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Question Paper Code: R4031

B.E. / B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Fourth Semester

Mechanical Engineering

R21UGS431 - REASONING AND QUANTITATIVE APTITUDE

(Regulation R2021)

(Common to EEE, Agricultural and Chemical Engineering branches)

Duration: Three hours

Maximum: 100 Marks

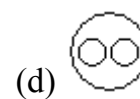
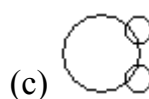
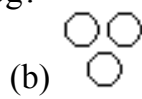
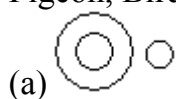
Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

- If $a : b = 3 : 4$ and $b : c = 8 : 9$. Then find $a : c$ CO1- Ap
(a) 1 : 3 (b) 3 : 2 (c) 2 : 3 (d) 1 : 2
- The average of 13 results is 50. If the average of first 7 results is 52 and that of last 7 results is 49. Find the 7th result? CO1- Ap
(a) 50 (b) 52 (c) 56 (d) 57
- The simple interest on Rs. 7500 at 6% per annum for 8 years is CO1- Ap
(a) Rs. 4200 (b) Rs. 3600 (c) Rs. 2800 (d) Rs. 3000
- A person crosses a 450 m long street in 3 minutes. What is his speed in km/hr? CO1- Ap
(a) 7 (b) 9 (c) 8 (d) 10
- How many three digit numbers can be formed using the digits {0, 1, 2, 3, 4} (Repetition of digits is not allowed)? CO1- Ap
(a) 60 (b) 48 (c) 64 (d) 125
- On 8th Feb, 2005 it was Tuesday. What was the day of the week on 8th Feb, 2004? CO1- Ap
(a) Tuesday (b) Monday (c) Sunday (d) Wednesday
- Find the Odd man out 8, 27, 64, 100, 125, 216, 343 CO2- Ap
(a) 27 (b) 100 (c) 123 (d) 343
- Prasanna said, "This girl is the wife of the grandson of my mother." How is Prasanna related to the girl? CO2- Ap
(a) Husband (b) Father (c) Father-in-law (d) Grandfather
- Which of the following will not be a number of the series: CO2- Ap
1, 8, 27, 64, 125,.....?
(a) 256 (b) 512 (c) 729 (d) 1000

10. Which of the following diagrams indicates the best relation between Pigeon, Bird and Dog?

CO2- Ap



PART – B (10 x 2= 20 Marks)

11. The inverse ratio of 1 : 2 : 3 is _____ CO1- Ap
12. The average of 12 numbers is 24. If each number be added by 3. Then the average of new Set of numbers is _____ CO1- AP
13. At _____ rate of simple interest a certain sum will be double in 10 years. CO1- Ap
14. If 5 monkeys eats 5 bananas in 5 minutes then 7 monkeys eats 7 bananas in _____ minutes. CO1- Ap
15. Today is Thursday. After 91 days, it will be _____ CO1- Ap
15. $5P_0 =$ _____ CO1- Ap
16. 1 leap year has _____ odd days. CO1- Ap
17. A, P, R, X, S and Z are sitting in a row. S and Z are in the centre. A and P are at the ends. R is sitting to the left of A. Then _____ is to the left of R? CO2- Ap
18. $123 : 13^2 :: 235 : \underline{\hspace{2cm}}$ CO2- Ap
19. What is the value of x? Using this given statements, CO2- Ap
- Statement : A : $x^2 = 64$;
- Statement : B : $x^3 = 512$;
20. Fill the blank in the series: QPO, NML, KJI, _____, EDC CO2- Ap

PART – C (5 x 12= 60 Marks)

Answer any **five** of the following questions

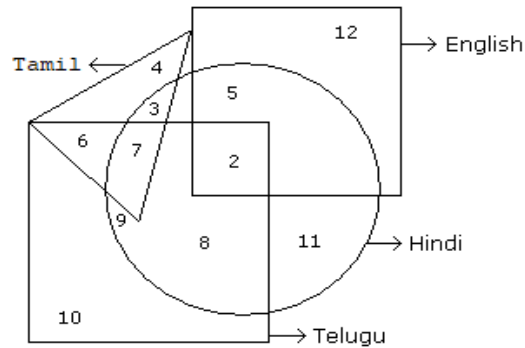
21. (i) The ratio of boys and girls in a school is 9:5.If the total number of students in the school is 1050.Then find the number of boys and Girls? CO1- App (12)
- (ii) Population of a village is eight thousand. If 6% men and 10% women are added, population becomes 8,600, then the number of men in the village was:
22. (i) The average weight of a group of 150 students in a class is 60 kg. If the mean of the weights of all the 50 male students in the class is 70 kg. Find the average weight of 100 girls in the class? CO1- App (12)
- (ii) 8 years ago Rama's mother was five times older than her daughter. After 8 years the mother will be twice older than her daughter. Find the present age of Rama?
23. (i) A man travels from his home to office at 4km/hr and reaches his office 20 min late. If the Speed had been 6 km/hr he would have reached 10 min early. Find the distance from his home to office. CO1- App (12)
- (ii) A man deposits Rs. 5000/- in his bank account for 5 years to earn an interest of 12%. What amount will he get after 5 years?

24. (i) A and B can do a work in 12 days, B and C in 15 days, C and A in 20 days. Then how long will they take to finish it individually? CO1- App (12)
(ii) If the cost price of 12 pens is equal to the selling price of 8 pens, the gain percent is?
25. (i) In what ratio must a grocer mix two varieties of pulses costing Rs. 15 and Rs. 20 per kg respectively so as to get a mixture worth Rs. 16.50 kg? CO1- Ap (12)
(ii) Find the angle between the minute hand and the hour hand of a clock when the time is 6.30?
26. (i) Five students P, Q, R, S and T are sitting in a row facing North. P is adjacent to T. T is in the middle of the row. T is the immediate right of P. P is not adjacent to Q or R. Then S is adjacent to Whom? CO2- Ap (12)
(ii) A and B are brothers. E is the daughter of F. F is the wife of B. What is the relation of E to A?
27. Study the following table and answer the questions based on it. CO3- Ap (12)
Expenditures of a Company (in Lakh Rupees) per Annum Over the given Years.

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

1. What is the average amount of interest per year which the company had to pay during this period?
2. The total amount of bonus paid by the company during the given period is approximately what percent of the total amount of salary paid during this period?
3. Total expenditure on all these items in 1998 was approximately what percent of the total expenditure in 2002?
4. The total expenditure of the company over these items during the year 2000 is?
5. The ratio between the total expenditure on Taxes for all the years and the total expenditure on Fuel and Transport for all the years respectively is approximately?

28. In the following figure Small Square represents the persons who know English, triangle to those who know Marathi, big square to those who know Telugu and circle to those who know Hindi. In the different regions of the figures from 1 to 12 are given. CO3- An (12)



1. How many persons can speak English and Hindi both the languages only?
2. How many persons can speak Tamil and Telugu both?
3. How many persons can speak only English?
4. How many persons can speak English, Hindi and Telugu?
5. How many persons can speak all the languages?