{4}\right)$

38. If
$$\int \frac{\cos x - \sin x}{8 - \sin 2x} dx = \frac{1}{p} \log \left[\frac{3 + \sin x + \cos x}{3 - \sin x - \cos x} \right] + c,$$
then $p = \dots$

(a) 6　　(b) 1　　(c) 3　　(d) 12

39. If A is non-singular matrix and $(A + I)(A - I) = 0$ then $A + A^{-1} = \dots$

(a) $2A$　　(b) 0
(c) I　　(d) $3I$

40. Equations of planes parallel to the plane $x - 2y + 2z + 4 = 0$ which are at a distance of one unit from the point $(1, 2, 3)$ are ....

(a) $x + 2y + 2z = -6, x + 2y + 2z = 5$
(b) $x - 2y - 6 = 0, x - 2y + z = 6$
(c) $x + 2y + 2z = 6, x + 2y + 2z = 0$
(d) $x - 2y + 2z = 0, x - 2y + 2z - 6 = 0$

41. The y-intercept of the line passing through $A(6, 1)$ and perpendicular to the line $x - 2y = 4$ is ....

(a) 5　　(b) 13
(c) −2　　(d) 26

42. The number of σ and π-bonds in 2-formylbenzoic acid are respectively

(a) 10, 3　(b) 14, 3　(c) 12, 5　(d) 17, 5

43. The volume of 1 mole of any pure gas at standard temperature and pressure is always equal to

(a) 0.022414 m^3　(b) 22.414 m^3
(c) 2.2414 m^3　(d) 0.22414 m^3

44. Veronal is used as a/an

(a) analgesic　　(b) antihistamine
(c) antibiotic　　(d) tranquilizer

45. Which of the following is also called as nitrogen sesquioxide?

(a) NO_2　　(b) N_2O_3
(c) N_2O_4　　(d) N_2O_5

46. The oxidation number of sulphur in S_8 molecule is

(a) 6　　(b) 0　　(c) 2　　(d) 3

47. Which among the following is a set of nucleophiles ?

(a) H^+, NH_3, Cl^-　　(b) BF_3, H_2O, NH_3
(c) $AlCl_3, BF_3, NH_3$　(d) $CN^-, H_2O, R{-}OH$

48. Which of the following acts as oxidising agent in hydrogen-oxygen fuel cell ?

(a) H_2　　(b) O_2
(c) KOH　　(d) C

49. In ozone molecule the formal charge on the central oxygen atom is

(a) −1　　(b) +2
(c) 0　　(d) + 1

50. According to Werner's theory the geometry of the complex is determined by

(a) only from the primary valence in space
(b) number and position of the primary valences in space
(c) number and position of the secondary valences in space
(d) only from the position of secondary valence in space

REAP SECTION

1. 25 persons are in a room. 15 of them play hockey, 17 of them play football and 10 of them play both hockey and football. Then the number of persons playing neither hockey nor football is
   (a) 2   (b) 17
   (c) 13   (d) 3

2. If 137 + 276 = 435 how much is 731 + 672?
   (a) 534   (b) 1403
   (c) 1623   (d) 1531

3. 5 skilled workers can build a wall in 20 days; 8 semiskilled workers can build a wall in 25 days; 10 unskilled workers can build a wall in 30 days. If a team has 2 skilled, 6 semiskilled and 5 unskilled workers, how long will it take to build the wall?
   (a) 20 days   (b) 18 days
   (c) 16 days   (d) 15 days

4. Given digits 2, 2, 3, 3, 3, 4, 4, 4, 4 how many distinct 4 digit numbers greater than 3000 can be formed?
   (a) 50   (b) 51
   (c) 52   (d) 54

5. Hari (H), Gita (G), Irfan (I) and Saira (S) are siblings (i.e. brothers and sisters). All were born on 1st January. The age difference between any two successive siblings (that is born one after another) is less than 3 years. Given the following facts:
   1. Hari's age + Gita's age > Irfan's age + Saira's age.
   2. The age difference between Gita and Saira is 1 year. However, Gita is not the oldest and Saira is not the youngest.
   3. There are no twins.

In what order were they born (oldest first)?
   (a) HSIG   (b) SGHI
   (c) IGSH   (d) IHSG

6. If $Log(P) = (1/2)Log(Q) = (1/3)Log(R)$, then which of the following options is TRUE?
   (a) $P^2 = Q^3R^2$ (b) $Q^2 = PR$
   (c) $Q^2 = R^3P$ (d) $R = P^2Q^2$

7. A container originally contains 10 litres of pure spirit. From this container 1 litre of spirit is replaced with 1 litre of water. Subsequently, 1 litre of the mixture is again replaced with 1 litre of water and this processes is repeated one more time. How much spirit is now left in the container?
   (a) 7.58 litres   (b) 7.84 litres
   (c) 7 litres   (d) 7.29 litres

8. The variable cost (V) of manufacturing a product varies according to the equation $V = 4q$, where q is the quantity produced. The fixed cost (F) of production of same product reduces with q according to the equation $F = 100/q$. How many units should be produced to minimize the total cost $(V + F)$?
   (a) 5   (b) 4
   (c) 7   (d) 6

9. P, Q, R and S are four types of dangerous microbes recently found in a human habitat. The area of each circle with its diameter printed in brackets represents the growth of a single microbe surviving human immunity system within 24 hours of entering the body. The danger to human beings varies proportionately with the toxicity, potency and growth attributed to a microbe shown in the figure below:

(Probability that microbe will overcome human immunity system)
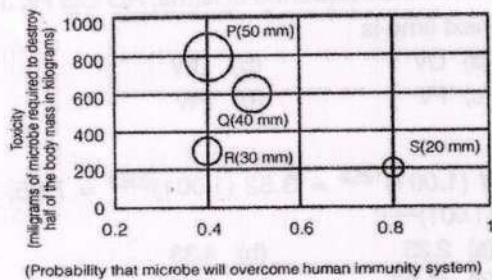
A pharmaceutical company is contemplating the development of a vaccine against the most dangerous microbe. Which microbe should the company target in its first attempt?

(a) P   (b) Q

(c) R   (d) S

10. A transporter receives the same number of orders each day. Currently, he has some pending orders (backlog) to be shipped. If he uses 7 trucks, then at the end of the 4th day he can clear all the orders. Alternatively, if he uses only 3 trucks, then all the orders are cleared at the end of the 10th day. What is the minimum number of trucks required so that there will be no pending order at the end of the 5th day?

(a) 4   (b) 5

(c) 6   (d) 7

11. There are two candidates P and Q in an election. During the campaign 40% of the voters promised to vote for P, and rest for Q. However, on the day of election 15% of the voters went back on their promise to vote for P and instead voted for Q . 25% of the voters went back on their promise to vote for Q and instead voted for P. Suppose, P lost by 2 votes, then what was the total number of voters?

(a) 100   (b) 110

(c) 90   (d) 95

12. The fuel consumed by a motorcycle during a journey while travelling at various speeds is indicated in the graph below
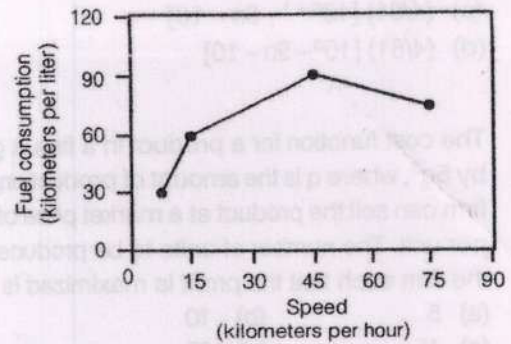
The distance covered during four laps of the journey are listed in the table below:

Lap	Distance (kilometers)	Average speed (kilometers per hour)
P	15	15
Q	75	45
R	40	75
S	10	10

From the given data, we can conclude that the fuel consumed per kilometre was least during the lap

(a) P   (b) Q

(c) R   (d) S

13. Three friends, R, S and T shared toffee from a bowl. R took 1/3rd of the toffees, but returned four to the bowl. S took 1/4th of what was left but returned three toffees to the bowl. T took half of the remainder but returned two back into the bowl. If the bowl had 17 toffees left, how many toffees were originally there in the bowl?

(a) 38   (b) 31

(c) 48   (d) 41

14. Given that $f(y) = |y|/y$, and q is any non-zero real number, the value of $|f(q) - f(-q)|$ is

(a) 0   (b) −1

(c) 1   (d) 2

15. The sum of n terms of the series $4 + 44 + 444 + \ldots$ is

(a) $(4/81)[10^{n+1} - 9n - 1]$

(b) $(4/81)[10^{n-1} - 9n - 1]$

(c) $(4/81)[10^{n+1} - 9n - 10]$

(d) $(4/81)[10^n - 9n - 10]$

16. The cost function for a product in a firm is given by $5q^2$, where q is the amount of production. The firm can sell the product at a market price of ₹ 50 per unit. The number of units to be produced by the firm such that the profit is maximized is

(a) 5   (b) 10

(c) 15   (d) 25

17. A political party orders an arch for the entrance to the ground in which the annual conventions is being held. The profile of the arch follows the equation $y = 2x - 0.1 x^2$ where y is the height of the arch in meters. The maximum possible height of the arch is

(a) 8 meters   (b) 10 meters

(c) 12 meters   (d) 14 meters

18. An automobile plant contracted to buy shock absorbers from two supplies X and Y. X supplies 60% and Y supplies 40% of the shock absorbers. All shock absorbers are subjected to a quality test. The ones that pass the quality test are considered reliable. Of X's shock absorbers, 96% are reliable. OF Y's shock absorbers, 72% are reliable.
The probability that a randomly chosen shock absorber, which is found to be reliable, is made by Y is

(a) 0.288   (b) 0.334

(c) 0.667   (d) 0.720

19. Which of the following assertions are CORRECT?

P: Adding 7 to each entry in a list adds 7 to the mean of the list

Q: Adding 7 to each entry in a list adds 7 to the standard deviation of the list

R: Doubling each entry n a list doubles the mean of the list

S: Doubling each entry in a list leaves the standard deviation of the list unchanged

(a) P, Q   (b) Q, R

(c) P, R   (d) R, S

20. Given the sequence of terms, AD CG FK JP, the next time is

(a) OV   (b) OW

(c) PV   (d) PW

21. If $(1.001)^{1259} = 3.52$ $(1.001)^{2062} = 7.85$, then $(1.001)^{3321}$

(a) 2.23   (b) 4.33

(c) 11.37   (d) 27.64

22. Raju has 14 currency notes in his pocket consisting of only ₹ 20 notes and ₹ 10 notes. The total money value of the notes is ₹ 230. The number of ₹ 10 notes that Raju has is

(a) 5   (b) 6

(c) 9   (d) 10

23. A and B friends. They decide to meet between 1 PM and 2 PM on a given day. There is a condition that whoever arrives first will not wait for the other for more than 15 minutes. The probability that they will meet on that day is

(a) 1/4   (b) 1/16

(c) 7/16   (d) 9/16

24. The data given in the following table summarizes the monthly budget of an average household.

Category	Amount
Food	4000
Clothing	1200
Rent	2000
Savings	1500
Others	1800

The approximate percentage of the monthly budget NOT spent on savings is

(a) 10%   (b) 14%

(c) 81%   (d) 86%

25. There are eight bags of rice looking alike, seven of which have equal and one is slightly heavier. The weighing balance is of unlimited capacity. Using this balance the minimum number of weighting required to identify the heavier bag is

(a) 2   (b) 3

(c) 4   (d) 8

26. A number much greater than 75 it is smaller than 117 is
    (a) 91 (b) 93
    (c) 89 (d) 96

27. A firm is selling it product at ₹ 60/unit. The total cost of production is ₹ 100 and firm is earning total profit of ₹ 500, Later the total cost increased by 30%. By what percentage the price should be increased to maintain the same profit level.
    (a) 5 (b) 15
    (c) 10 (d) 30

28. Following table provides figures (in rupees) on annual expenditure of a firm for two years 2010 and 2011

Category	2010	2011
Raw material	5200	6240
Power & fuel	7000	9450
Salary & wages	9000	12600
Plant & machinery	20000	25000
Advertising	15000	19500
Research & Development	22000	26400

In 2011, which of the following two categories have registered increase by same percentage?
    (a) Raw material and salary and wages
    (b) Salary and wages and advertising
    (c) Power and fuel and advertising
    (d) Raw material and research and development

29. If $|4x - 7| = 5$ then the value of $2|x| - |-x|$ is
    (a) $2, \dfrac{1}{3}$ (b) $\dfrac{1}{2}, 3$
    (c) $\dfrac{2}{3}, \dfrac{1}{3}$ (d) $\dfrac{2}{9}, 3$

30. x and y are two positive real numbers, such that equation
    $2x + y \le 6$; $x + 2y \le 8$
    For which values of (x, y), the function $f(x, y) = 3x + 6y$ will give maximum value
    (a) 4/3, 10/3 (b) 8/3, 20/3
    (c) 8/3, 10/3 (d) 4/3, 20/3

31. What will be the maximum sum of 44,. 42, 40, ...?
    (a) 502 (b) 504
    (c) 506 (d) 500

32. Out of all the 2-digit integers between 1 and 100, a 2-digit number has to be selected at random. What is the probability that the selected number is not divisible by 7?
    (a) 13/90 (b) 12/90
    (c) 78/90 (d) 77/90

33. A tourist covers half of this journey by train at 60 km/h, half of the remainder by bus at 30 km/h and the rest by cycle at 10 km/h. The average speed of the tourist in km/h during his entire journey is
    (a) 36 (b) 30
    (c) 24 (d) 18

34. Find the sum of the expression
    $$\frac{1}{\sqrt{1}+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + ... + \frac{1}{\sqrt{80}+\sqrt{81}}$$
    (a) 7 (b) 8
    (c) 9 (d) 10

35. The current erection cost of a structure is Rs. 13,200. If the labour wages per day increase by 1/5 of the current wages and the working hours decrease by 1/24 of the current period, then the new cost of erection in Rs., is
    (a) 16, 500 (b) 15, 180
    (c) 11, 000 (d) 10, 120

36. In the summer of 2012, in New Delhi, the mean temperature of Monday to Wednesday was 41°C and of Tuesday to Thursday was 43°C. If the temperature on Thursday was 15% higher than that of Monday, then the temperature in °C on Thursday was
    (a) 40 (b) 43
    (c) 46 (d) 49

37. A car travels 8 km in the first quarter of an hour, 6 km in the second quarter and 16 km in the third quarter. The average speed of the car in km per hour over the entire journey is
    (a) 30
    (b) 36
    (c) 40
    (d) 24

38. Find the sum to n terms of the series 10 + 84 + 734 +....

    (a) $\dfrac{9(9^n + 1)}{10} + 1$
    (b) $\dfrac{9(9^n - 1)}{8} + 1$

    (c) $\dfrac{9(9^n - 1)}{8} + n$
    (d) $\dfrac{9(9^n - 1)}{8} + n^2$

39. The set of values of p for which the roots of the equation $3x^2 + 2x + p(p - 1) = 0$ are of opposite sign is
    (a) $(-\infty, 0)$
    (b) $(0, 1)$
    (c) $(1, \infty)$
    (d) $(0, \infty)$

40. What is the change that a leap year, selected at random, will contain 53 Saturdays?

    (a) $\dfrac{2}{7}$
    (b) $\dfrac{3}{7}$

    (c) $\dfrac{1}{7}$
    (d) $\dfrac{5}{7}$

41. The statistics of runs scored in a series by four batsmen are provided in the following table. Who is the most *consistent* batsman of these four?

Batsman	Average	Standard Deviation
K	31.2	5.21
L	46.0	6.35
M	54.4	6.22
N	17.9	5.90

    (a) K
    (b) L
    (c) M
    (d) N

42. What is the next number in the series?
    12   35   81   173   357   _____.

43. Find the odd one from the following group:
   WEKO   IQWA   FNTX   NVBD
    (a) WEKO
    (b) IQWA
    (c) FNTX
    (d) NVBD

44. For submitting tax returns, all resident males with annual income below Rs 10 lakh should fill up Form P and all resident females with income below Rs 8 lakh should fill up Form Q. All people with incomes above Rs 10 lakh should fill up Form R, except non residents with income above Rs 15 lakhs, who should fill up Form S. All others should fill Form T. An example of a person who should fill Form T is
    (a) a resident male with annual income Rs 9 lakh
    (b) a resident female with annual income Rs 9 lakh
    (c) a non-resident male with annual income Rs 16 lakh
    (d) a non-resident female with annual income Rs 16 lakh

45. A train that is 280 metres long, travelling at a uniform speed, crosses a platform in 60 seconds and passes a man standing on the platform in 20 seconds. What is the length of the platform in metres?

46. The exports and imports (in crores of Rs.) of a country from 2000 to 2007 are given in the following bar chart. If the trade deficit is defined as excess of imports over exports, in which year is the trade deficit 1/5th of the exports?
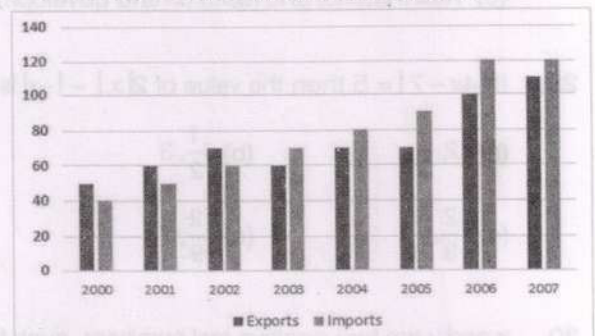
    (a) 2005
    (b) 2004
    (c) 2007
    (d) 2006

47. You are given three coins: one has heads on both faces, the second has tails on both faces, and the third has a head on one face and a tail on the

other. You choose a coin at random and toss it, and it comes up heads. The probability that the other face is tails is

(a) 1/4   (b) 1/3

(c) 1/2   (d) 2/3

48. A regular die has six sides with numbers 1 to 6 marked on its sides. If a very large number of throws show the following frequencies of occurrence:

$1 \to 0.167$; $2 \to 0.167$; $3 \to 0.152$; $4 \to 0.166$; $5 \to 0.168$; $6 \to 0.180$. We call this die

(a) irregular   (b) biased

(c) Gaussian   (d) insufficient

49. Fill in the missing number in the series.

2   3   6   15   _?_   157.5   630

50. Find the odd one in the following group

QWZB, BHKM, WCGJ, MSVX,

(a) QWZB   (b) BHKM

(c) WCGJ   (d) MSVX

UGEE 2018 SOLUTIONS

Answers of UGEE 2018 SUPR

1	D	11	B	21	B	31	B	41	B
2	C	12	*	22	B	32	C	42	D
3	B	13	A	23	C	33	C	43	A
4	A	14	A	24	D	34	B	44	D
5	B	15	B	25	A	35	B	45	B
6	B	16	B	26	D	36	C	46	B
7	A	17	A	27	B	37	B	47	D
8	A	18	A	28	A	38	A	48	B
9	D	19	A	29	A	39	A	49	D
10	D	20	B	30	C	40	D	50	C

Answers of UGEE 2018 REAP

1	D	11	A	21	D	31	C	41	A
2	C	12	B	22	A	32	D	42	16
3	D	13	C	23	C	33	C	43	D
4	B	14	D	24	D	34	B	44	B
5	B	15	C	25	A	35	B	45	560
6	B	16	A	26	D	36	C	46	D
7	D	17	B	27	A	37	C	47	B
8	A	18	B	28	D	38	D	48	B
9	D	19	C	29	B	39	B	49	45
10	C	20	A	30	A	40	A	50	C