BS017

ALL KERALA BHAVAN'S SCHOLARSHIP EXAMINATION 2017-2018

Class :XII SCIENCE

Duration:1 ½ Hrs

Max Marks: 100

GENERAL INSTRUCTIONS

READ THE INSTRUCTIONS CAREFULLY BEFORE ANSWERING THE QUESTIONS

1. Please fill up your Roll No. and class in the box provided on the answer sheet.
2. This question booklet has 2 sections: Section A and Section B.
3. Section A has 34 questions and is mandatory for candidates .
   Section B is divided into 4 parts: Part I – Maths,Part –II Biology ,
   Part-III Computer Science, Part – IV Informatics Practices.
4. Candidates should answer any two parts from Section B.
5. Total number of Questions to be answered is 50(34+8+8) and 5 Tie Breaker questions.Tie Breaker questions would be evaluated only in case of a tie.
6. The choice of subjects must be indicated in the boxes provided under section B in the Answer sheet.
7. Each question has 4 options a,b,c,d.
8. For each question, select the best/correct option and darken the bubble completely against the corresponding question in the answer sheet provided.
9. Each question carries 2 marks.
10. Use blue/Black ball point pen to darken the bubble.
11. Darken only one bubble against each question.
12. There will be no negative marking

SCIENCE

1 Choose from the options given below to improve the sentence by substituting the highlighted part with one of the options. Choose option (d) if the sentence is correct.

I was searching frantically for my diamond ring in the whole house when ***"inside the pouch all along it was lying"***.

(a) all along it was lying inside the pouch.
(b) inside the pouch it was lying along
(c) all along it was inside the pouch lying
(d) no improvement

2 Choose the correct word from the words given below that does not indicate movement accompanied by weariness

(a) Plod (b)mumble (c)trudge (d)stagger

3 Choose the alternative which best expresses the meaning of the idiom/ phrase

A penny for your thoughts

(a) without any hesitation
(b) asking money for one's ideas/ thoughts
(c) a way of asking what someone is thinking
(d) to present a counter argument

4 Choose the correctly spelt word

(a) asterisk (b)convalasence (c)deductible (d)liaison

5 In 'The Rattrap', the tramp's view of the world was a ---------- one.

(a) Enlightened (b)cynical (c)compassionate (d)transformed

6 ' A thing of Beauty' is an excerpt from Keat's poem

(a) Ode to Autumn (b)Ode to Nightingale
(c) Endymion (d)Ode on a Grecian Urn

7 Name the English pacifist, a devoted follower of Gandhiji, who was involved in the Champaran episode

(a) Charles Freer Andrews (b)Louis Fischer
(c) A.O Hume (d)Michael Andrews

8 _____ was burgled in the wee hours of Whit Monday

(a) Coach and Horses Inn (b)Huxter's shack
(c) Cuss's house (d) The vicarage

9. The binding energy per nucleon for the parent nucleus is E_1 and that for the daughter nuclei is E_2. Then

(a)$E_1 = 2E_2$ (b)$E_2 = 2E_1$ (c)$E_1 > E_2$ (d) $E_2 > E_1$

10. If the ratio of the concentration of electrons to that of holes in a semi conductor is 7/5 and the ratio of currents is 7/4, then what is the ratio of their drift velocities?

(a) 5/8 (b) 4/5 (c) 5/4 (d) 4/7

11. Focal length of a convex lens of refractive index 1.5 is 2cm. Focal length of lens when immersed in a liquid of refractive index of 1.25 will be

(a)10cm (b) 7.5cm (c) 5cm (d) 2.5cm

12. What should be the velocity of an electron so that its momentum becomes equal to that of a photon of wave length 5200 A^0 ?

(a) 700m/s (b) 1000m/s (c) 1400m/s (d) 2800m/s

13. A charged particle is moving in a uniform magnetic field in a circular path with a radius R. When energy of the particle is doubled, then the new radius will be

(a) R/2 (b) $R\sqrt{2}$ (c) 2R (d) R/3

14. The resistance of the series combination of 2 resistances is S. When they are joined in parallel, the total resistance is P. If S=nP, then the minimum possible value of n is

(a) 4 (b) 3 (c) 8/9 (d) 2

15.A dipole is placed in a uniform electric field, the potential energy will be minimum when the angle between its axis and field is

(a) 0 (b) π (c) $\pi/2$ (d) 2π

16. A ray of light strikes a material's slab at an angle of incidence 60°. If the reflected and refracted rays are perpendicular to each other, the refractive index of the material is

(a) $1/\sqrt{3}$ (b) $1/\sqrt{2}$ (c) $\sqrt{2}$ (d) $\sqrt{3}$

17. Which of the following is a network solid ?

(a)SO_2(Solid) (b)I_2 (c)Diamond (d)H_2O (ice)

18. Weight of urea required to prepare 200 ml of 2M solution is:

(a)12g (b)24g (c)20g (d)60g

19. While charging the lead storage battery

(a)$PbSO_4$ anode is reduced to Pb
(b)$PbSO_4$ cathode is reduced to Pb
(c)$PbSO_4$ cathode is oxidised to Pb
(d)$PbSO_4$ anode is oxidised to PbO_2

20. The role of catalyst is to change

(a)Gibbs energy of the reaction
(b) Enthalpy of the reaction.
(c) Energy of reaction.
(d) Equilibrium constant.

21. Which of the following acids forms three series of salts?

(a) H_3PO_2 (b)H_3BO_3 (c) H_3PO_4 d)H_3PO_3

22. Chemical composition of 'Slag' formed during the smelting process in the extraction of copper is:
(a)Cu_2O+lFeS (b)$FeSiO_3$ (c)$CuFeS_2$ (d)Cu_2S+FeO

23. The compounds$[Co(SO_4)(NH_3)_5]$ Br and$[Co(SO_4)(NH_3)_5]$ Cl represent
(a)Linkage isomerism (b)Ionisation isomerism
(c) coordination isomerism (d)no isomerism.

24. Which of the following does not undergo cannizzaro reaction?
(a)Benzaldehyde (b)2-methylpropanal
(c)p-methoxybenzaldehyde (d)2,2-dimethylpropanal

25. Which state signed MOU with South Korea?
(a) Gujarat (b)West Bengal (c)Maharashtra (d)Uttar Pradesh

26. Which bank launched 'Project Nischay' for turnaround?
(a)IDBI (b)PNB (c)Canara (d)SIB

27. When is World Tourism Day observed?
(a) sept 20^{th} (b)Aug 10^{th} (c)Aug 1^{st} (d)Sep 27^{th}

28. Official Mascot of FIFA U17 World cup is?
(a)Asiatic Lion (b) Clouded Leopard (c)Javan Tiger (d)Snow leopard

29. Who is the chief Justice of India?
(a) Dipak Misra (b)H.L Dattu (c)Jagdish Singh Khehar (d) P .Sathasivam

30. Find the answer that best completes the analogy: Book is to reading as fork is to :
(a) drawing (b) writing (c) stirring (d) eating

31. What number best completes the analogy: 8:4 as 10:
(a) 3 (b) 7 (c) 24 (d) 5

32. Which number should come next in the pattern?
37,34,31,28
(a) 27 (b) 26 (c) 25 (d)29

33. Enter the missing number 4,8,14,22,?
(a) 26 (b) 28 (c) 32 (d) 36

34. One word that doesn't belong to the same group.
(a) receiver (b) radar (c) race car (d) reviver

SECTION B

Section B comprises of 4 parts –part 1,part II part III, part IV
Answer any two parts only of Section B

PART I - MATHEMATICS

1. The length of the perpendicular drawn from the point P (5,4,2) to the line $\vec{r} = (-\hat{\imath} + 3\hat{\jmath} + \hat{k}) + \lambda(2\hat{\imath} + 3\hat{\jmath} - \hat{k})$ is
(a)$\sqrt{35}$ (b) $\sqrt{24}$ (c)$\sqrt{26}$ (d)$\sqrt{12}$

2. Two balls are drawn at random from a bag containing 2 white , 3 red , 5 green and 4 black balls one by one with replacement. The probability that both balls are of different colours is
(a) $\frac{17}{98}$ (b) $\frac{27}{98}$ (c) $\frac{71}{98}$ (d) $\frac{17}{196}$

3. The sum of the order and degree of the differential equation
$\frac{d^2y}{dx^2} + \sqrt[3]{\frac{dy}{dx}} + (1+x) = 0$ is

$(a)2$ $(b)3$ $(c)4$ $(d)5$

4. The value of $\int_0^{\pi} \frac{xSinx}{1+Cos^2x}\,dx$ is

(a) $\frac{\pi}{4}$ $(b)\pi$ $(c)\frac{\pi^2}{4}$ $(d)\frac{\pi^2}{2}$

5. Solution of $3\tan^{-1}x + \cot^{-1}x = \pi$ is

(a) 4 b) 1 c) 0 d)2

6. If $A = \begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$ the value of x and y such that $A^2 + xI_2 = yA$ is

a) $x = 8, y = 8$ $b)\ x = 8, y = 4$ $c) x = 6, y = 4$ $d)\ x = 6, y = 6.$

7. The value of k so that the function

$$f(x) = \begin{cases} \frac{2^{x+2}-16}{4^x-16}, & if\ x \neq 2 \\ k & if\ x = 2 \end{cases} \text{ is}$$

$continuous\ at\ x = 2$ is

a)1 b)2 c) $\frac{1}{2}$ d) $\frac{1}{4}$

8.The value of p when the curves $x^2 = 9p(9-y)$ and $x^2 = p(y+1)$ cut Each other at right angles is

a)2 b)4 c)5 d)8

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PART II – BIOLOGY

1. Pollen grains of a tetraploid plant brings about fertilisation in a diploid plant. The endosperm of the seed will be
(a) 2n (b) 3n (c) 4n (d) 5n

2. The segments of DNA which can shift positions
(a) Transposons (b) Cistrons (c) Introns (d) Exons

3. 10% Law for energy transfer in food chain was given by
(a) Lindeman (b) Stanley (c) Tansley (d) Haeckel

4. International Rice Research Institute is situated at
(a) Mexico (b) Hyderabad (c) Phillipines (d) Taiwan

5. A person may die due to allergic reactions or an anaphylactic shock which is characterised by
(a) blood capillaries become highly permeable causing loss of fluids from the blood.
(b) constriction of peripheral blood vessels
(c) drastic increase in blood pressure
(d) all the above

6. Tachyglossus is a connecting link between
(a) reptiles and birds (b) birds and mammals
(c) amphibians and reptiles (d) reptiles and mammals

7. Presence of which of the following hormone in urine confirms pregnancy
(a) Estrogen (b) Prolactin
(c) Progesterone (d) Human Chorionic Gonadotropin

8. What will be the number of histone molecules in a chromatin fibre having 50 nucleosomes
(a)400 (b) 500 (c)1000 (d) 450

PART III COMPUTER SCIENCE

1. The OOP feature which helps to implement reusability of class is,
(a) polymorbhism b)Inheritance c)Abstraction d) data hiding

2. Which of the following is used to identify the copy constructor of class type X.
(a) (X&) (b) X(&X) (c)X(X&) (d)X(X)

3. Write the function header for destructor of a class Flight.
(a) Flight() (b) void Flight() (c) void ~Flight() (d) ~Flight()

4. Translate, following infix expression into its equivalent postfix expression,
(A+B^D)/(E – F)+G

(a)ABD^+EF-/G+ (b) AB+D^EF-/G+ (c) AB+D^EF/-G+ (d) ABD^+ EF/-G+

5.Suppose circular Queue is maintained by an array Q with 12 memory locations. Find the number of elements in Q when Front= 10,Rear = 3.
(a)4 (b)5 (c)7 (d) 6.

6.Convert the following Boolean expressions into its equivalent canonical SOP form
(X'+Y+Z')(X'+Y+Z)(X'+Y'+Z)(X'+Y'+Z')
(a)F(X,Y,Z)=Σ(0,1,2.3)
(b) F(X,Y,Z)=Σ(4,5,6,7)
(c)F(X,Y,Z)=π(0,1,2.3)
(d)F(X,Y,Z)=π(4,5,6,7)

7. Consider a file F containing objects E of class EMP.Write statement to return the number of bytes from the beginning of the file to the current position of the file pointer.
(a) E.tellg() (b) F.tellg() (c) E.seekg() (d) F.seekg()

8. Which type of network is formed, when you connect two mobiles using Bluetooth to transfer a video.
(a)LAN (b)PAN (c)MAN (d)WAN

PART IV --INFORMATICS PRACTICES

1. Two engineers in the same room connected their palmtops using Bluetooth for working on a group presentation. Out of the following , what kind of network have they followed.?
(a) LAN (b) MAN (c) PAN (d)WAN

2. What will be the value of total after the loop finishes execution.?

```
int total=0;
for(int c=0;c<=10;c++)
{total+=c;}
```

(a) 10 (b)16 (c)55 (d)36

3. In which topology each node is connected with exactly two of its neighbouring nodes.?
(a)LAN (b)Mesh (c)Ring (d)Star

4.Which device that regenerates the received signal and retransmits it to its destinations.?
(a) Switch (b)Repeater (c)Modem (d)Gateway

5. The relationship between two tables is established with the help of which key?
(a)Primary key (b)Candidate key (c)Alternate key (d)Foreign key

6. Which operator in Mysql checks a value within a set of values and retrieve the rows from the table which are matching.?
(a)In (b)Between (c)Like (d)AND.

7. Which TCL command in Mysql is used when the changes done in a transaction needs to be undone.
(a)Rollback (b)Commit (c)Savepoint (d)Begin

8. Which keyword in Java is used to derive a subclass from a base class.
(a)reference (b)derive (c)extends (d)none of the above

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TIE BREAKER

1. One word that doesn't belong to the same group.
   (a) yen (b) pound (c) franc (d) mark

2. Who is the current RBI Governor of India?
   (a) Raghuram Rajan (b)D.Subharao (c)Urjit Patel (d)Y. V.Reddy

3. Effective magnetic moment of Sc^{3+} ion is
   (a) 1.73 (b)0 (c) 5.92 (d)2.83

4. The magnetic field of a given length of wire carrying current for a single turn circular coil at centre is B. Then its value for two turns coil of the same wire, when the same current passes through it, is
   (a) B/4 (b)B/2 (c) 2B (d) 4B

5. Choose a synonym for 'frantic'.
   a) energetic b) frenetic c) enthusiastic d) pathetic

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