

FIITJEE RET – 9

(2018 – 2020)(1ST YEAR_CHAMPIONS (20S))

IIT-2017 (P1)

DATE: 03.09.2018

Time: 3 hours

Maximum Marks: 183

INSTRUCTIONS:

A. General

1. This booklet is your Question Paper containing 54 questions.
2. Blank papers, clipboards, log tables, slide rules, calculators, cellular phones, pagers and electronic gadgets in any form are not allowed to be carried inside the examination hall.
3. Fill in the boxes provided for Name and Enrolment No.
4. The answer sheet, a machine-readable Objective Response (ORS), is provided separately.
5. DO NOT TAMPER WITH / MULTILATE THE ORS OR THE BOOKLET.

B. Filling in the OMR:

6. The instructions for the OMR sheet are given on the OMR itself.

C. Question paper format & Marking Scheme

7. Each part has three sections as detailed in the following table:

Section	Question Type	Number of Questions	Category wise Marks Each Question				Maximum marks of the section
			Full Marks	Partial Marks	Zero Marks	Negative Marks	
1	One or more correct option (s)	7	+4 If only the bubble(s) corresponding to all the correct option(s) is(are) darkened	+1 For darkening a bubble corresponding to each correct option, provided NO incorrect option is darkened	0 If none of the bubbles is darkened	-2 In all other cases	28
2	Single digit integer (0–9)	5	+3 If only the bubble corresponding to the correct answer is darkened.	---	0 In all other cases	---	15
3	Single correct option	6	+3 If only the bubble corresponding to the correct option is darkened	---	0 If none of the bubbles is darkened	-1 In all other cases	18

Don't write / mark your answers in this question booklet.

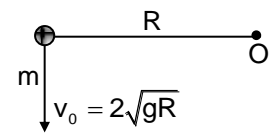
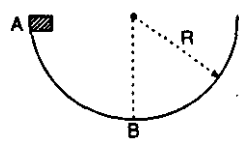
If you mark the answers in question booklet, you will not be allowed to continue the exam.

NAME:

ENROLLMENT NO.:

PAPER-I
PART I: PHYSICS
SECTION 1 (Maximum Marks: 28)

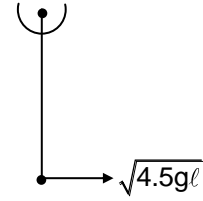
- * This section contains **SEVEN** questions.
- * Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four options is(are) correct.
- * For each question, darken the bubble(s) corresponding to all the correct option(s) in the ORS
- * For example, if (A), (C) and (D) are all the correct options for a question, darkening all these three will get +4 marks; darkening only (A) and (D) will get +2 marks; and darkening (A) and (B) will get -2 marks, as a wrong option is also darkened.

1. A particle of mass m is connected to a fixed point O by means of an inextensible string and is free to move in a vertical plane. The particle is initially given a velocity $v_0 = 2\sqrt{gR}$ when the string is in horizontal position. Then
- 
- (A) the minimum tension in the string during subsequent motion is mg
 (B) the initial acceleration of the particle will be $4g$
 (C) the minimum initial velocity to be imparted to particle in the position shown for it to complete the vertical circle will be $\sqrt{3gR}$
 (D) the tangential acceleration of the particle when the velocity vector becomes horizontal is zero
2. A particle of mass m is moving in a circular path of constant radius r such that its centripetal acceleration a_c is varying with time t as $a_c = k^2 r t^2$, where k is a constant. The power delivered to the particle by the force acting on it is $mk^A r^B t$, then choose the correct statement:
- (A) The value of A is 3 (B) The value of A is 2
 (C) The value of B is 3 (D) the value of B is 2
3. A small block of mass m is released from rest from position A inside a smooth hemispherical bowl of radius R as shown in figure. Choose the wrong option:
- 
- (A) Acceleration of block is constant throughout
 (B) Acceleration of block is g at A
 (C) Acceleration of block is $3g$ at B
 (D) Acceleration of block is $2g$ at B

Space for rough work

4. A particle of mass m is attached with a light string of length ℓ . It is free to rotate in a vertical plane (as shown). At the lowermost tip, a velocity of $\sqrt{4.5g\ell}$ is given. Choose correct options:

- (A) The string will slack at $\theta = \cos^{-1}\left(\frac{5}{6}\right)$, (θ is the angle made by the string with vertical axis)
 (B) The maximum tension in the string will be $5.5\ mg$
 (C) The maximum tension in the string will be $4.5\ mg$
 (D) The string will slack at $\theta = \cos^{-1}\left(\frac{1}{2}\right)$ (θ is the angle made by the string with vertical axis)



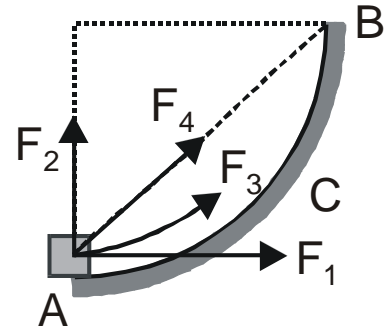
5. For the given situation in the previous question, which of the following options are incorrect? (values are given in SI units)

- (A) Maximum height achieved by the particle is $\frac{55\ell}{72}$
 (B) Maximum height achieved by the particle is $\frac{187\ell}{72}$
 (C) Speed of particle at maximum height is $\sqrt{\frac{125g\ell}{216}}$
 (D) Speed of particle at maximum height is $\sqrt{\frac{5g\ell}{6}}$

6. Rain drops fall from a certain height with a terminal velocity v on the ground. The viscous force is $F = 6\pi\eta rv$. Here η is coefficient of viscosity, r the radius of rain drop and v is speed. Then work done by all the forces acting on the ball till it reaches the ground is proportional to
 (A) r^7 (B) r^5 (C) r^3 (D) r^2

Space for rough work

7. ACB is a smooth quarter circular path of radius R. Four forces are acting at a particle placed at A. F₁ is always horizontal, F₂ is always vertical, F₃ is always tangential to path, F₄ is always directed from particle's position to point B. Magnitude of all forces are equal to F, Then,



- (A) work done by F₁ is F.R
 (B) work done by F₄ is $F.R\sqrt{2}$
 (C) work done by F₃ is $\frac{\pi FR}{2}$
 (D) work done by F₃ is $\frac{F.R}{\sqrt{2}}$

SECTION 2 (Maximum Marks: 15)

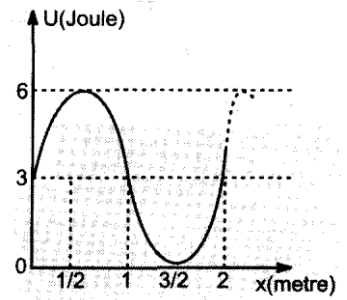
- * This section contains **FIVE** questions.
- * The answer to each question is a **SINGLE DIGIT INTEGER** ranging from 0 to 9, both inclusive.
- * For each question, darken the bubble corresponding to the correct integer the ORS.

8. Two blocks of masses $m_1 = 1\text{kg}$ and $m_2 = 2\text{kg}$ are connected by a non – deformed light spring. They are lying on a rough horizontal surface. The coefficient of friction between the blocks and the surface is 0.4. The minimum constant force F, which has to be applied in horizontal direction to the block of mass m_1 in order to shift the other block is $(n+2)$ N. Find n.

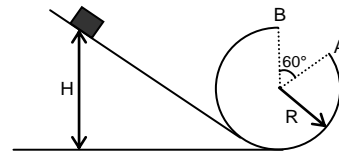


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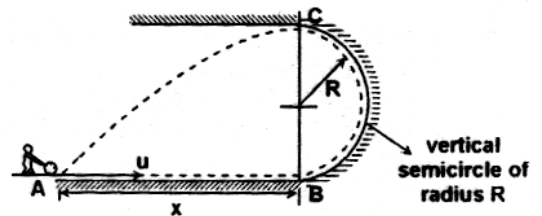
9. Potential energy (sinusoidal curve) is shown graphically for a particle. The potential energy does not depend on y and z co-ordinates. For range $0 < x < 2$ maximum value of conservative force (in magnitude) is $(\beta\pi)$. Find the value of β . [Here this force is corresponding to above potential energy and all units are in SI]



10. A bullet is fired at a target. Its velocity is decreased by 50% after penetrating 21 cm into the target. Find the additional thickness that the bullet will penetrate (in cm) before coming to rest.
11. A small particle slides from height $H = 45$ cm as shown and then loops inside the vertical loop of radius R from where a section of angle $\theta = 60^\circ$ has been removed. If $R = (1/N)$ meter, such that after losing contact at A and flying through the air, the particle will reach at the point B. Find N . Neglect friction everywhere.



12. A person rolls a small ball with speed u along the floor from point A. The ball returns to A after rolling on the circular surface in the vertical plane from B to C and becoming a projectile at C. The required speed u is $\frac{N}{2}\sqrt{gR}$. Find N .
($x = 3R$) (Neglect friction and radius of ball)



Space for rough work

SECTION 3 (Maximum Marks: 18)

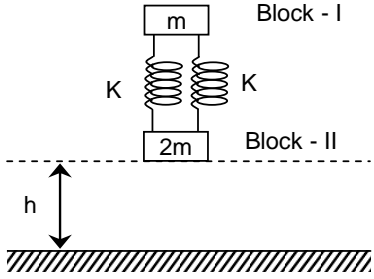
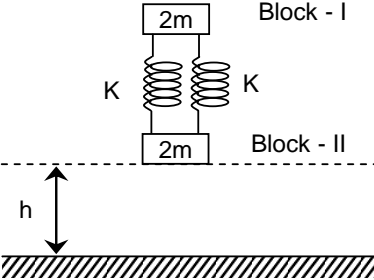
- * This section contains **SIX** questions of matching type.
- * This section contains **TWO** tables (each having 3 columns and 4 rows)
- * Based on the table, there are **THREE** questions
- * Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is correct.
- * For each question, darken the bubble corresponding to the correct option in the ORS.

Two blocks I and II are attached with a mass less spring as shown in **Column – 1**. After striking the ground, the speed of Block – II becomes zero instantly. Let **h** is the minimum height from where the system must be released, so that Block – II just gets lifted up.

Answer the below questions based on the situations given in **Column - 1**

	Column – 1	Column – 2	Column – 3
(I)		(i) $\frac{3mg}{2K}$	(P) $2g\sqrt{\frac{m}{K}}$
(II)		(ii) $\frac{mg}{K}$	(Q) $2g\sqrt{\frac{2m}{K}}$

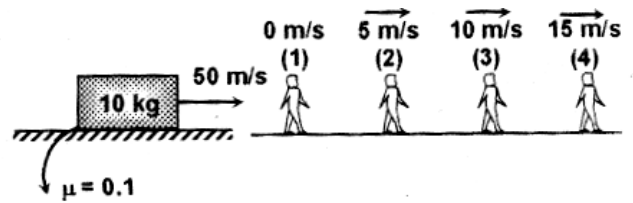
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(III)		(iii) $\frac{4mg}{K}$	(R) $g\sqrt{\frac{2m}{K}}$
(IV)		(iv) $\frac{2mg}{K}$	(S) $g\sqrt{\frac{3m}{K}}$

13. Pick the correct option
 (A) II \rightarrow iv \rightarrow Q (B) II \rightarrow iv \rightarrow P (C) II \rightarrow iii \rightarrow R (D) none of these
14. Pick the option for maximum work done by the external agent.
 (A) III \rightarrow i \rightarrow P (B) III \rightarrow ii \rightarrow R (C) III \rightarrow iv \rightarrow P (D) none of these
15. Pick the option for minimum potential energy in the final configuration.
 (A) IV \rightarrow i \rightarrow S (B) I \rightarrow i \rightarrow S (C) III \rightarrow iv \rightarrow P (D) none of these

Space for rough work

In the given situation a block, of mass 10 kg is on the ground and given initial velocity 50 m/s. Observer – 1 is at rest, observer – 2 is moving with velocity 5 m/s, observer – 3 moving with velocity 10 m/s and observer – 4 moving with velocity 15 m/s in the direction as shown in the figure.



Column 1		Column 2 Work done on block due to friction (in 2 sec)		Column 3 Work done on ground due to friction (in 2 sec)	
(I)	Observer - 1	(i)	-880 J	(P)	- 300 J
(II)	Observer – 2	(ii)	-980 J	(Q)	- 200 J
(III)	Observer – 3	(iii)	-780 J	(R)	- 100 J
(IV)	Observer - 4	(iv)	-680 J	(S)	0 J

16. Match the column if work done by friction on ground is – 200 J
 (A) III → iii → Q (B) I → iv → Q (C) III → i → Q (D) II → ii → Q
17. Match the column if work done by friction on the block is – 680 J
 (A) IV → iv → R (B) IV → iv → P (C) I → iv → S (D) III → iv → P
18. Match the column for observer-2
 (A) II → iii → P (B) II → ii → Q (C) II → iv → S (D) II → i → R

Space for rough work

PART II: CHEMISTRY
SECTION 1 (Maximum Marks: 28)

- * This section contains **SEVEN** questions.
- * Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four options is(are) correct.
- * For each question, darken the bubble(s) corresponding to all the correct option(s) in the ORS
- * For example, if (A), (C) and (D) are all the correct options for a question, darkening all these three will get +4 marks; darkening only (A) and (D) will get +2 marks; and darkening (A) and (B) will get -2 marks, as a wrong option is also darkened.

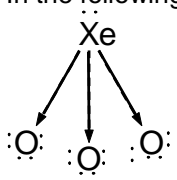
19. Which is correct statement
As the s-character of a hybrid orbitals decreases
(A) the bond angle decreases (B) the bond strength decreases
(C) the bond length increases (D) no change in bond length
20. Which is correct
(A) during N_2^+ formation, one electron is removed from the bonding molecule orbital of N_2 .
(B) during O_2^+ formation, one electron is removed from the antibonding molecular orbital of O_2 .
(C) during O_2^- formation one electron is added the bonding molecule orbital of O_2 .
(D) during CN^- formation, one e^- is added to bonding molecular orbital of CN
21. Which of the following is/are correct relation ?
(A) bond energy \propto (polarity of the bond)¹ (B) bond energy \propto (s-character of hybrid orbital)⁻¹
(C) bond energy \propto (atomic radius)⁻¹ (D) bond energy \propto (bond order)¹
22. Which of the following is/ are correct statements.
(A) In ortho nitro phenol intra molecular H-bonding takes place.
(B) Lower alcohols are soluble in water
(C) Hydrogen bond is generally formed by polar covalent compounds.
(D) Hydrogen bond is not formed by non-polar covalent compounds.
23. The compound / species in which d – orbital is not involved in central atom hybridization
(A) $POCl_3$ (B) SOF_4 (C) $XeOF_2$ (D) IF_2^+

Space for rough work

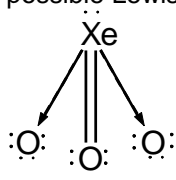
24. Sodium sulphate is soluble in water whereas barium sulphate is sparingly soluble because
 (A) the hydration energy of sodium sulphate is more than its lattice energy
 (B) the lattice energy of barium sulphate is more than its hydration energy
 (C) the lattice energy has no role to play in solubility
 (D) the hydration energy of sodium sulphate is less than its lattice energy
25. A π - bond can be formed between two p_x orbitals each having an unpaired electron, if they approach each other along:
 (A) X-axis (B) Y-axis (C) Z-axis (D) Any direction

SECTION 2 (Maximum Marks: 15)

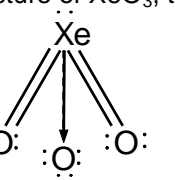
- * This section contains **FIVE** questions.
 * The answer to each question is a **SINGLE DIGIT INTEGER** ranging from 0 to 9, both inclusive.
 * For each question, darken the bubble corresponding to the correct integer the ORS.

26. Out of I_3^{\ominus} , ICl_2^{\ominus} , $BeCl_2$, XeF_2 , XeF_6 , BrF_5 , $HC \equiv CH$. How many will have linear shape?
27. How many of the following is correct regarding bond angle ?
 (i) $NH_3 < H_2O$ (ii) $F_2O < H_2O$
 (iii) $SCl_2 < OCl_2$ (iv) $H_2S < H_2O$
 (v) $Cl_2O < F_2O$ (vi) $CH_3^{\ominus} < CH_3^{\oplus}$
 (vii) $NH_3 < CH_4$ (viii) $BF_4^{\ominus} < BF_3$
 (ix) $SnCl_2 < HgCl_2$
28. The maximum number of hydrogen bonds that a molecule of water can have is
29. The experimental value of dipole moment of the HCl is 1.03 D. The length of the H–Cl bond is 1.275 Å. The percentage of ionic character in HCl is x then the value of (x – 10) approximately is
30. In the following four possible Lewis structure of XeO_3 , the sum of formal charge present on Xe is?
- 

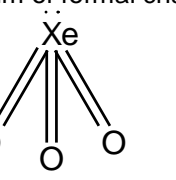
(I)



(II)



(III)



(IV)

Space for rough work

SECTION 3 (Maximum Marks: 18)

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Column 1 (species)		Column 2 (Bond order)		Column 3 (characteristics)	
(I)	C_2	(i)	2	(P)	Paramagnetic
(II)	N_2^+	(ii)	3	(Q)	Diamagnetic
(III)	O_2^{2-}	(iii)	2.5	(R)	Does not exist
(IV)	N_2	(iv)	1	(S)	Triple bond and diamagnetic

31. The only CORRECT combination for N_2 is
 (A) IV, iii, S (B) IV, ii, P (C) IV, i, S (D) IV, ii, S
32. The only CORRECT combination for O_2^{2-} is
 (A) III, i, R (B) III, iv, Q (C) III, iii, P (D) III, iv, P
33. The only CORRECT combination for C_2 is
 (A) I, i, S (B) I, iv, P (C) I, i, Q (D) I, iii, Q

Space for rough work

Column 1 (Ionic species)		Column 2 (Shape)		Column 3 (Hybridisation)	
(I)	XeF_5^+	(i)	Tetrahedral	(P)	Sp^2
(II)	SiF_5^-	(ii)	Square planar	(Q)	Sp^3d^2
(III)	AsF_4^+	(iii)	Trigonal bipyramidal	(R)	Sp^3d
(IV)	CH_4	(iv)	Square pyramidal	(S)	Sp^3

34. The only CORRECT combination for XeF_5^+ is
 (A) I, ii, Q (B) I, iv, Q (C) I, iii, Q (D) I, iv, R
35. The only CORRECT combination for SiF_5^- is
 (A) II, iii, Q (B) II, iii, P (C) II, iii, R (D) II, iv, R
36. The only CORRECT combination for AsF_4^+ is
 (A) III, i, P (B) III, ii, S (C) III, iv, P (D) III, i, S

Space for rough work

PART III: MATHEMATICS
SECTION 1 (Maximum Marks: 28)

- * This section contains **SEVEN** questions.
- * Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four options is(are) correct.
- * For each question, darken the bubble(s) corresponding to all the correct option(s) in the ORS
- * For example, if (A), (C) and (D) are all the correct options for a question, darkening all these three will get +4 marks; darkening only (A) and (D) will get +2 marks; and darkening (A) and (B) will get -2 marks, as a wrong option is also darkened.

37. The system of equation $x - y \cos \theta + z \cos 2\theta = 0$; $-x \cos \theta + y - z \cos \theta = 0$; $x \cos 2\theta - y \cos \theta + z = 0$ has a non-trivial solution, for θ is equal to
 (A) $\frac{\pi}{3}$ (B) $\frac{\pi}{6}$ (C) $\frac{2\pi}{3}$ (D) $\frac{\pi}{12}$
38. If the system of equations $x = cy + bz$, $y = az + cx$ and $z = bx + ay$ have a non-trivial solution, then the value of $a^2 + b^2 + c^2 + 2abc$ is
 (A) 1 (B) 0 (C) -1 (D) independent of a, b, c
39. The value of determinant $\begin{vmatrix} \cos(\theta + \phi) & -\sin(\theta + \phi) & \cos 2\phi \\ \sin \theta & \cos \theta & \sin \phi \\ -\cos \theta & \sin \theta & \cos \phi \end{vmatrix}$ is
 (A) positive (B) independent of θ (C) independent of ϕ (D) none of these
40. If $\begin{vmatrix} yz - x^2 & zx - y^2 & xy - z^2 \\ xz - y^2 & xy - z^2 & yz - x^2 \\ xy - z^2 & yz - x^2 & zx - y^2 \end{vmatrix} = \begin{vmatrix} r^2 & u^2 & u^2 \\ u^2 & r^2 & u^2 \\ u^2 & u^2 & r^2 \end{vmatrix}$, then
 (A) $r^2 = x + y + z$ (B) $r^2 = x^2 + y^2 + z^2$ (C) $u^2 = yz + zx + xy$ (D) $u^2 = xyz$

Space for rough work

41. Let $\Delta = \begin{vmatrix} \frac{1}{\sin\theta\cos\phi} & \frac{1}{\sin\theta\sin\phi} & \frac{1}{\cos\theta} \\ -\cos\theta & -\cos\theta & \frac{\sin\theta}{\cos^2\theta} \\ \frac{\sin\phi}{\sin\theta\cos^2\phi} & \frac{-\cos\phi}{\sin\theta\sin^2\phi} & 0 \end{vmatrix}$, then

- (A) Δ is dependent on θ (B) Δ is dependent on ϕ
 (C) Δ is a constant (D) none of these

42. If $\begin{vmatrix} x^2+x & x+1 & x-2 \\ 2x^2+3x-1 & 3x & 3x-3 \\ x^2+2x+3 & 2x-1 & 2x-1 \end{vmatrix} = Ax + B$, where A and B are constants, then

- (A) $A + B = 12$ (B) $A - B = 36$ (C) $A^2 + B^2 = 720$ (D) $A + 2B = 0$

43. The determinant $\Delta = \begin{vmatrix} b & c & b\lambda + c \\ c & d & c\lambda + d \\ b\lambda + c & c\lambda + d & a\lambda^3 + 3c\lambda \end{vmatrix}$ is equal to zero, if

- (A) b, c, d are in AP (B) b, c, d are in GP
 (C) b, c, d are in H.P (D) λ is a root of $ax^3 - bx + cx - d = 0$

SECTION 2 (Maximum Marks: 15)

- * This section contains **FIVE** questions.
- * The answer to each question is a **SINGLE DIGIT INTEGER** ranging from 0 to 9, both inclusive.
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44. If $x \neq y \neq z$ and $\begin{vmatrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{vmatrix} = 0$, then $3xyz + 4 =$

Space for rough work

45. If $a + b + c = 2s$, then $\begin{vmatrix} a^2 & (s-a)^2 & (s-a)^2 \\ (s-b)^2 & b^2 & (s-b)^2 \\ (s-c)^2 & (s-c)^2 & c^2 \end{vmatrix} = \frac{2ks^3(s-a)(s-b)(s-c)}{3}$, then k is

46. If $\Delta_r = \begin{vmatrix} x & y & z \\ 2^r & 2 \cdot 3^r & 3 \cdot 4^r \\ 2 \cdot (2^n - 1) & 3 \cdot (3^n - 1) & 4 \cdot (4^n - 1) \end{vmatrix}$, then the value of $\frac{1}{2} \left(3 \sum_{r=1}^n \Delta_r + 8 \right)$ is

47. If $2ax - 2y + 3z = 0$, $x + ay + 2z = 0$ and $2x + az = 0$ have a non-trivial solution, then a is

48. The value of determinant $\begin{vmatrix} a_1x_1 + b_1y_1 & a_1x_2 + b_1y_2 & a_1x_3 + b_1y_3 \\ a_2x_1 + b_2y_1 & a_2x_2 + b_2y_2 & a_2x_3 + b_2y_3 \\ a_3x_1 + b_3y_1 & a_3x_2 + b_3y_2 & a_3x_3 + b_3y_3 \end{vmatrix}$ is

SECTION 3 (Maximum Marks: 18)

- * This section contains **SIX** questions of matching type.
- * This section contains **TWO** tables (each having 3 columns and 4 rows)
- * Based on the table, there are **THREE** questions
- * Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is correct.
- * For each question, darken the bubble corresponding to the correct option in the ORS.

49 – 51: By appropriately matching the information given in the three columns of the following table.

Column 1	Column 2	Column 3
(I) $\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix}$	(i) $2abc(a + b + c)^3$	(P) $\begin{vmatrix} 1 & 1 & 1 \\ a^2 & b^2 & c^2 \\ a^3 & b^3 & c^3 \end{vmatrix}$
(II) $\begin{vmatrix} a & b & c \\ a^2 & b^2 & c^2 \\ bc & ca & ab \end{vmatrix}$	(ii) 0	(Q) $\begin{vmatrix} b-c & c-a & a-b \\ c-a & a-b & b-c \\ a-b & b-c & c-a \end{vmatrix}$
(III) $\begin{vmatrix} a+b+c & a & a^2 \\ a+b+c & b & b^2 \\ a+b+c & c & c^2 \end{vmatrix}$	(iii) $(a - b)(b - c)(c - a)$ $(ab + bc + ca)$	(R) $\begin{vmatrix} a & b & c \\ a^2 & b^2 & c^2 \\ b+c & a+c & a+b \end{vmatrix}$
(IV) $\begin{vmatrix} (b+c)^2 & bc & ac \\ ab & (a+c)^2 & bc \\ ac & bc & (a+b)^2 \end{vmatrix}$	(iv) $(a - b)(b - c)(c - a)$ $(a + b + c)$	(S) $\begin{vmatrix} (b+c)^2 & a^2 & a^2 \\ b^2 & (c+a)^2 & b^2 \\ c^2 & c^2 & (a+b)^2 \end{vmatrix}$

Space for rough work

49. Which of the following is the **CORRECT** combination ?
 (A) (III) (iii) (P) (B) (III) (iv) (S) (C) (II) (iv) (P) (D) (II) (iii) (S)
50. Which of the following options is the **CORRECT** combination ?
 (A) (I) (iii) (Q) (B) (I) (i) (R) (C) (II) (iii) (P) (D) (II) (iv) (P)
51. Which of the following options is the **INCORRECT** combination ?
 (A) (III) (iii) (P) (B) (III) (iv) (S) (C) (I) (ii) (Q) (D) (IV) (i) (R)

52 – 54: By observing column 1, column 2, column 3 establish the relation and answer to the questions below:

Column 1	Column 2	Column 3
(I) If B is odd ordered matrix such that $BB^T = I$ and $ B = -1$, then	(i) $\det(B - I) = -\det(B + I)$	(P) $B - I$ is null matrix
(II) If B is skew symmetric matrix of even order then	(ii) $\det(B - I) = 0$	(Q) $B - I$ has no inverse
(III) If B is skew symmetric matrix of odd order then	(iii) $\det(B - I) = \det(B + I)$	(R) $B - I$ has an inverse only if $B + I$ has inverse
(IV) If A is a non-singular matrix satisfying $AB - BA = A$, then	(iv) $\det(B - I) = 1$	(S) $B - I$ has no inverse if $B + I$ has no inverse

52. Which of the following is the only **CORRECT** combination ?
 (A) (I) (ii) (P) (B) (I) (ii) (Q) (C) (II) (iii) (Q) (D) (IV) (i) (P)
53. Which of the following is the only **INCORRECT** combination ?
 (A) (II) (iii) (R) (B) (II) (iii) (S) (C) (III) (i) (R) (D) none of these
54. Which of the following options is the **INCORRECT** combination ?
 (A) (III) (i) (S) (B) (IV) (iii) (R) (C) (IV) (iii) (S) (D) none of these

Space for rough work

FITJEE RET – 9

(2018 – 2020)(1ST YEAR_CHAMPIONS (20S))

IIT-2017 (P1)

DATE: 03.09.2018

ANSWERS

PHYSICS

- | | | | |
|------------|-----------------|------------|---------|
| 1. A, C, D | 2. B, D (Bonus) | 3. A, C | 4. A, B |
| 5. A, B, D | 6. A (Bonus) | 7. A, B, C | 8. 6 |
| 9. 3 | 10. 7 | 11. 5 | 12. 5 |
| 13. D | 14. C | 15. B | 16. A |
| 17. B | 18. D | | |

CHEMISTRY

- | | | | |
|-------------|-------------|-------------|----------------|
| 19. A, B, C | 20. A, B, D | 21. A, C, D | 22. A, B, C, D |
| 23. A, D | 24. A, B | 25. B, C | 26. 5 |
| 27. 7 | 28. 4 | 29. 7 | 30. 6 |
| 31. D | 32. B | 33. C | 34. B |
| 35. C | 36. D | | |

MATHEMATICS

- | | | | |
|---------------|---------------|-----------------|--------|
| 37. ABCD | 38. AD | 39. B | 40. BC |
| 41. AB | 42. ABCD | 43. BD | 44. 1 |
| 45. 3 | 46. 4 (Bonus) | 47. 2 | 48. 0 |
| 49. B (Bonus) | 50. C | 51. A or B or D | 52. B |
| 53. D | 54. D | | |